Do it yourself (DIY) manual for mobilising and engaging stakeholders and citizens in climate change adaptation planning and implementation

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Introduction

How can you enhance your climate change adaptation planning with powerful stakeholder[1] engagement and citizen mobilisation strategies? How can you ensure their future endorsement to secure long-term and effective adaptation measures? If these questions are among your current concerns, you are not alone. Most regional and local governments are seeking to address these opportunities and with good reason: stakeholders and citizens are the backbone of successful adaptation planning and implementation.

No matter how thoughtful, scientifically robust and data-informed your climate change adaptation plan is, unless it is accepted and backed by stakeholders and citizens, it will not reach its full potential both in its design and in its implementation.

Aims and scope

This manual is for use by regional and local authorities and has been produced as part of the EU Mission Implementation Platform for Adaptation to Climate Change (MIP4Adapt). The manual will guide you on how to engage stakeholders and citizens throughout the six main steps of the climate change adaptation planning process described in the Regional Adaptation Support Tool (RAST).

It presents tried and tested tools and methods that can help you to take a 'whole-of-society' approach that leaves no one behind. The manual is underpinned conceptually by four elements: **communicate, engage, connect and enable (action).**

COMMUNICATE   ENGAGE   CONNECT   ENABLE

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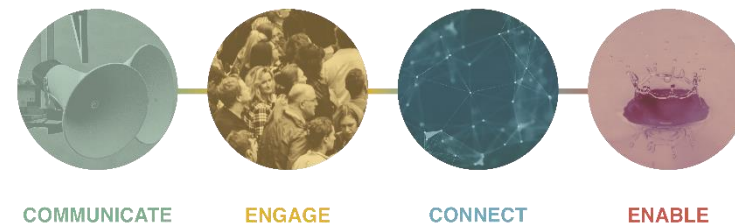
[1] A stakeholder is any person or group that influences or is influenced by your climate change adaptation plan. In practice, this implies everyone that may be affected by challenges and opportunities posed by climate change and actors that have the capacity to implement relevant actions.

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It conceives them as interconnected elements to mobilise stakeholders and citizens and encourage collective understanding, commitment, and action (see Box 1 for more details).

Box 1: COMMUNICATE-ENGAGE-CONNECT-ENABLE

Key elements for success to mobilise and engage stakeholders and citizens effectively and collaboratively:

- COMMUNICATE to/with a broad range of stakeholders and citizens who may be overwhelmed by the extent of information that they receive on a regular basis

- ENGAGE with an inclusive spectrum of organisations and individuals

- CONNECT stakeholders and citizens with decision-makers in ways that facilitate deliberation about policies and measures

- ENABLE stakeholders and citizens to ACT collectively and individually.

Why do you need to engage and mobilise stakeholders and citizens?

There is robust evidence that public participation can lead to more ambitious and transformative climate change planning and implementation [Ref1].

As a regional or local authority, you can play a vital role in building or enhancing stakeholders and citizens' awareness and understanding of climate vulnerabilities, risks, and opportunities, and strengthening their commitment on what can be done to address them. In turn, this can facilitate implementation, including behavioural change.
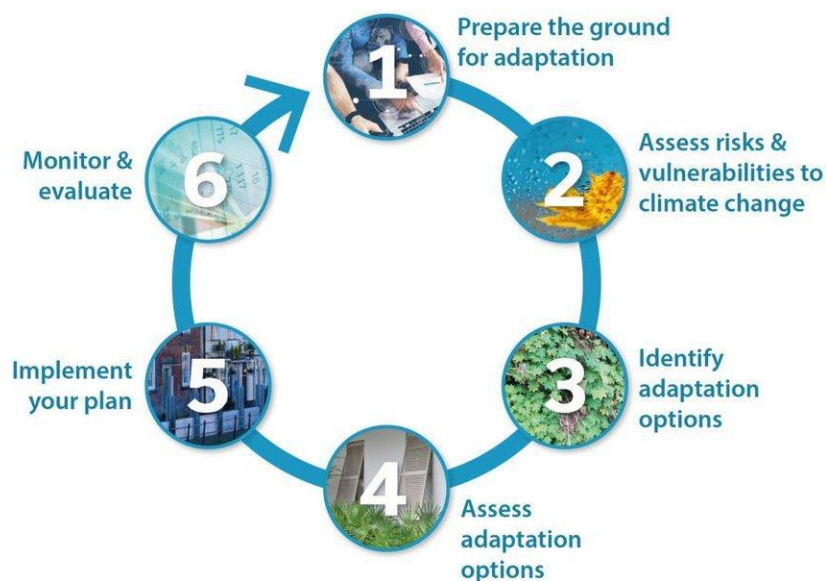
By engaging your stakeholders and citizens, you can ensure that your climate change adaptation plans are:

- **Salient**: While much may be known about the sensitivity of human and natural systems to climate variability and change, stakeholders and citizens can provide important local insights, knowledge, and experience. Furthermore, they may be the best judge of their own adaptive capacity; their ability to adjust to potential damages, to take advantage of opportunities, or to respond to consequences. Many stakeholders are also likely to be responsible for implementing actions arising from the plan, so they will likely be knowledgeable about operational issues and deployment.

- **Credible**: If your climate change adaptation plan is to be credible, consistent, and trustworthy, then it is important that it is informed bottom-up not just led top-down.

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- **Legitimate:** By securing inputs to and validation of your climate change adaptation plan from stakeholders and citizens, it is more likely to be seen as fair, proportionate, and equitable by all, thereby facilitating your ability to ensure its implementation.
- **Jointly owned:** Co-development of your plan with stakeholders and citizens will ensure common ownership and encourage everyone to play their part in its implementation.
- **Understood:** The involvement of stakeholders and citizens in each step of the adaptation planning cycle (e.g., in defining climate vulnerabilities and risks, identifying and prioritising adaptation options, and developing implementation plans) will mean that the purposes of the plan, the issues on which it focuses and the ways in which these are addressed will be familiar, better known and thus understood.

When and how to engage and mobilise stakeholders and citizens in your adaptation planning?

This manual will help you to consider when and how you can most effectively and efficiently mobilise and engage stakeholders and citizens in your climate adaptation planning cycle. It addresses the stepwise cycle described in the RAST and explains specific actions and tools that you can use in each step.

Engaging stakeholders and citizens can help to reduce conflict, build trust, support buy-in to the decisions made, build a collective public mandate for climate adaptation strategies and plans, and facilitate collective understanding. Stakeholders and citizens are then more likely to support adaptation goals and implementation of related actions.

The following table summarises the key entry points in the adaptation planning cycle where there is a clear opportunity to seek stakeholder input and/or validation, and to consult with citizens or support their mobilisation and behavioural change.

A distinction is made between stakeholders that may be involved in specific sectoral or cross-sectoral activities and citizens that may be targeted through more generic approaches.

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Table 1: Examples of participatory activities for each step of the RAST cycle

Adaptation planning cycle	Examples of actions regarding stakeholders	Examples of actions regarding citizens
Step 1 – prepare the ground for adaptation	• Develop a sustained engagement strategy • Develop a community of practice to be consulted and/or involved in all subsequent steps (with a particular focus on implementation)	• Adapt your communication strategy • Undertake a citizens' interests/attitudes survey • Establish a citizens' assembly to be consulted and/or involved in all subsequent steps (with a particular focus on implementation)
Step 2 – assess risks & vulnerabilities to climate change	• Identify and prioritise, or validate climate vulnerabilities and risks through thematic/sectoral focus groups or workshops or identify any cross-cutting climate vulnerabilities and risks across themes/sectors through cross-thematic/cross-sectoral workshops	• Deliberative processes to better identify risks and vulnerabilities from vulnerable groups • Target communications activities to build citizens' understanding or awareness of climate vulnerabilities and risks (i.e., an information awareness campaign)
Step 3 – identify adaptation options	• Identify and validate adaptation options through thematic/sectoral focus groups or workshops or identification of cross-cutting adaptation actions through cross-thematic/cross-sectoral workshops	• Consult citizens on the salience, credibility and legitimacy of adaptation options and their willingness to support them
Step 4 – assess adaptation options	• Facilitate thematic/sectoral focus groups or workshops to apply agreed criteria for prioritising adaptation options or cross-thematic/cross-sectoral workshops to validate the prioritisation of all adaptation options	• Consult citizens on the prioritisation of adaptation options (e.g., through citizens surveys)
Step 5 – implement your plan	• Develop an enabling environment (e.g., guidance, incentives and support) that promotes stakeholders' implementation of actions	• Deliberative engagement of citizens to inform the development of an enabling environment for the implementation of adaptation actions • Target communications activities to inspire behavioural changes that lead to greater resilience
Step 6 – monitor & evaluate	• Involve stakeholders in reporting progress on actions that are being implemented (included by themselves)	• Establish citizen science programmes to monitor outputs and outcomes associated with adaptation actions

Step 1: Preparing the ground for adaptation

Whether you are preparing to begin your climate change adaptation plan or have already advanced some way through the adaptation cycle, identifying and understanding which stakeholders and citizens can contribute and in what way is enormously beneficial.

