Smart Control of Air Pollution

Policy Briefs from the **iSCAPE** project funded by the European Union's Horizon 2020 Research and Innovation Programme

iSCAPE manifesto for citizen engagement in science and policy

Contents

Key Take-Aways

Stakeholder engagement for Living Labs

Living Labs are instruments for experimentation and innovation. The iSCAPE Living Labs in Bologna-IT, Bottrop-DE, Dublin-IE, Guildford-UK, Hasselt-BE and Vantaa-FI adopted this definition, aiming to encompass interventions in real life settings with the stakeholder engagement. To achieve this goal, there are essential characteristics that must be considered simultaneously: active user involvement throughout the process; real life settings; multi-stakeholder participation; multi-method approach; co-creation.

For the purposes of citizen engagement and to further understand the above concept, iSCAPE developed three principles for citizen engagement, shown in Figure 1 in the next page.

Stakeholder engagement and management can be one of the most beneficial and rewarding activities for a Living Lab wanting to reach out to citizens. Often underestimated, if planned and deployed in the right way, the engagement of multiple stakeholders represents a valuable resource for a Living Lab. It should, in fact, be at the core of each Living Lab approach and process.

In iSCAPE the overarching purpose of multi-stakeholder engagement and management had a high relevance to ensure an effective management of both key local actors and the scientific community, when active and proactive citizen engagement was at the core of the Living Lab activities. New ideas and solutions were developed through co-creation activities, in addition to the awareness raised

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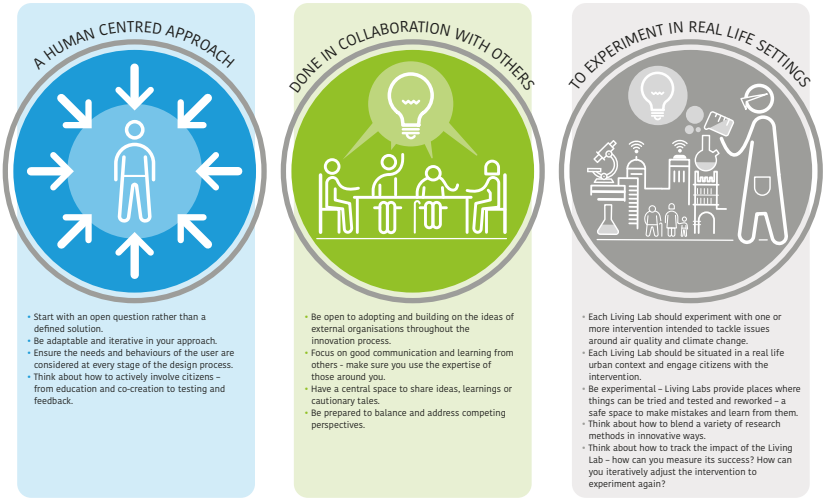


Figure 1: iSCAPE Living Labs: Three Key Principles.

on air pollution challenges and control, in close collaboration with researchers and public authorities.

Fundamental to this co-creation process is the human-centered methodology placing citizens at the center of the Living Lab. Following a human-centred approach means effective involvement of citizens, requiring adaptable and iterative activities to make sure that needs and behaviours are always considered and reflected.

This approach ensures a varied team made up of experts and laypeople, who are enabled to participate on an equal ground, without communication barriers, open to adopt and build ideas throughout shared processes.

Such co-creation, based on human-centred methods, eventually leads to having informed citizens, conscious about the real challenges both from a technical and non-technical perspectives. Acquiring the knowledge on air pollution issues and challenges and being part of an active space as the Living Lab, the citizen is empowered and facilitated in approaching real solutions, by developing and improving new and existing local policies.

During the three years of co-creation activities the iSCAPE Living Labs increased the awareness of air pollution and its impact on health, while establishing new ways of thinking. Living Lab teams gained valuable insights and a better understanding of citizens needs and desires. These were also fundamental to establish new communication and operation levels that led to empower citizens and engage them in decision-making processes.

The iSCAPE Living Labs put the citizens at the centre of complex urban system and through bespoke local engagement activities and strategies they contributed to the scientific research as well as inform policy changes.