But how? And where to start? This section outlines how to develop **your mobilisation and engagement strategy** during each subsequent step of the adaptation planning cycle. You are encouraged to start by outlining a general strategy. This will be developed in further detail when you undertake adaptation planning one step at a time, i.e., learning as you progress through the RAST and managing stakeholders and citizens expectations on an evolving basis.

How to develop your mobilisation and engagement strategy

Your **mobilisation and engagement strategy** can be tailored to your local context by providing answers to the following guiding questions:

- **WHY do you want to engage with stakeholders and citizens?** e.g., how do you anticipate that their involvement and active participation can enhance the outcomes of specific steps of the adaptation planning cycle?

- **WHO do you need to engage** from the public, private and voluntary sectors to:
  - Gain salient, credible inputs from all key actors with relevant knowledge and experience from the sectors or areas that your climate change adaptation plan will address.
  - Ensure that the development of the plan has involved as far as possible all key stakeholders that may be affected by it
  - Secure the ownership and understanding of those who will be responsible for the plan's delivery and those who will need to be involved in implementing it.

In undertaking this stakeholder mapping and network analysis, it will be helpful to consider stakeholders' aspirations and the existing relationships among them. You can find some guidance on designing stakeholder engagement at Climate-ADAPT. You can also benefit from other participatory processes already in place by activating potential synergies with other similar activities.

The RESIN guide for stakeholder engagement divides stakeholder analysis into three steps:

   i)   Identification of stakeholders (through a stakeholder mapping – see description in the appendix)

   ii) Categorisation of stakeholders (e.g., using an influence-interest matrix); and

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iii)   Analysis of the relationships between stakeholders (see introductory guidelines to social network analysis).

Analysing the level of interest and influence of different stakeholders can enable you to identify those whom it would be beneficial to fully involve in the development of your strategy (e.g., that can communicate information to and from the rest of the population), or who you only need to inform.

- **HOW much will be required from stakeholders and citizens** (e.g. what is the expected level of participation) to help identify and prioritise climate vulnerabilities, risks and adaptation options and **WHAT will they get in return**? This is important since properly **managing the expectations** of the stakeholders and citizens involved (i.e., regarding their objectives and roles and aspirations) is critical to the success of a participatory process.

  To create long-term impact, your mobilisation and engagement strategy needs to be sustained over time and rely on a clearly structured participatory process. Thinking about this will also help you to save resources and create a real sense of community. You can identify what aspects can be of interest for your stakeholders or citizens, in short, what will they get in return from their participation. This will not only help you narrow down your strategy but also enable you to manage expectations from the parties involved.

- What are the **necessary resources**, and what is the **expected duration** of each participatory process (**HOW MUCH and for HOW LONG**)?

  The mobilisation and engagement strategy should ideally build on a **roadmap of participatory activities** covering the whole RAST cycle, and to be further detailed for the specific step you are dealing with. This roadmap needs to be clearly communicated to your stakeholders and citizens.

  There are many popular and well-tested participatory tools and techniques, as well as more innovative approaches you can use in your mobilisation and engagement activities. The selection of methods will depend on your specific objectives (see Table 1) and focus (e.g., information exchange, joint analysis, mutual learning, collective decision-making or further stakeholder involvement). Professional guidance on the design and execution of the participatory roadmap may be useful to support you to increase the effectiveness of the process.

An additional point to be considered is **how to best align your communication strategy** with your mobilisation and engagement activities. You may have communication experts within your team that can prepare a robust communication strategy (i.e. identifying messages, audiences and channels). This is key to support the development, implementation and monitoring of your climate change adaptation plan, thus ensuring a strong alignment of your communication with the stakeholder and citizens engagement strategy. However, you will need to take into consideration some specific characteristics about climate change communication, e.g., connecting with what matters to your audience, creating narratives that tell a compelling story, or using effective visual communication.

Supporting the mobilisation and engagement of your stakeholders

Communities of Practice (CoPs) are a good example of a well-established form of social organisations that can play a central role in increasing the level of stakeholder participation in the implementation of your adaptation plan. A CoP that focus on climate change adaptation is an organised group of people who share a common interest and want to coordinate efforts towards achieving shared goals related to climate resilience. You can set-up your own CoP to establish a space for mutual learning, often with a focus on sharing good practices and supporting the implementation and adoption of adaptation options. The EU-JRC Community of Practice Playbook provides detailed guidance on how to run a community of practice by properly considering the most important factors that enable these communities to thrive. MIP4Adapt has its own CoP to help all actors exchange ideas, learn and network around specific areas of common interest.

Supporting the mobilisation and engagement of your citizens

Deliberative processes can support you to promote a structured dialogue or conversation between policy actors and citizens and bring those who may not always understand the data on climate change, those that are sceptical of possible solutions, or those who are concerned that they will be impacted by climate change, into the discussion. Moreover, these processes can help to provide customised support at the local level to identify concrete needs from most vulnerable groups, thus contributing to just resilience. As an example, the climate citizens' assemblies engage a group of citizens, with a balanced representation of ages, gender, and socio-economic aspects, to learn, deliberate and make recommendations on climate-related priorities. These recommendations can help decision-makers and other stakeholders to better understand how citizens perceive the main challenges and required actions to build climate resilience.

Good practices in climate citizens' assemblies: Starting with the Ireland Citizen Assembly back in 2016, a growing number of European climate citizens' assemblies provide clear examples regarding how a group of randomly selected citizens can learn, engage in dialogue, deliberate and provide clear recommendations and potential solutions to help tackle complex climate change challenges (reports are available, setting out the recommendations stemming from deliberative processes in Ireland, France, the UK and Spain). These recommendations have been issued to national parliaments to inform potential political reforms: for example, they culminated in a Climate Action Plan in Ireland and a proposal for constitutional reform in France to guarantee that the state will act on climate change. Several other citizens' assemblies on climate action have been held in Europe at regional and local levels, with the world's first permanent climate citizens' assembly operating in Brussels from 3 February 2023 onwards.

These assemblies provide a framework in which citizens can deliberate and produce inclusive, just and broadly supported recommendations that may steer policy changes. In terms of available resources, the European Knowledge Network on Climate Assemblies has produced detailed guidance on different aspects related to the design and preparation, implementation, and evaluation of climate assemblies. Additionally, the Climate Citizens' Assemblies project provides clear advice and insights on three phases of running a climate assembly (i.e., preparation, implementation of the assembly, and political follow-up). These build on the experience and lessons learned from successful national climate assemblies across Europe (see box to the left).

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Steps 2, 3 and 4: Identify and assess your climate vulnerabilities, risks and adaptation options

You can seek to consult key stakeholders and citizens to draw upon their knowledge and lived experiences to:

- Validate and supplement any initial desk-based review of the central **elements included within the vulnerability and risk assessment** processes, i.e., sensitivities, adaptive capacities (organisational capability and technical, financial and ecosystem capacity) and exposure to climate hazards – see RAST for definitions

- Identify and assess the most **relevant options to address resultant climate vulnerabilities, risks and opportunities**

- Enhance their collective understanding of their motivations, core beliefs, concerns, feelings, and values in relation to climate change.

Participatory activities can use **focus groups** and **stakeholder workshops** as core activities for validating and getting input to identify and prioritise climate vulnerabilities, risks and/or adaptation options. These can be organised either as theme- or sector-specific activities or as cross-thematic or cross-sectoral activities, i.e., when seeking to promote the identification of synergies and reconciliation of trade-offs and conflicts across themes or sectors.

Both focus groups and stakeholder workshops enable you to collect qualitative data and deep information on people's perceptions and can be very valuable to understand concerns, motivations, and beliefs, both individually and collectively constructed. Crucial points are to ensure that the discussion is guided by a clear objective, that participants are relevant to the topics under discussion, and that activities are facilitated in a way that encourages open and honest communication.