Citizen Engagement

In tackling air pollution in an urban context, citizen engagement is the basis to engage a relevant audience and reach people, create a team and develop ideas. Contributing in an innovative way in science and research, as well as interacting with the practical daily matters with the local authorities, citizens are connected with scientists and researchers, with policy makers and key municipal actors, influencing the former and driving the latter.

Citizen engagement was included in the iSCAPE Living Labs since the very early stages, to the extent that the initial step was to create the iSCAPE Citizen Manifesto. The Manifesto aimed to support Living Labs in engaging with citizens and city stakeholders in the most effective way. This was built upon five guiding principles: Make it simple, Make it visible, Make it personal, Make it practical and Make it playful (see Figure 3).

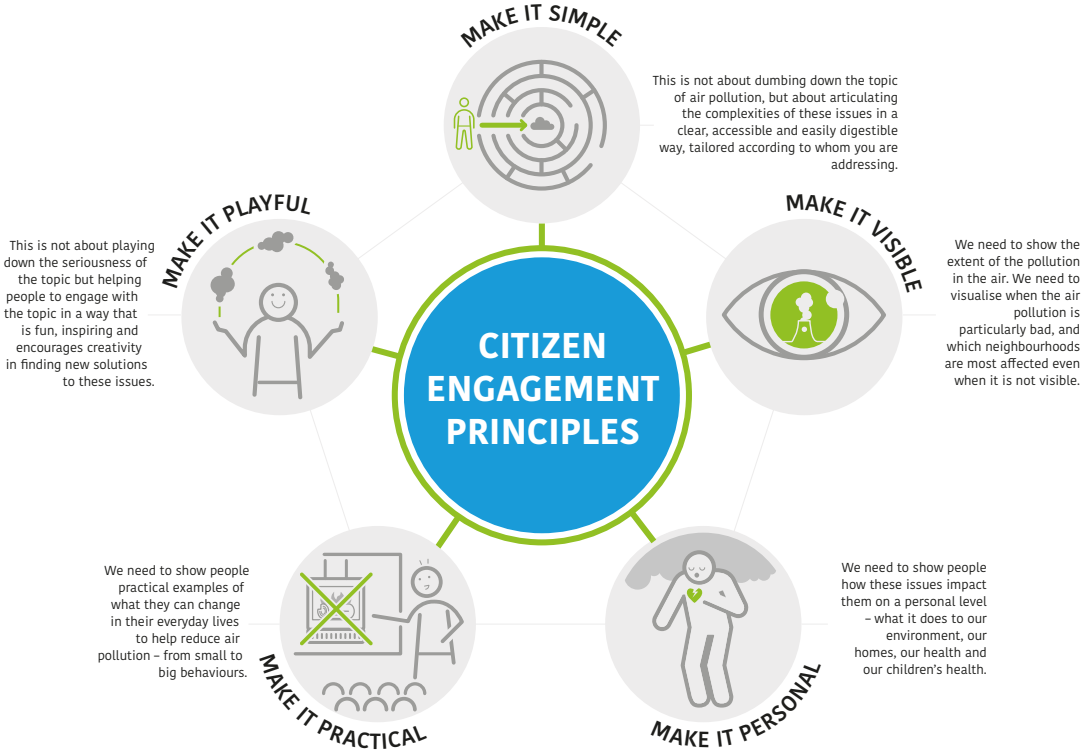


Figure 2: Five guiding principles of the iSCAPE Citizen Manifesto.

The first principle (Make it simple) aims to articulate complexities in a clear and easily digestible way, often the language and terminology is given for granted in particular in a research or political environment. The second (Make it visible) and third (Make it personal) principles aim to reach citizens at a personal level, showing the real effects of air pollution in a tangible way and how these are experienced on everyone of us. The last two principles (Make it practical, Make it playful) provide a new and pragmatic approach that ensures constant engagement and fun.

The five principles are applicable to every stakeholder engagement activity undertaken to tackle the issue of air pollution in an urban context.

Figure 2: The challenges related to air quality in the six iSCAPE cities.

"I felt that we had achieved something really positive and look forward to future cooperation."

One of the Guildford Living Lab workshop participants.

The hands-on experience of the six European cities involved in the iSCAPE activities, brought together diverse participants of all ages to find out more and co-create new ideas and solutions to reduce their exposure to air pollution. This experience managed to bring closer to the attention of a very wide citizen and stakeholder audience complex environmental issues, helping to understand and predict the climate change impacts of new green infrastructures and collective behavioural change.