There are a myriad of well-proven participatory methods and tools (see e.g., the MSP guide) that can be used by focus groups or stakeholder workshops to facilitate validation or further input to the vulnerability and risk assessments.

> **Examples of engagement methods:**
> - For diagnosing and defining objectives and challenges, and establishing a common ground: visioning, Pentagonal Problem, participatory mapping, study circles, and cognitive mapping.
> - For knowledge exchange, social learning and co-creation of new ideas: World Café, Fish Bowl, role-play exercises and Pro Action Café.
> - For supporting decision-making and consensus building (i.e., commitment to take action): non-violent communication, open forums, round-robin, regenerative dialogues, and participatory multi-criteria analysis.

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No single tool or method is applicable to all situations and objectives. Therefore, if internally you do not have the expertise, you should seek out professional guidance on the design and facilitation of these activities to ensure the chances of fully achieving the planned objectives.

To help create an enabling environment, you may need to better understand the needs, motivations, concerns and beliefs people have about climate change and adaptive behaviour. You can learn more about the predominant values of your stakeholders and citizens through surveys and questionnaires, social network analysis, or outcome mapping techniques and use this information to spark action. Citizen surveys (see e.g., the Eurobarometer survey by the EC) are particularly useful to gather feedback, to raise awareness among people and communities, and to engage citizens on a range of issues identified. Moreover, these surveys promote transparency and accountability by gathering citizens voices so that these can be incorporated in the decision-making process. You can use the data collected from citizen surveys to identify areas for improvement in the design of your adaptation plan, to make data-driven decisions about policies and programs, and to rate the level of agreement on a subject or topic under discussion. Specific citizen surveys can be set up to, e.g., inform and/or validate the identification and prioritisation of climate vulnerabilities, risks, and adaptation options. This activity can also support the development of an enabling environment for the implementation of the selected adaptation options.

Step 5: Implementing your plan

Having communicated, engaged, and connected with your stakeholders and citizens in preceding steps of the development of your adaptation plan, its salience, credibility and legitimacy can be further enhanced by involving them in:

- Development of costed implementation plans for the selected adaptation actions
- Identification of relevant sources of funding and finance
- Development of policy implementation plans.

Deliberative processes are particularly meaningful to create an enabling environment to facilitate the implementation of the selected adaptation options. In other words, you can leverage knowledge and experience into the implementation of the adaptation plans when you connect with your stakeholders and citizens, tapping into the value of networks of actors by activating social relations, building up local social capital rooted on people's social or collective spirit, as 'social beings' 'connected' to other people. Stakeholders and citizens understanding and ownership of what needs to be done to implement the adaptation plan will also give them the greatest chance of enable them to act both collectively and individually. These processes can be organised at

different scales, from community consultations to much broader national citizens' assemblies. Several tools (see, for example, these Community dialogue guidelines) and work being conducted by some EU-funded ongoing projects (e.g., PHOENIX and REAL DEAL) can provide you with ideas on how to set up and undertake these democratic adaptation initiatives.

The **active role** of stakeholders and citizens is fundamental to achieving climate resilience, i.e., to sustain and deepen citizen and stakeholder mobilisation and engagement over time. This involvement can be supported through the action of local Communities of Practice or Living Labs that strengthen their participation to enhance the implementation of the plan (see box on the right side for an example).

> **A Living Lab supporting implementation of adaptation options**
> Within the scope of the H2020 BRIGAID project, the city of Antwerp actively helped in finding a test location for smart green roof systems as part of the Living Lab activity. The city launched an open call to their citizens, announcing the BRIGAID plans and asking for owners willing to make their roof available for the testing. Throughout the project lifetime, the test site was visited by stakeholders, citizens and scientists.

Moving from deliberation into action requires you considering the key levers to achieve mobilisation and behavioural change at the individual and collective levels (see a related Climate-KIC 'success story'). There are however other types of incentives beyond tapping into the stakeholder and citizens' intrinsic values and motivations. Environmental Policy Instruments (EPIs), -defined as incentive tools designed and implemented with the purpose of adapting individual decisions to collectively agreed goals- can spur behavioural change through the right incentives or disincentives and to change conditions that facilitate e.g. funding specific options to reduce risk. These tools can improve an existing policy framework by incentivising, rather than commanding, behavioural changes that may lead to adaptation.

A step further is to implement **co-decision processes**, such as the green participatory budget (see box below), whereby citizens are given a direct say into how public budgets are allocated and spent for addressing climate change. Through this tool, members of a community decide on the allocation and distribution of resources towards real-world climate projects and initiatives.

> **Good practices on co-decision-making: Lisbon green participatory budgeting**
> Participatory budgeting represents a form of citizen participation through which citizens have effective decision-making power over a portion of the municipal budget. Lisbon was one of the first big European cities to adopt participatory budgeting on a municipal scale, including (since 2018) green participatory budgets with a focus on proposals for a 'more sustainable, resilient and environmentally friendly city'. The approach builds on a hybrid model combining in-person deliberation processes with web-based platforms for voting on, and the selection of, climate change mitigation and adaptation projects based on local citizens' choices.

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Step 6 – Monitor and evaluate

As a region or local authority, it is also important that you monitor and evaluate the progress of planned actions and check the actual outcomes against the objectives that were set out from the beginning (see UAST in Climate-ADAPT). This monitoring and evaluation (M&E) enables you to learn and reflect on the effectiveness and potential side-effects of your adaptation plan. Progress against several indicators should also be regularly reported to the relevant decision-makers and stakeholders to build trust and also adaptive capacity.

However, adaptation M&E may be challenging, in particular when assessing the delivery of the desired outcomes [Ref2]. The main difficulties relate to misaligned time frames (i.e., length of time that it takes to implement the scope and scale of required adaptation actions versus the length of time that they may take to deliver benefits); limitations in data availability, including baseline data; and financial costs and required commitment to ensure sustainability of long-term monitoring. Engaging your stakeholders and citizens in the feedback and improvement process of the monitoring and evaluation of the plan will allow you to better face these challenges and help your plan to remain pertinent. In addition, it can be a powerful system to promote collective and individual climate action; from raising public knowledge and awareness to educating younger generations.

Citizen science (defined as scientific research conducted with participation from the general public) can be a supportive tool to help achieve a constant cycle of improvement in a timely manner. Citizens can be engaged in monitoring relevant variables related to the implementation of the climate change adaptation plan to reflect -with the input from stakeholders and citizens- on what is working well and what is not under a specific context. This will increase understanding and awareness, further help to ensure the salience, credibility and legitimacy of refinements to the plan and thereby encourage further commitment to action – leading to the aforementioned improvement cycle.

The main questions that you will need to address are:

- Outputs – To what extent are the actions in your plan being implemented?
- Outcomes – To what extent have climate vulnerabilities and risks been reduced? (e.g., by reducing sensitivities to climate-related hazards and/or increasing associated adaptive capacities, or by reducing climate vulnerabilities' exposure to climate-related hazards).

> **EU experiences in citizen science for climate action**
>
> The EC has promoted several citizen science projects that involve research methodologies that support citizens' mobilisation in climate action (see examples from SwafS programme, from the eu-citizen.science project or from the AURORA project – currently engaging 7,000 citizen scientists across Europe to become 'Near-zero emission' citizens). As another example, UK's Nature's Calendar is effectively using citizen science to track the effects of climate change on wildlife.

Appendix – Further description of key tools

This appendix includes more detailed information about some of the key tools to support mobilisation and engagement of your stakeholders and citizens. Under this context, the term 'tool' is understood in a broad way and encompasses actual tools and also guidelines, methodologies, platforms, good practices or other resources.