The lessons learnt from the experiences were varied. To note down a few, consider the following when engaging with stakeholders:

Identify a target group: Think about who to attract to your research or event. Remember that you can plan better when you do not cater for everyone, but for specific groups of people, such as children or the elderly, for example.

Identify multipliers: Think about involving community groups, professional organisations, student groups and your personal networks. Asking these people to invite others they know to get involved will amplify the potential audience.

Target 'influencers': These may include local politicians, school or university professors, professionals or entrepreneurs, as well as other prominent figures in the community. Ask them to spread knowledge about your initiative.

Incentivise participants: Incentives are always a good way to get people onboard and keep them motivated across time. Think creatively about what sort of incentives are most appropriate. Also keep in mind that people are not always keen on extrinsic drivers like money, compared with intrinsic like learning something new or meeting other people, for example.

Communicate with your audience: Think about all types of media – local newspapers, classified ads, city or university newsletters, social media (free or paid), notice boards, etc. – to spread the news about your events or recruit people for your action research.

Join other local events: Festivals, exhibitions, fairs, annual gatherings, organised by other initiatives in the city or in collaboration with others, can create a mutually beneficial scenario of reaching stakeholders together.

Make it visual: Use illustrations, thought starters, and other visualization tools (see below) to make your communication as attractive as possible.

Implementation Tips

Air pollution engagement tools

In iSCAPE the 'air pollution engagement tools' were created to help the Living Labs communicate and engage with participants on the topics of air

pollution and climate change. The tools are freely available online and can be used with citizens and city stakeholders such as businesses and local authorities.

The engagement tools use different communication strategies and they can be used in conjunctions and chosen according to the target audience and the type of engagement in place, e.g. co-creation workshops, events, meetings.