TYPE OF TOOL

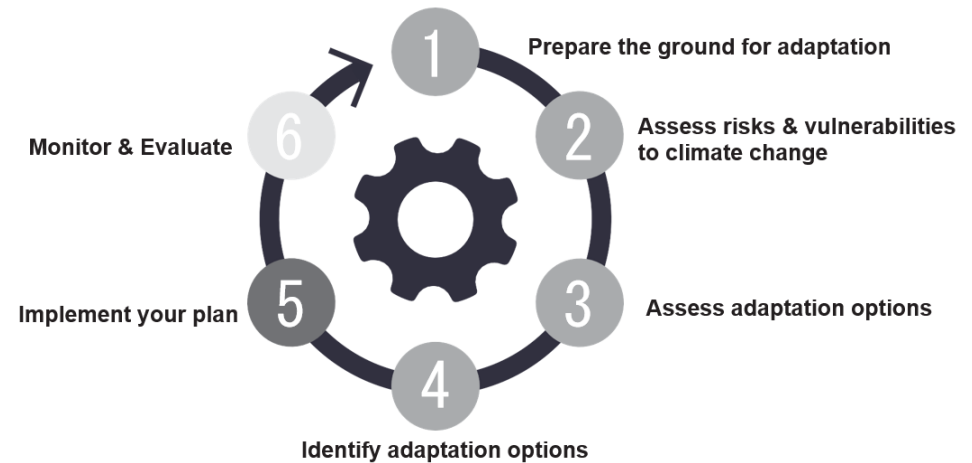Tool   Guideline   Methodology   Platform   Good Practice   Other

The appendix includes several fact sheets with relevant information about each tool, namely:

- Main description
- How does the tool work
- General tips and advice on how to use the tool
- References, including key documents used for the elaboration of the descriptions that provide further information
- Time, skills and resources needed for the use of the tool
- Expected outputs and outcomes
- Potential barriers and constraints

For each tool we also include a figure indicating the type of tool and which steps of the RAST it can provide support to (see example on the right side)

1 Prepare the ground for adaptation
2 Assess risks & vulnerabilities to climate change
3 Assess adaptation options
4 Identify adaptation options
5 Implement your plan
6 Monitor & Evaluate

LIST OF TOOLS

01 STAKEHOLDER ANALYSIS

Stakeholder mapping and analysis is a process for identifying and categorising different groups of people, such as organisations or individuals who influence, or are influenced by, your climate change adaptation plan.

This is a key prerequisite for the development of effective communication strategies, and will help maximise the positive impact of your climate plans. As such, it is core for understanding power asymmetries, i.e., which actors or stakeholders have more and less power, and potential sources of resistance, i.e. groups that will oppose potential changes or new initiatives. The enhancement of strategies to support stakeholder engagement are important throughout the full participatory process to maximise the positive impact of the adaptation plan.

HOW DOES IT WORK

The core component is the identification of your stakeholder ecosystem. You will need to draft an initial list and complete it through a mix of online research, focus groups, questionnaires, semi-structured interviews and/or snowballing techniques. As part of this process, you can introduce the adaptation plan to your stakeholders; explain what will be asked of them; what they can get in return from their participation; and why their contribution is so important.

As a next step, you can gather information about each of the stakeholders, such as their concerns, key needs and priorities, level of influence, and level of interest. This will help you determine the level of engagement required for each stakeholder group.

Finally, you can also analyse the relationships between stakeholders to better understand power balances, dependencies, information flows or influences.
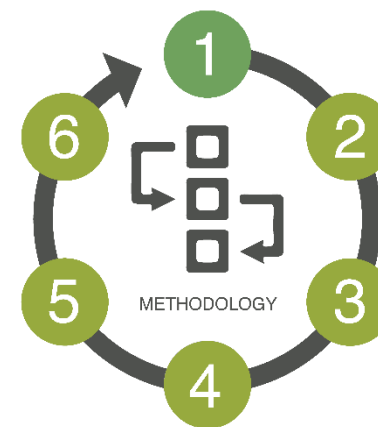
TIPS

Remember to continuously review and update your stakeholder map as you move from one step of the RAST into the next one through your adaptation planning cycle. The composition of the stakeholders is likely to change over time, as well as their relevance or influence to the specific actions where they can get involved.

REFERENCES

H2020 RESIN project methodology for involving stakeholders

Climate-ADAPT: Identifying and engaging stakeholders

Example of stakeholder mapping for climate change adaptation: ECO-CITIES project in Manchester

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Time

As regards to stakeholder mapping, it depends on the size and complexity, e.g., of the options being considered. For smaller areas, for example the process could be completed within a few days, while for larger areas, it can take up to several weeks. The implementation of the stakeholder analysis requires additional time, also linked to plan´s size and complexity.

Skills

Previous experience is not required for stakeholder mapping, although strong interpersonal and communication skills are needed to engage with stakeholders and gather information. The ability to synthesize and present information clearly and concisely is a major advantage. Stakeholder analysis may however require support from specialists.

Resources

For stakeholder engagement, the resources needed are mainly people allocated to conduct the work. In terms of stakeholder analysis, you might need a team to conduct research or surveys to gather information about each stakeholder's expectations and interests. Specifics tools are required for analysing relationships between stakeholders, e.g. social network analysis with accompanying software tools.

EXPECTED OUTPUTS / OUTCOMES

★ List of stakeholders (incl. contact details of reference people) who may significantly contribute to your adaptation plan.

★ Identifying and understanding interests, needs, and expectations of these stakeholders.

★ Identification of potential conflict or opposition that may arise from different stakeholders. Helping organisations mitigate risks before potential escalation.

POTENTIAL LIMITATIONS AND BARRIERS

Limitations in accessing or available information about certain stakeholders may hinder the mapping process.

Incomplete representation: the stakeholder mapping process can be subjective as it may depend on individual perspectives or preferences. Thus, the process may exclude some stakeholders who could have an impact on your adaptation planning.

Complexity and changing environment: the process can be complex and might have to be undertaken several times since stakeholders and their positions evolve over time.

02 COMMUNICATING CLIMATE CHANGE

As many years of climate action efforts have shown, climate change communication is not a straightforward task and deserves specific attention. The 'Handbook for IPCC authors on principles for effective communication and public engagement on climate change´ explains that 'talking about the real world', 'connecting with what matters to people' and 'telling a human story' are key principles in climate change communication.

How people feel about a given situation has a powerful influence on their decisions about how to react (and potentially act), i.e., people do not necessarily act when they have better information. The literature shows that emotions are important for practical decision-making, to understand risks and to provide motivation.

HOW DOES IT WORK

Narrative tools with attractive images, visuals and impactful storytelling can capture people's attention and activate their emotions, and thus are more likely to trigger behavioural changes with regards to climate action.

As an example, the guidelines made by the IPCC to support scientists in communicating about climate change provide six key principles to support them in public engagement. The IPCC communications team explains for example that you need to be careful with the climate change data you want to communicate, because 'big numbers' of climate change (e.g., global average temperature targets, concentrations of atmospheric carbon dioxide) don't relate to people's day-to-day experiences. Most people understand the world through anecdotes and stories, rather than statistics and graphs, so aiming for a narrative structure and showing the human face behind the science when presenting information will help you tell a compelling story.

REFERENCES

Handbook for IPCC authors on principles for effective communication and public engagement on climate change

The CMCC Foundation has produced several webinars on specific aspects of climate change communication, namely:
- How to talk about climate change in a way that makes a difference
- Journalism and science: narratives of climate change
- Climate change and disinformation: state of the art and how to tackle it

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Time

Putting specific focus and consideration to climate change targeted communication will not significantly increase the time needed to deploy your communication strategy.

Skills

Strong communication skills coupled with visual skills and a sound knowledge in climate change are needed. Storytelling experience can be a major plus.

Resources

A meaningful communication campaign on climate change requires significant resources, including carefully elaborated visual materials to support evidence-based messages.

EXPECTED OUTPUTS / OUTCOMES

★ Adapting your communication strategy to better convey information leading to increasing awareness on climate change impacts and effectively reducing vulnerabilities and increasing adaptive capacity.

★ Clear messages to simplify complex scientific information on climate change, making this information understandable for a wide range of citizens and stakeholders. Providing recommendations in multiple channels and maximising the reach and on the impacts of from climate change communication thus raising awareness on the target audiences (e.g. vulnerable groups, a specific sector, etc.).

POTENTIAL LIMITATIONS AND BARRIERS

Language and terminology: Climate change is a complex topic, and the use of scientific jargon and technical terms can be difficult for many people to understand. It can be useful is therefore important to use as far as possible simple language and terminology that is accessible to a broad audience.

Cultural and social barriers: Different cultural and social backgrounds can affect people's perceptions and understanding of climate change and its risks and impacts.

Political and ideological differences: Climate change has become a politically polarised issue, and individuals' beliefs and values may influence their interpretation and acceptance of scientific evidence. You should consider this consciously in your communication strategy.