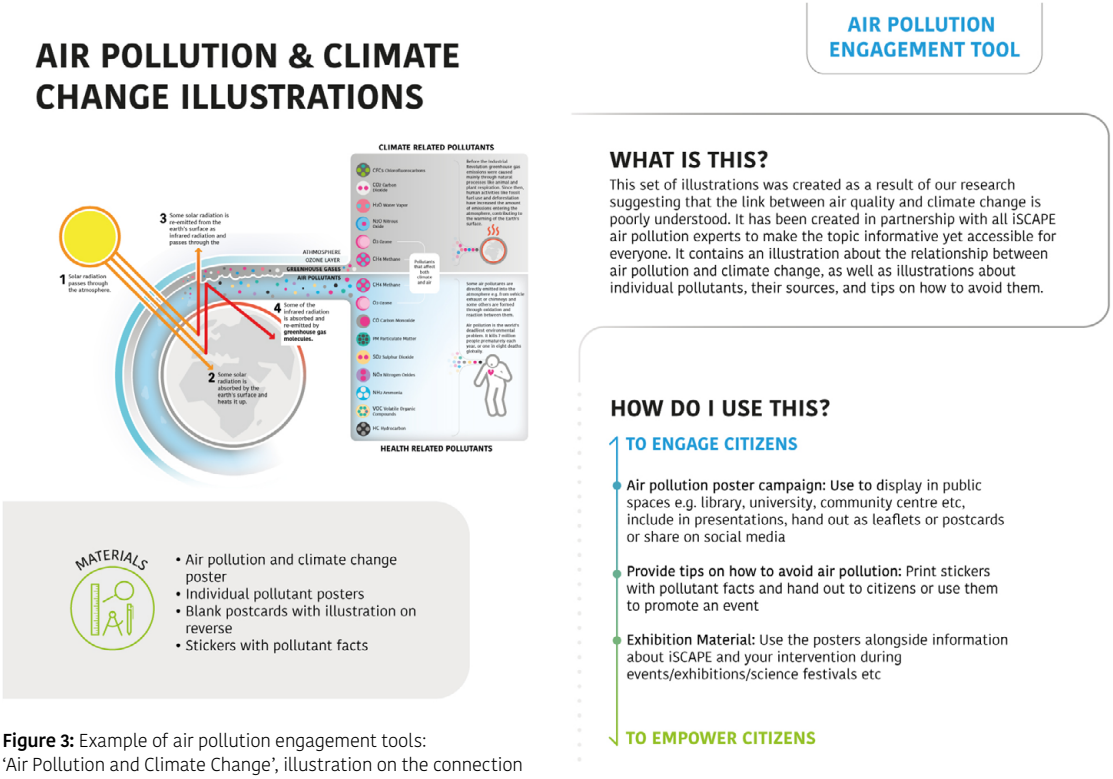


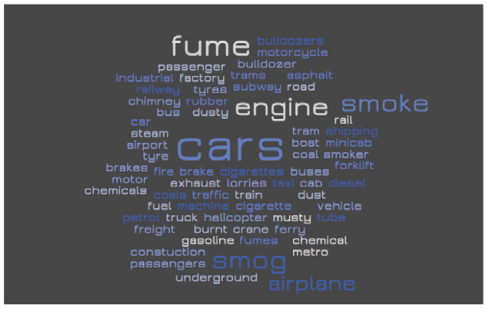
Figure 3: Example of air pollution engagement tools: 'Air Pollution and Climate Change', illustration on the connection between air pollution, health and climate change.

The tools and related instructions and materials are freely available at www.iscapeproject.eu.

The 'Air Pollution and Climate Change' illustration (Figure 3) provides at a glance a clear message on the relationship between air pollution and climate change. The Twitter Chatter (Figure 4) and Citizen Stories (Figure 5) leverage on social media concepts, which are not only familiar and easy to implement and digest, but also play on the direct engagement of the citizens. Finally the City Challenges (Figure 6) and Thought Starters (Figure 7) are set of cards to trigger two way discussions and communication, as well as draw comparisons, generate new ideas and increase awareness.

TWITTER CHATTER

AIR POLLUTION ENGAGEMENT TOOL



MATERIALS

- Map per city
- Word cloud per city
- Blank postcards with illustration on reverse

Figure 4: Instruction for Twitter Chatter.

WHAT IS THIS?

Twitter Chatter is research undertaken by the data science team at Future Cities Catapult. They wanted to measure how people experience a topic such as air pollution and looked at the context in which experiences of air pollution take place. To do this they didn't just look at the use of the word 'air pollution' on Twitter, but instead looked at terms such as 'traffic', 'chimney', 'airplane' etc. The data science team also looked at how pollution is expressed through smells, sounds and visual cues deciphered from short Twitter messages. The output of the research is a map per iSCAPE city displaying how much air pollution is talked about, as well as a word cloud displaying the most used words in connection with air pollution.

HOW DO I USE THIS?

TO ENGAGE CITIZENS

- **Air pollution Twitter data:** Display the map and/or word cloud as a poster in public spaces e.g. library, university, community centre etc, include in presentations or use it on leaflets or postcards
- **Social media:** Share images on social media
- **Exhibition:** Use the map and word cloud with information about iSCAPE and your intervention during events/exhibitions/science fairs etc
- **Citizen workshops:** Use the maps and word clouds together with other material for workshops to illustrate how people currently feel about air pollution in your city and understand more about the language being used to describe it

TO EMPOWER CITIZENS

CITIZEN STORIES

AIR POLLUTION ENGAGEMENT TOOL

MATERIALS

- 3-5 citizen video stories each from Italy, Germany, Ireland, UK, Belgium and Finland. Videos are subtitled in English.
- Pledge cards
- Postcards with questions for citizens to respond to
- Consent form for participants to agree to take part and allow us to publish their opinion through the iSCAPE project
- Example Powerpoint slides for citizen quotes

Figure 5: Instruction for Citizen Stories.

WHAT IS THIS?

A set of personal stories from regular citizens about how air pollution affects them. Respondents describe on camera or on a postcard the moment when they first noticed air pollution in their city. They then provide examples of how they have attempted to reduce their personal contribution to air pollution.

HOW DO I USE THIS?

TO ENGAGE CITIZENS

- **Tell citizen stories:** Use videos within presentations about air pollution to give different citizen centred points of view
- **Social media:** Share videos of individual citizens on social media and record reactions to them. If you have a large and active following, encourage them to feedback or respond with their own opinion via text or a video. You must make sure you have full consent from participants before sharing anything online
- **Record new citizen stories:** Set up a video booth at an event and ask citizens questions related to air pollution
- **Postcard survey:** Hand out blank postcards with questions for people to answer and ask them to send it back to the living lab at their own convenience. Ideally the postage would already be paid. These can then be shared online or used in exhibitions
- **Citizen pledges:** Get people to make pledges on a piece of card describing what behaviour they will change to reduce air pollution. Take a picture of them with their pledge card and share on social media

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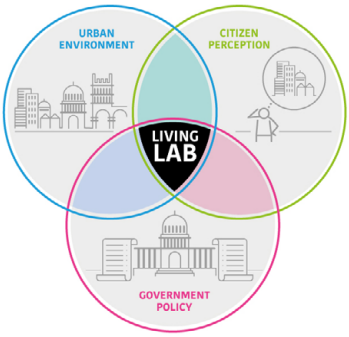
CITY CHALLENGES

AIR POLLUTION ENGAGEMENT TOOL



MATERIALS

- City challenge overview
- City challenge cards
- City profile cards
- Ideas cards
- Guide to citizen workshops
- Guide to hackathon

WHAT IS THIS?

A set of challenges based on a survey done with city officials in each of the iSCAPE cities. The challenges are based on 3 key themes; urban environment, government policy & citizen perception. They can help start discusions, draw comparison between cities and help inspire solutions to these challenges.

HOW DO I USE THIS?

TO ENGAGE CITIZENS

- **Challenge workshop:** Identify how challenges impact citizens personally
- **Twitter campaign:** ask people for feedback on a particular challenge
- **Ideation workshop:** involve citizens in finding solutions to city challenges
- **Open call/hackathon:** Bring in knowledge of experts from different fields. eg, academia, start ups, local hacker groups etc. to create solutions or even protoype new ideas for city challenges

TO EMPOWER CITIZENS

Figure 6: Instruction for City Challenges.

THOUGHT STARTERS

AIR POLLUTION ENGAGEMENT TOOL

MATERIALS

- Set of thought starter cards and template
- Idea cards
- Guide to citizen workshops
- Guide to putting together a prototyping kit

WHAT IS THIS?

The Thought Starter Cards provide a set of inspiring examples for how air pollution can be made simple, visible, practical, personal or playful - the iSCAPE principles for citizen engagement. The cards are intended to inspire discussions and generate new ideas for raising awareness and reducing air pollution.

HOW DO I USE THIS?

TO ENGAGE CITIZENS

- **Create new thought starter cards:** Add your own examples to create additional cards and share them with the iSCAPE team and on the Virtual Living Lab website
- **Start Discussions:** Use these thought starters within presentations about air pollution to start a discussion with the audience.
- **Exhibition/Event:** Print them off and use them as part of an exhibition or event as posters or leaflets prior, during or before.
- **Social media:** Communicate them more widely through social media and collate feedback about them, e.g. in blog posts, Twitter and Facebook.
- **Ideation workshop:** Use the cards in a workshop with citizens, city stakeholders and/or businesses to brainstorm new ideas for raising awareness and reducing air pollution – maybe get them to build a prototype for these ideas as part of the workshop using card, glue etc.

TO EMPOWER CITIZENS

Figure 7: Instruction for Thought Starters.

The 'air pollution engagement tools' are based on the Manifesto and citizens engagement principles, enhancing their effectiveness. They help the Living Labs to communicate and engage with their local community on the topics of air pollution and climate change.

"This activity seems to me like solving a common problem with collective wisdom."

One of the Hasselt Living Lab workshop participants.

Recommendations

The following recommendations are based on the insights gained from the six iSCAPE Living Labs. These can be used by other Living Labs to increase their effectiveness in citizen engagement and co-creation actions, so to integrate them as tools for policy makers.

1. Raise awareness of the initiative

The impact of a Living Lab's activity relates to the number of citizens that are going to be engaged. Starting to inform at an early stage and sending out clear messages using the iSCAPE Citizen engagement principles will increase the chances for success.

2. Visualise air pollution at street level

The visualisation of air pollution is a strong incentive to persuade citizens to engage, as it helps to take air pollution at a personal level. Using tools like the Air pollution illustrations or the Thought Starters ensure an effective communication easily understood by citizens.