EXAMPLE TOOLS

The website on IPCC graphic resources on climate change physics provides meaningful examples on good practices in climate change communication (see example below).
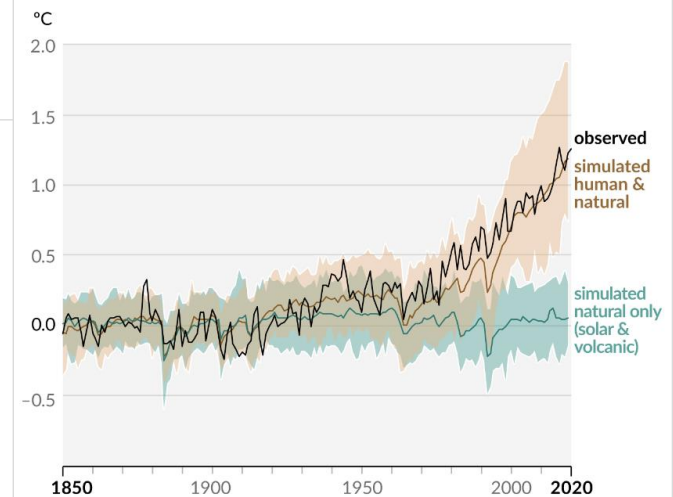
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03 INFORMATION AWARENESS CAMPAIGN

An information awareness campaign aims to inform stakeholders and citizens about their vulnerability and risks to climate change, and provides general guidance on how to proactively adapt and be better prepared to cope with these.

This tool seeks to encourage individual and societal behavioural changes towards climate adaptation through targeted communication strategies over a specific time. By promoting stakeholder and citizens engagements and enhancing adaptive capacity awareness raising campaigns are often important components in the adaptation process.

METHODOLOGY

HOW DOES IT WORK

As a first step, you need to define your mission statement and specific objectives such as increased awareness of a certain issue, increased engagement, or a shift in perception.

Then, you need to integrate this information awareness campaign into your overall communication strategy and tailor this campaign to your targeted audiences. This implies learning as much as you can about them (e.g., motivations, concerns, etc.).

When you draft your message, remember to make it concise, clear, and memorable, and add compelling content that supports your message. Information can be communicated through several different media platforms (e.g., TV, internet, social media, newspapers, public events, schools' campaigns, etc.).

TIPS

Often, a key to success lies in launching information awareness campaigns on several media platforms at the same time. Make sure you adapt your messaging to each different channel.

REFERENCES

Climate-ADAPT provides a thorough description of awareness campaigns as an adaptation option.

As an example of a large-scale awareness campaign, you can consult 'Visions for a world you like' - a European Commission Public Communication Campaign on Climate Change.

Time

This will depend on your previous experience in communicating about climate change and the specific requirements you identify for your campaign. You will need to assess what is the appropriate timing of the communication to ensure it reaches the audience at the right time.

Skills

Previous knowledge on effective communication in climate change is a positive asset. You need to get to know and understand your audience, be able to produce clear, concise messages, and give clarity on the purpose of communication, i.e., whether the communication campaign aims to inform, persuade, or mobilise.

Resources

Depending on the scale of the campaign, may need a team to work on marketing, design, development, and outreach / technological resources: online platforms, social media, email marketing, etc. Specialised tools like website traffic monitoring or attribution studies can be used to measure the effectiveness of the campaign.

EXPECTED OUTPUTS / OUTCOMES

★ Increased awareness and understanding of climate change impacts and adaptation options (policies, practices, technologies, etc.)

★ Increased engagement and participation from the public or stakeholders and nudges towards changing attitudes and behaviours.

★ Increased trust in reliable sources of information and contribution to reduced misinformation or disinformation on climate change issues among stakeholders and citizens.

POTENTIAL LIMITATIONS AND BARRIERS

Accessibility: If information is only available through certain channels, it may not reach all members of the intended audience.

Financial constraints: Implementing large-scale campaigns can be expensive, and limited resources may restrict the reach of the campaign.

Risk of limited perception: if problems seem distant and not real, this can lower stakeholders' participation and the effectiveness of the campaign, e.g., people may not see the value or relevance of the information being shared.

EXAMPLE ACTIONS

★ You can see below an example of a pioneer public awareness campaign related to climate change adaptation: "The Netherlands lives with water".

Door klimaat verandering wordt het steeds warmer, èn natter.

Cartoon from the 'The Netherlands Lives with Water' public awareness campaign featuring Peter Timofeeff

1. What is the purpose of the 'The Netherlands Lives with Water' public awareness campaign?

February 2003 saw the start of the multimedia public awareness campaign 'The Netherlands Lives with Water'. The campaign aims to explain the government's policy of 'giving water more room' and encourage support for it.

Initially, the campaign pressed home the message that the climate is changing and that this has consequences for water management in the Netherlands. Gradually, the campaign puts into plain words what measures such as storing water mean in practice. Moreover, it highlights the efforts the national government, provincial authorities and water boards are undertaking across the Netherlands to keep the country safe and dry.

Research showed that the public estimated the campaign to be informative and believable. The awareness that the government is effecting measures to balance the effects of climate change has increased significantly. At the end of 2003, 82% of the population recognised the social importance of measures to protect against flooding, and 72% endorsed the proposition that this would have to involve 'giving water more room'. Weatherman and 'Water Ambassador' Peter Timofeeff is seen as an appealing and likeable expert. On national and regional radio and television, he brings the problems and solutions to peoples' attention through cartoons and personal appearances.

Source: www.nederlandleeftmetwater.nl

★ 'You control Climate' was an awareness campaign launched by the European Commission to encourage people to make small changes to their daily behaviour related to climate change action. You can find a description of the main aims, target audiences, design and content of this campaign.

★ You can watch a video example of an awareness campaign on adaptation to flood risk from the Dutch Ministry on Infrastructure and Water Management

★ As an alternative to 'conventional' awareness campaigns, you can consult the Change Game from the CMCC Foundation. This is a "game-based learning solution which helps to raise awareness and improve understanding of complex transformational challenges faced by humanity when dealing with climate change".

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04 CLIMATE ADVOCACY STRATEGY

A city or region-led advocacy strategy is a process that aims to influence change at the local, regional, and even national level. Cities and regions can use their political influence, resources, and local knowledge to raise awareness on specific topics and mobilise citizen and stakeholder support through different actions. Common advocacy strategies include policy advocacy, coalition building, public awareness campaigns, engaging with elected officials and legal action.

HOW DOES IT WORK

Climate advocacy strategies vary widely depending on the type of action employed by each municipality or region. However, all advocacy strategies need to be tailored to the specific context, based on a well-structured plan, employ a communication strategy, and be directed towards a clearly identified target audience.

The key messages need to resonate strongly with the context and target audiences' characteristics, such as needs, concerns and motivation for the proposed climate innovations. You need to make sure that your messaging is localised, clear, concise and compelling.

The success of a Climate Advocacy Strategy depends on many factors, such as making sure that the process is flexible enough for it to be adapted and refined over time based on a strong monitoring evaluation and learning (MEL).

TIPS

Remember that advocacy efforts require persistence and a long-term commitment to achieve goals, and that success may not be immediate.

REFERENCES

Description of advocacy strategies in Climate-ADAPT.

Advocacy Guide on how to engage with the European Economic and Social Committee (EESC).

European Transparency Register – European Parliament.

Time

Some advocacy strategies may require months or years of planning and preparation before these strategies can be implemented, particularly if these involve building a coalition of supporters, conducting research, or developing communication materials. The implementation time thus ranges from a minimum of a few weeks to several years (think of a legal action, for example like climate litigation).

Skills

Knowledge on public policies and communication strategies is key.

Resources

The resources needed vary widely depending on the strategy, scope and scale of the Climate Advocacy Campaign and the accompanying activities. Overall, costs can vary from a few thousand to hundreds of thousands EUR.

EXPECTED OUTPUTS / OUTCOMES

★ Increased media coverage and public discussion of the issue.

★ Formation of new partnerships and coalitions to address the issue.

★ Access to resources and services for those affected by the issue.

★ Development of new programs or initiatives to address the issue.

★ Engagement and participation of stakeholders in addressing the issue.

POTENTIAL LIMITATIONS AND BARRIERS

There are several potential barriers to success, including the lack of clear and needs-oriented communication, lack or misuse of resources, resistance to change, political polarisation, lack of public awareness, opposition from powerful interests and legal barriers to name a few.

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05 CITIZEN SURVEYS

Citizen surveys are used to gather feedback and opinions on specific issues from residents and citizens. You can use it as a powerful and quick tool to better understand your citizens' needs and perceptions and ensure that your climate adaptation plan reflects and is aligned with people's priorities.

It can help promote transparency and accountability by giving residents a voice in the decision-making process. It can also be a very helpful tool to gather feedback on existing as well as past and future plans and can support raising the awareness of people and communities on key topics.

HOW DOES IT WORK

The survey needs to build on effective survey design techniques, which ensure statistical reliability and validity. This requires a sampling plan that seeks to identify the target population and a method for selecting citizens.

Clear, concise questions and appropriate response options needs to be specified. A citizen survey can be used for different purposes, such as for rating citizen's level of understanding of a topic or policy, agreement on a specific subject or plan, project ideas and suggestions or tracking how public opinion evolves over time.

TIPS

You can use citizen surveys to inform the scope of other key engagement tools, such as a climate citizens' assembly or an adaptation participatory budgeting.
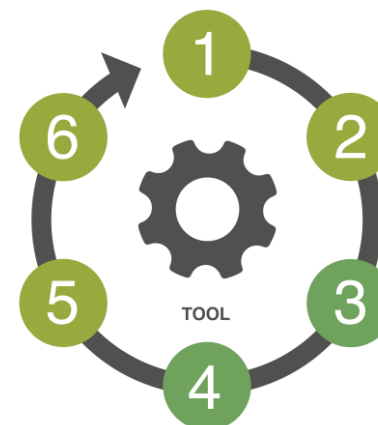
REFERENCES

Survey launched by the EU-funded IMPETUS project in seven regional communities across Europe. The survey will allow inventory shaping climate change adaptations for long-lasting benefits and identify further opportunities to take part in climate adaptation activities.

European Commission open consultation on the EU strategy on adaptation to climate change.

Citizen survey by Dresden municipality (Germany), gathering views and needs on several key topics, including the state of the environment and community involvement.

Time

The time for designing a survey will vary depending on your experience on the use of this tool. The completion of the survey depends on the scope and size of the survey and it will usually take several weeks.

Skills

Experience in research methods and statistics, as well as in the subject matter of the survey, is required. Professional support may be sought out to ensure the delivery of robust results.

Resources

Some resources are needed within a range. Some citizen surveys can be implemented using an online platform or by sending paper surveys to citizens. As such, they are relatively inexpensive, quick and easy to devise compared to many of the other stakeholder engagement tools included in this manual. Other surveys can be more complex due to a larger sample and are best undertaken with the support of a specialised provider.

EXPECTED OUTPUTS / OUTCOMES

★ Support public participation in the democratic process by providing a platform for citizens to express their opinions, needs, priorities, and concerns.

★ Rating and feedback on adaptation options, projects, or policies.

★ Helps reveal disparities and perceptions among different demographics.

★ Benchmarking of citizens' perceptions and priorities, for example compared to other cities and regions.

POTENTIAL LIMITATIONS AND BARRIERS

Expert knowledge is often required for the adequate design of the survey.

A sampling bias can potentially lead to a potential lack of validity of the results, and therefore could limit to what extent conclusions can be generalized to a larger group.

06 CLIMATE CITIZENS' ASSEMBLY

A climate citizens' assembly is a democratic process that allows participants to engage in dialogue and to co-develop solutions. It aims to involve citizens in the deliberation of municipal, regional, national, and international policies on climate change. By giving everyday people a seat at the governance table, they can be powerful in helping to strengthen or rebuild political legitimacy and accountability in the eyes of the public. The Assemblies are deliberative, meaning that they are based on a method of dialogue and argumentation among participants.

In the last decade they have been gaining increasing traction as a means to address a key need: ensuring a fair and inclusive climate transition and societal transformation.

HOW DOES IT WORK

The process begins with the creation of an independent expert committee tasked with co-designing a timespan, the core questions/topics and a follow-up plan for the assembly.

Assembly members should then be selected through sorting, by weighing factors such as age, sex, income, education and geographical location. To value citizens for their time and effort, it is important that they receive financial compensation, as well as travel reimbursements and child-care support.

Three key implementation steps can be distilled in a climate citizens' assembly: a learning step, a deliberation step, and the recommendation step.
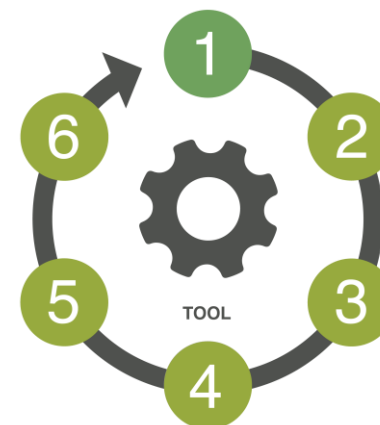
TIPS

Ensuring that the conditions for decision-makers' follow-up are clear from since the onset, and that a proper media campaign and public support from a broad societal coalition are two key criteria for success. These help to increase the public pressure needed to further ensure Implementation of the recommendations emerging from the assembly.

REFERENCES

Knowledge network on climate assemblies.

Project "Climate Citizens' Assemblies: learning with, from and for Europe".

You can consult the Greater Cambridge climate citizens´ assembly as a regional example.

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Time

The design of the full process requires a substantial amount of time and effort. Experiences in the implementation of the assembly shows a time-range between 6 and 20 weeks. Some are now even permanent thus allocated an annual budget.

Skills

The members of the climate citizens' assembly do not need any specific experience or previous knowledge on the topics to be discussed. What matters is a proactive and positive attitude and the willingness to collaborate. However, a carefully planned training needs to be provided to all members to ensure a common knowledge base.

Resources

A well-designed climate citizens' assembly requires an important effort on the side of the implementing institution. Bespoke coordination among different government departments is needed, requiring working with colleagues across silos. In addition to expertise in deliberative practice and climate governance for the independent expert committee, you may need to draw on specific communities of practice and have trained facilitators to support the process.

EXPECTED OUTPUTS / OUTCOMES

★ IncreasedIncrease public awareness, knowledge and advocacy regarding climate change issues and the need for climate action.

★ Set of recommendations or policy proposals.

★ Broader public debate on climate change issues and better communication between policymakers and citizens, which tends to increase trust in the climate change policies.

★ Increased public engagement and ownership of action / Enhanced sense of legitimacy for climate change policy choices.

POTENTIAL LIMITATIONS AND BARRIERS

Climate citizens' assemblies are generally regarded as having a positive impact on communities. However, those who critique climate citizens' assemblies, such as (Machin, 2023), point to practical problems with the selection of participants and information, as well as potential power asymmetries during the assemblies.

Unlike elected bodies, climate citizens' assemblies are not directly responsible for decision-making. As such, their direct impact on policymaking is difficult to assess. Knowledge is often required for the adequate design of the survey.

EXAMPLE ACTIONS

★ The newly established (i.e., 2023) climate citizens' assembly of Bologna (Italy) has been designed to stretch over eight meetings of half a day each during a total of about four months. The city is seeking citizens' direct involvement on the following key questions:

- How can the city's energy transition be promoted from the most impactful climate-emitting sectors, while at the same time guaranteeing the principle of equity and climate justice and counteracting the phenomena of poverty and marginalisation?

- How can institutions and citizens address and contain the city's main climate risks (heat islands, extreme weather events, floods, droughts, etc.)?

- What obstacles, if any, do you see in municipal rules, services and regulations to achieving these objectives and possible improvements and innovations?

The members of the Assembly commit to attending at least 70% of the meetings, and to show a pro-active and participative attitude for their whole duration. Various forms of support are envisioned for Assembly members, including an attendance fee of EUR 72.96 (including all tax and social security charges) and babysitting services.

★ The world's first permanent climate assembly began its work in Brussels on 3 February 2023 as a deliberative support tool to accompany and inform local climate policy.

The Brussels Climate Assembly consists of a succession of several citizens' panels, each of them composed of one hundred randomly selected citizens who deliberate and make recommendations on specific topics related to the city climate policy.

As explained within the 'Büergerrat' website, "*citizens not only make recommendations, but also actively follow what happens with them through a commission that monitors how politicians deal with the recommendations. The Brussels government has undertaken to thoroughly examine all recommendations from citizens and to report transparently on what happens with them*".

★ Another permanent climate citizens' assembly has began operating in Milan (Italy) in 2023.

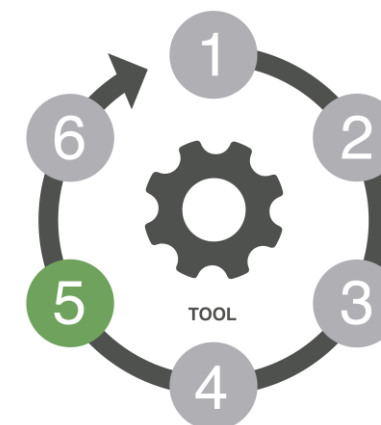# 07 GREEN PARTICIPATORY BUDGET

A green participatory budget is a process whereby citizens are given a direct say into how public budgets are allocated and spent for addressing climate change. So far, most Participatory Budgets have been implemented at the city or even neighbourhood level, though there are also examples at the regional and national level.

Participatory budgeting can be applied both as a tool and as a methodology. It is considered a tool because it provides a structure for citizens to directly participate in the decision-making process around how public funds are allocated and spent. It can also be considered a methodology because it involves a specific perspective and approach to governance and public engagement, including aspects such as transparency, inclusivity, and deliberation.

HOW DOES IT WORK

Through a green participatory budget, you will empower community members to take the leadership in proposing and voting for what the community believe should receive public funding. The process involves a series of facilitated meetings and consultations, online and in-person, where citizens and stakeholders discuss, submit and vote on climate projects.

A key to success is transparent communication and a complaints treatment process and the set-up of a model that works for your specific community. Another fundamental step is the establishment of a technical working group, ensuring that the final selected projects are feasible and realistic.

TIPS

In Lisbon, for example, in-person engagement is used for discussion and debate, whereas voting and proposal submission takes place online.

REFERENCES

What is participatory budgeting? (Scotland government)

The Participatory Budgeting Theory of Change is a tool that can help you understand how PB can lead to desired changes for people, communities, and governments.

Dispelling Myths about Participatory Budgeting (OECD)

Time

It depends on the size of the budget allocated to the Green Participatory Budget, the number of participants and the complexity of the projects. Typically, it can take several months.

Skills

Previous experience and knowledge are preferable from a wide range of disciplines (e.g., communication, outreach and engagement, environmental sustainability, urban economics and finance, policy and governance, project management). If you do not possess these skills in-house, you will most likely need to seek out expertise and establish partnerships with external organisations or individuals in your local ecosystem.

Resources

To implement a green participatory budget, you will need to invest substantial economic resources, as well as time. The funding you decide to put into it can vary widely. Another fundamental input is strong political willingness.

EXPECTED OUTPUTS / OUTCOMES

★ Helping close the gap between institutions and citizens towards a just transition by incorporating citizens' priorities in the projects chosen and implemented.

★ Increased institutional trust, transparency, and efficiency.

★ Increased societal awareness of climate change.

★ Increased citizens' satisfaction with municipal/regional policies.

★ Shift in local attitudes towards sustainability.

POTENTIAL LIMITATIONS AND BARRIERS

Depending on the size and scope of your green participatory budget, you may need specialised profiles, e.g., project manager, expert in participatory processes, urban economist, communication and/or outreach coordinator, evaluation specialist.

Gathering quality information about the effectiveness of the proposed solutions may be challenging.

Monitoring and assessing the positive impacts from the adopted solutions requires proper resources and long-term commitment.

EXAMPLE ACTIONS

★ LISBON: 15% of funds from Lisbon's already existing platform for participatory budgeting (over EUR 33 million) is dedicated solely for climate change adaptation and mitigation projects (about EUR 5 million). So far, citizens have decided to fund projects such as cycling lanes, tree planting for street heat reduction, or water capture and storage.
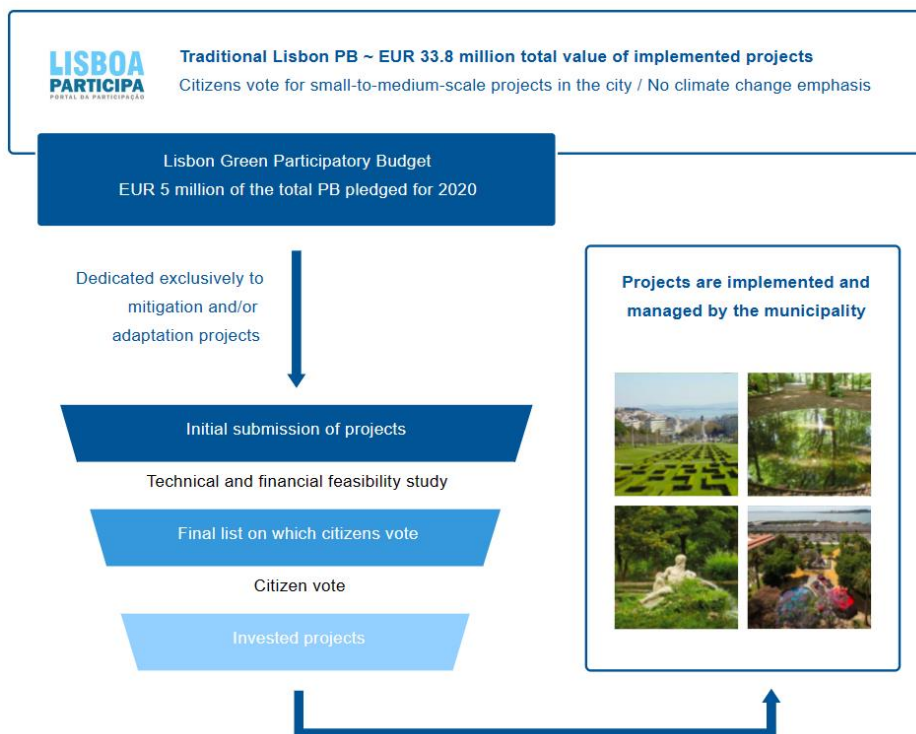
Hidden Garden is the story of most ever voted project of the participatory budget of Lisbon, an initiative for preserving an endangered green area and turning it into a public space.

★ BOLOGNA -participatory budget 2023: from 26 May to 30 June it is possible to vote for the favourite project, among the 43 proposed by the citizens of Bologna. All the projects have been designed to meet the objectives of the "Bologna Missione Clima", which commits the city to achieving climate neutrality by 2030.

The project of each neighbourhood that gets the most votes will be financed and implemented, thanks to an investment from the Municipality of 500.000 euros per neighbourhood, with a total of 3 million euros for six winning projects. Citizens residing in the municipality of Bologna who have turned sixteen can vote, as well as non-residents who carry out their work, study or volunteer activity in the municipality and foreigners and stateless persons residing in the municipality of Bologna or who carry out their work, study, or volunteer activity.

08 COMMUNITIES OF PRACTICE

Communities of Practice focused on climate change are organised groups of people who share a common interest and want to coordinate efforts towards achieving shared goals. Communities of practice typically consist of experts from various fields, as well as community-members who are directly affected or want to act.

Through sharing knowledge, learning from each other, improving skills, and advancing the general knowledge, climate-focused communities of practice are seen as being conducive to the development, scale-up and transferability of innovative and creative practices.

As such, communities of practice can be a concrete tool to influence policy decisions and funding, but also build alliances and partnerships for projects and initiatives.

HOW DOES IT WORK

To be successful, communities of practice need to be active. As such, one of the keys to success lies in setting-up the right enabling environment for members to decide what is important and get and take what the members need and value. Ultimately, a successful community of practice is one where knowledge and collaboration flow effectively and outcomes are organic and not prescribed.

Communities of practice can take different forms, such as face-to-face meetings, social media groups, discussions and dialogues, collaboration on projects, advocacy campaigns, webinars, group activities, etc. Rather than specifically focusing on a given form of communication, a successful community of practice is one where a sense of community, respect and trust are strongly felt by its members.
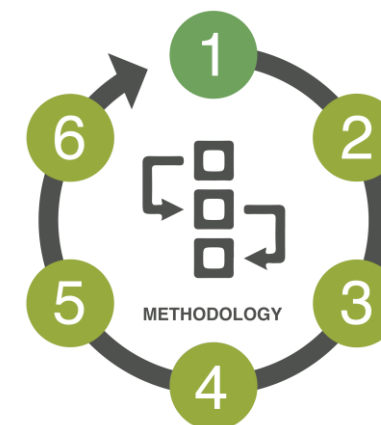
TIPS

There are several well-established forms of social organisations that can play a central role in increasing the level of stakeholder participation in the implementation of your adaptation plan: e.g., Communities of Practice, Living Labs, Communities of Innovation, Observatories, Multi-Stakeholder Partnerships and Learning and Action Alliances.

REFERENCES

EU-JRC's Community of Practice Playbook

You can read here a specific article on communities of practice and climate change

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Time

The implementation time can vary widely from a minimum of several weeks and up to several years. Ideally communities of practice eventually become self-organized due to the trust and commitment generated by its members.

Skills

Climate adaptation focused Communities of Practice require previous experience and knowledge at the intersection between climate science and policy, citizen and stakeholder engagement, facilitation, and systems thinking.

Resources

Inputs and resources needed will vary depending on the scope and size of your community of practice. Proper human and economic resources need to be allocated to ensure day-to-day operation and leadership of the community.

EXPECTED OUTPUTS / OUTCOMES

★ Community building and enhanced engagement.

★ Collaboration among citizens and organisations (also within).

★ Knowledge sharing and advancement.

★ Shared value creation and peer-to-peer orientation leads to innovation, elaboration, and discovery.

POTENTIAL LIMITATIONS AND BARRIERS

Reach: the community of practice needs to effectively engage a broad audience of stakeholders. Be sure to roll-out a communication strategy to mitigate the risk of limited reach.

Diversity: it is important to take all possible steps to ensure inclusivity in the representation of different perspectives and expertise.

Sustainability: resources for the operation of a community of practice can be temporary or be completely or partially voluntary. To ensure its sustainability, it is important to think about funding and organisational sustainability early-on.

09 INCENTIVES EPIs

Environmental Policy Instruments (EPIs) are incentives designed and implemented with the purpose of adapting individual decisions to collectively agreed goals. EPIs are traditionally classified between pricing (e.g., water tariffs), environmental taxes and charges, subsidies (on products and practices), trading (e.g. tradable permit for pollution or water abstraction, compensation mechanisms, payments for environmental services) and voluntary agreements and risk management schemes (insurances or liabilities). They have been applied in diverse environmental policies.

Emission trading schemes have been developed for climate change mitigation policy and EPIs have also been used for air quality, climate change adaptation and energy policies. Policy instruments have been applied to improve energy efficiency, energy taxes, and regulations for minimum level of energy efficiency and energy saving.

HOW DOES IT WORK

How this tool works depends which EPI is most suitable to the issue addressed or which combination of EPIs would work best for the objectives sought. For example, the most recurrent EPIs in the water sector are tariffs, taxes and charges, but also subsidies and cooperative schemes are broadly applied.

Stakeholder participation and public participation at large are crucial elements for increasing the general acceptance of EPIs and in motivating participation. The importance of public participation may be reduced in cases where the EPI as such, or the specific solution EPI intends to promote, has already gained public (social) acceptance.
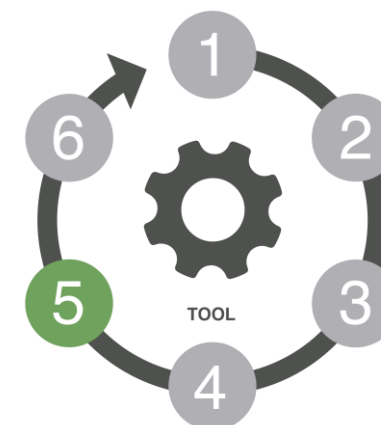
REFERENCES

Description of economic incentives for behavioural change in Climate-ADAPT.

The FP7-funded WEATHER project provides an overview of possible incentives to transport adaptation and their potential impact.

Overview of economic instruments applied to the water sector and references to case studies are provided by the EU-funded project EPI-Water.

Time

The design and implementation of EPIs could take from one to five years. EPIs are normally long-lasting measures. However, the lifetime is often determined by the policy framework, the specific legislation in place and social acceptance.

Skills

Experience in policy, legal, and economic aspects is key.

Resources

In terms of costs of EPIs, we can distinguish between direct costs (e.g., cost of paying a tax) and transaction costs (e.g., time and money cost of getting to the market, finding a buyer or seller, negotiating, and returning). Transaction costs might also relate to additional monitoring required.

EXPECTED OUTPUTS / OUTCOMES

★ Improve an existing policy framework by incentivising, rather than commanding, behavioural changes that may lead to adaptation. EPIs can spur behavioural change through incentives or disincentives, change conditions to enable economic transactions or reduce risk.

★ Better social distribution of the burden to achieve the desired objective. EPIs may raise revenue and can therefore be relevant for financing adaptation measures.

POTENTIAL LIMITATIONS AND BARRIERS

Organisation, adequate legal framework to support.
Potential drawbacks may come from the equity side, as these affect different agents or social groups not necessarily in a progressive way.

New allocation mechanism may increase economic efficiency but impose high negotiation and enforcement costs, making simpler allocation mechanisms potentially preferable. Mediation costs may be high, thus limiting the effectiveness of these measures.
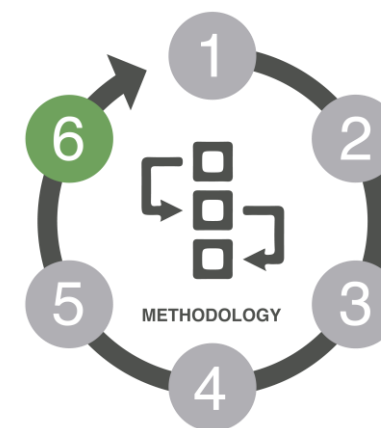
10 CITIZEN SCIENCE

Citizen science is a form of scientific research that involves the participation of ordinary people, or non-professional scientists, in the gathering and analysis of data. It is a way to generate data from and with citizens and carry out that research in a participatory and collaborative manner.

As a tool, it enables citizens to actively participate in scientific research and can involve the use of technology and other resources to enable citizens. This may include the provision of data collection tools (e.g., apps, sensors), online resources and training, or access to scientific equipment or databases.

HOW DOES IT WORK

As a methodology, citizen science involves a structured approach to engaging citizens in scientific research, often through collaborative partnerships between scientists and the public. It involves the use of standardised protocols for data collection, quality control, and analysis, as well as opportunities for citizen involvement in scientific decision-making and discussion of results.

To make it work, you first need to find and scope a project and a team or group of actors interested in participating in citizen science. Then you might need to train your participants. For example participants are often provided with some training on how to collect and record data, and may receive instruction on how to use specialized equipment or software. According to your project's goals, objectives and instructions, you will also realise a data collection, sometimes through online platforms or mobile apps. These data are analysed either by the participants themselves or by professional scientists, and then the resulting findings may be published and/or used to inform policy decisions.

TIPS

Citizen science projects often involve outreach and communication with the public, including sharing findings and encouraging more people to get involved.

REFERENCES

The role of Citizen Science in the European Green Deal

The 'Guide to Citizen Science' (Tweddle et al. 2012) includes more detail about the sort of resources required for setting up and running a citizen science project.

Time

The implementation time for each citizen science project may vary based on the scope, complexity, and resources available. Some citizen science projects may take a few months to implement, while others may take years to finalise.

Skills

Citizen science can be open to anyone, regardless of background or level of education. However, it often needs training, and ongoing, regular support. Additionally, it is important for participants to have access to the necessary tools or technology for collecting and submitting data.

Resources

Several resources will be required to run your initiative effectively, such as: website, online database, and existing technology, support, guidance notes or specialist measurement equipment. Collaborating with technology providers or using open-source software may make the costs more acceptable.

EXPECTED OUTPUTS / OUTCOMES

★ Generate research data that can be used by scientists for their research.

★ Scientific participative research.

★ Enhanced monitoring of environmental variables.

★ Increased scientific literacy and public engagement in science.

POTENTIAL LIMITATIONS AND BARRIERS

A willingness to learn and follow instructions is important, as well as an interest in the specific topic being studied.

A carefully planned training program needs to accompany the engagement of the citizen scientists.

Other potential barriers comprise access to technology, lack of expertise, time required, funding needs, and cultural barriers.

References

[1] Massimo Cattino and Diana Reckien (2021). Does public participation lead to more ambitious and transformative local climate change planning? *Current Opinion in Environmental Sustainability*: volume 52. https://doi.org/10.1016/j.cosust.2021.08.004

[2] United Nations Development Programme (2022). Policy brief: adaptation monitoring and the importance of the Glasgow Sharm el Sheikh programme in building national systems. Available online [last accessed - June 2023].