3. Showcase developed ideas

It is important to provide time and space to share and showcase outputs and ideas from citizen engagement activities. Take advantage of spaces at exhibitions, fairs and other events with the support of visual material. Any showcase of outputs can be used to build the following Living Labs engagement task.

4. Record and monitor progress

To improve and advance in citizen engagement it is crucial to keep records and monitor the Living Lab's progress. Keep records of texts, audio and video (including crowdsourcing), on social media and other sites and regularly assessing them to identify areas of improvement.

5. Be interactive in communicating

The most important value of the citizen engagement is in the two-way communication that can be triggered. Do not limit your communication in a simple transfer of information, but constantly ask participants for feedback and plan co-creation activities starting with an open question rather than a defined solution.

6. Acknowledge the value you are creating

Planning the activities for citizen engagement is not limited to the definition of practical steps to implement, but it requires an analysis of the values expected from your initiative, carefully focussing on the who, when and how. This will help in planning and accomplishing the required steps for an effective engagement.

7. Share learnings with peers

Living Labs work better if they are part of a network. Include and interact with other Living Labs in the engagement of the key local representatives from Academia, Business, Civil Society and Government, so to benefit of updated resources and ideas for new activities, as well as providing insights that can be adopted by others and will strengthen your initiatives.

8. Collect your own "Citizen Stories"

"Citizen Stories" is a simple tool that requires minimal effort. It can be done only by identifying two questions relevant to air pollution and potentially linked to the pilot in question. Questions are answered by the participants using their mobile phones and shared directly or via social media channels. By collecting video / blogs / social media etc. the Living Lab will create its individual identity that is shared with and owned by local communities.

9. Never hide failure

Especially if at the beginning, engagement activities conducted by a Living Labs imply a number of challenges along the way, resulting in issues and in some cases failures. Be transparent, share and analyse them with a critical eye to investigate areas for improvements. A failure can be more informative and inspiring than success itself.

10. Never stop trying

Living Labs constantly interact and operate with key local representatives from Academia, Business, Civil Society and Government, dealing with the same challenges, i.e. the air pollution and climate change, but within a changing environment, i.e. the urban context. It is essential to reiterate the activities and implement them adapting them to the constant changing of the urban environment.

Keywords to remember

Living Lab:
A citizen-centred urban innovation ecosystem, based on systematic user engagement in real-life settings through a wide variety of methods and tools, with the participation of multiple stakeholders in the co-creation of innovations.

Passive Control Systems:
Green and built urban infrastructure for air quality and/ or urban thermal comfort improvement, including e.g. low boundary walls, trees and hedges, green walls and roofs, photocatalytic coatings, green urban spaces and road geometry interventions.

Read More

The content presented herein is based on the following key project deliverables: **D2.4** 'Stakeholder Management Plan and Local Citizen Engagement Strategy for the Living Labs' (June 2017) and **D2.5** 'Community Feedback Report' (March 2019) as well as the **iSCAPE Playbook**. The underlying evidence refers to the six iSCAPE pilots run in the cities of Bologna-IT, Bottrop-DE, Dublin-IE, Guildford-UK, Hasselt-BE and Vantaa-FI.

All reports are available on the iSCAPE project website: www.iscapeproject.eu

Impressum

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The iSCAPE project

iSCAPE aimed to reduce urban air pollution and the negative impacts of climate change by leveraging sustainable passive control systems, behavioural change initiatives and the Living Lab approach.

For more information: www.iscapeproject.eu.

iSCAPE partners:

- University College Dublin
- University of Bologna
- University of Surrey
- Finnish Meteorological Institute
- Hasselt University
- TU Dortmund University
- JRC - Joint Research Centre - European Commission - Institute for Environment & Sustainability
- Institute for Advanced Architecture of Catalonia - FabLab Barcelona
- T6 Ecosystems S.r.l.
- Nanoair Solutions S.r.l.
- Future Cities Catapult Ltd.
- Dublin City Council
- Regional Agency for Prevention, Environment and Energy of Emilia-Romagna
- European Network of Living Labs
- Trinity College Dublin

Smart Control of Air Pollution - Policy Briefs

The Smart Control of Air Pollution - Policy Briefs series summarises key outcomes of the iSCAPE project with a clear policy orientation, to provide practical information to EU local decision-makers and other urban stakeholders. They cover the following topics: