



Open Innovation Call in Copenhagen targeting Air Quality and Urban Heat Island Effect

Competition Manual

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Aim of the Open Innovation Call

The City of Copenhagen, Denmark, is looking for new and innovative ideas, technologies, and approaches to reducing the negative impacts of urban air pollution and the heat island effect. The proposed solutions can approach the challenge from a mitigation perspective (reduce ambient air pollution or temperatures) or from an adaptation perspective (to help the citizens of Copenhagen to cope with the negative effects of air pollution or heat).

The goal of the challenge is to identify and pilot the most promising solution within the City in the hopes that it can improve upon the current state of air quality and/or urban heat. The solution, if piloted, will need to be measurable in its effectiveness to do so.

Background of the Open Innovation Call

All over the world, cities are engaging in the fight against climate change. The cities are increasingly experiencing the negative effects through cloudburst, longer drought periods and storm surges. It is threatening to disrupt the everyday life in the cities, and that is why cities are looking for solutions to help them fight and manage these changes.

The city of Copenhagen has high ambitions on climate and life quality. The city is working hard to become the first carbon neutral capital already in 2025 and doing this without lowering the quality of life of its citizens – we want to *improve* their quality of life.

- [Copenhagen – Carbon neutral capital](#) (containing additional relevant links, e.g. climate plans in English, Russian, Spanish, Chinese)
- [CPH 2025 Climate Plan](#)
- [CPH 2025 Climate Plan – Roadmap 2017-2020](#)
- [Copenhagen – Sustainable City Initiatives](#)

Air quality

A major issue in this work is air quality. The problems with air quality in Copenhagen is caused by emissions from cars, buses, trucks and vans, private wood fired ovens and emissions from ships (mainly cruise ships). But the air quality is also affected by emissions that come from other parts of the country and Europe from heavy industry. About 58% of NO₂ pollution has a regional background or comes from neighbouring municipalities – the rest is a result from emissions in the city. 6% is directly linked to traffic.

Air pollution is composed of many different materials and gasses that stem from both natural sources (volcanoes, forest fires etc.) and human sources in Copenhagen and the rest of Denmark and Europe, e.g. road traffic, agriculture, ships, wood fired stoves, power plants etc. Sources that use fossil fuels contribute to the pollution through emission with nitrogen dioxide, particles, sulphur and ammonia. Some of these are harmful in themselves, other become harmful when they through chemical processes are transformed to pollutants.

- [Air pollution in Copenhagen](#) (in Danish)

Health effects

The health effects of pollution in Copenhagen are quite severe:

- Every year more than 500 people are estimated to die from air pollution in Copenhagen
- Air pollution is also affecting around 20,000 people with chronic bronchitis, asthma, heart-diseases and cancer – costing around 10 years of expected life for the affected citizens
- Recent studies have shown that exhaust particles from cars and wood burning stoves are particularly dangerous

So, the City of Copenhagen actively wants to improve the air quality in the city. And we are looking for solutions to help us reach our goals.

Current initiatives in Copenhagen

- The city's own fleet of vehicles has transformed to electric or hydrogen vehicles where possible
- A strong bicycle program with an expanding network of bicycle lanes and super bicycle highways to enable commuter to transfer from private cars to bike
- Changing the energy production from fossil fuels to renewables
- Monitoring program for air quality
- A process for removing up to 75% of car traffic in the city centre
- Switching from diesel buses to electric buses (by 2021)
- Switching from diesel to electric harbour ferries (by 2020)

You can find information about the Copenhagen initiatives at this link:

- [Air pollution in Copenhagen](#) (in Danish)

Urban Heat Island

Cities are getting warmer. The density of buildings and hard surfaces absorb heat during the day, and this increases the temperature by several degrees. In Copenhagen, we have a temperate climate with mild winters and mild summers. A summer day in Denmark is a day where temperatures exceeds 25 degrees Celsius (77 degrees Fahrenheit). So urban heat island effect hasn't until now been a major issue. but the very warm and long summer in 2018 and partly in 2019 as well has increased the interest of the effect of a long term rise in temperature and how this will affect urban life.

Most buildings in Copenhagen are not cooled today, but with rising temperatures and warmer summers it can be expected that the need for cooling of buildings will increase – effecting the emissions from the city in a negative way.

To prevent this, we are looking for solutions that can help the city and the citizens to maintain the high quality of life in the city – even with rising temperatures.

Today, urban spaces and buildings are often designed to maximise the amount of sun and daylight. But this might change in the future where the need to provide citizens with more shady areas to stay cool in the summer increases.

Current initiatives

- Increasing tree cover in the city by planting 100,000 new trees over the next 10 years
- Creating green spaces – also as part of the city's [Cloudburst Management Plan](#)

Holistic solutions

Copenhagen is known for its holistic approach to planning and problem solving. Therefore, we are looking for solutions that address both the aspects of urban heat island and air pollution.

- Is it possible to design urban spaces in new ways that not only reduces heat stress, but also helps reduce the effects of air pollution?
- Can we design solutions of a high architectural quality that will allow for light in winter, but reduce the need for cooling in the summer?
- Is it possible to design solutions that link energy systems, housing and urban space?

Description of the Call

We are asking for solutions that can either be a specific product that addresses one or more of the issues mentioned above, or a vision/concept/design for a solution. If you are entering with a specific product it must be verifiable, but concepts etc. do not need to be the same level of details.

Evaluation and Criteria

Due to the open nature of the prompt, a wide range of solutions will be accepted but will be evaluated by the following criteria (with each criterion evaluated on a scale from "1" to "5", "5" being the highest level of criteria fulfilment):

Functionality

The proposal is rated on its ability to solve the challenge described under "Aim of the Open Innovation Call" and its ability to be validated or even implemented by the City of Copenhagen.

Innovation

The proposal is rated on its level of innovative thinking and how this is reflected in the proposed idea or solution.

Replicability

The proposal is rated on its replicability in different cities, i.e. a concept/product/service that enable more regions and cities around the world to take advantage of the solution(s) and not only the City of Copenhagen.

Sustainability

The proposal is rated on its potential to accelerate the green transition of cities and considerations for social, circular, and sustainability impacts (i.e. GHG emissions or energy usage) and effects.

Verifiable

The proposal is rated on its proven effectivity in the real world.

Aesthetic

The proposal is rated on its ability to improve the city as a more pleasant and liveable place.

Who Can Be Part of the Competition?

All relevant ideas will be taken into consideration. There are no requirements as to how far the idea/proposal/product has been developed, i.e. also ideas taking some areas of the general challenges into consideration are welcome, as the call is looking for multiple ways to deal with the overall aim mentioned in the call text. Therefore, as part of the competition, the idea could be matured towards the finals and beyond.

Groups/consortia with a constellation of competencies are expected to be most successful in this call. This, however, is in no way a requirement for participation. The competition is open to everyone regardless of background, experience, location or other factors. Applicants can participate alone or in groups, be private individuals or part of a company, organization, institution or through any kind of joint effort.

Why Participate?

All challenge participants get the opportunity to present their solution through their submissions to a professional evaluation panel from Copenhagen municipal agencies, relevant companies that are working with implementation of solutions and other sustainability leaders within the green industries.

Then, a group of (up to) five finalists selected from the Open Innovation Call will be asked to present their solution to a panel of selected representatives from some of the major private stakeholders and companies in urban development in Copenhagen City in person as well as city representatives on Open Innovation Day on 11 October 2019 that will take place under C40 World Mayors Summit in Copenhagen in October 2019. The evaluation panel will provide feedback on the pitches and offer recommendations on how the product, service, or vision could best be improved, validated or implemented in Copenhagen.

The winning solution will have the opportunity to discuss implementing a pilot of the solution with the city. Any pilot project will have to include a validation study that can be used as a case study for future development purposes.

The decision to engage in a pilot project is at the discretion of the City agencies and running a pilot is not a guaranteed outcome.

The winning solution will finally also have the opportunity to exhibit their vision in a public space within a City building. We expect the challenge results will receive press coverage and the City will do its part to promote the results.

Additionally, participation will provide great opportunities to engage with relevant stakeholders and expand networks and knowledge about the theme at hand.

Webinar about the call

A webinar regarding the call will take place on 9 September 2019 at 10 o'clock CET. For registration for the webinar, click [here](#).

After registering, you will receive a confirmation e-mail containing information about joining the webinar.

Competition Programme

The competition will be divided into two stages:

1. The first stage is an open submission process in which all submissions will be reviewed and evaluated, and finalists will be selected to join for the final presentations. The selected finalist will receive feedback on their initial applications and will be able to refine their solution that leads more directly to a pilot opportunity, including the *potential* suggestion of merging/collaborating with some of the other finalists for joint further improvement if the proposed ideas/solutions are considered complementary to reach a more desired outcome.
2. The final public-facing pitch will occur on Open Innovation Day during C40 World Mayors Summit in Copenhagen on 11 October 2019 and the winners will be announced.

Overview of important competition dates:

Open for Submission	19 August 2019
Informational Webinar	9 September 2019
Deadline for Submission	23 September 2019
Finalists Announced	1 October 2019
Open Innovation Day and Winners Announced	11 October 2019

Application Procedure

All solutions must be presented via [this submission form](#) by 23 September 2019, at 12 noon CET. Submissions that are not sent via this route will not be considered.

Open Innovation Day

The process to decide the winning idea/innovation is divided into two steps.

In a first step, when all proposals are submitted, the organizers will select a maximum of five (5) finalists/teams that will be invited to further participation. The proposals will be judged with a score sheet based on the judging criteria described above. The result of this selection will be a presentation of the finalist/teams that receives the highest score and is qualified for the Open Innovation Day, no further motivation will be presented.

Step two in the process is the [Open Innovation Day](#). Here, the selected finalist/teams will pitch and present their ideas and proposed solutions in front of a professional evaluation panel. The panel will decide a winner based on how the ideas and solutions answer to the challenge and the judging criteria. As mentioned above, a potential suggestion could be that finalists merge/collaborate towards the final for *joint* further improvement if the proposed ideas/solutions are considered as complementary and could result in more desired and holistic outcomes.

Ownership and responsibility

The Intellectual Property Rights (IPR) of the idea and related materials are owned by the contestant(s). However, we urge the contestants to bear in mind that this is an open innovation call that is looking for co-creation and joint development. The contestants can decide what kind of sensitive business information they would like, or need, to share in the competition. Individual confidentiality agreements to protect sensitive business information will be accepted to protect the business idea. It is the contestants' responsibility to point out the sensitive information and deliver the confidentiality agreement. All submissions could be published on the competition's website as written documentation associated with the competition, on websites of the organizing partners and network or under other circumstances in which the organizing partners and network may want to inform others about the competition and its results. When contestants submit for the competition, they accept that their proposal can be published.

Climate-KIC is facilitating professional business assistance and advice throughout the competition within its network. The goal is to help the contestants in any way possible to mature their idea towards the Open Innovation Day and expose the idea to a high-profile jury and professional audience. It is the contestants' own responsibility to make use of the resources made available in the competition, seek the necessary information and meet the deadlines.

Contact Information

For further information and questions concerning the competition, please get in touch with:

- Jakob Stolt, Senior Project Manager, EIT Climate-KIC, phone (+45) 28 10 98 92, jakob.stolt@climate-kic.org
- Lykke Leonardsen, Program Director, Resilient and Sustainable City Solutions, Technical and Environmental Administration, City of Copenhagen, phone (+45) 20 80 60 13, lykleo@kk.dk

FAQs

Q: Is it possible to upload other documents to the application?

A: Yes, it is possible to upload illustrative materials such as illustrations, diagrams, pictures etc. We will not take additional text material into consideration. Please see submission form for document requirements (type, file size etc.) for each question.

Q: Where do I find more details about the consultancy and for Open Innovation Day?

A: We will make sure that you receive all the information that you need for each step you enter. You are always welcome to contact Climate-KIC, Jakob Stolt (jakob.stolt@climate-kic.org) if you have any questions.

Q: Is it possible to fill the format and save it temporarily before submitting the final one?

A: No, unfortunately it can't be saved temporarily. It is advisable to make the application in a Word-file (or the like) and copy into submission form, especially when it comes to answers with a limit of characters (see submission form for details).

Q: Should potential local partners for pilot implementation be formally included in the proposal?

A: Not necessary at this time of application.

Q: Can you provide an idea about the budget for the winner solution?

A: The potential budget for the pilot will depend on what the winning solution is, what pilot consists of, and which agencies are sponsoring the pilot. We intend to find the funding to ensure any pilots will be meaningfully funded in order to verify the viability of the solution within the City.

Q: Does reducing motor vehicle exhaust through reducing the number of industrial trips count as improving air pollution

A: Yes, but it needs to be an innovative and new solution for Copenhagen in some way.

Q: Is there a way to submit a video as part of the submission

A: No, only jpeg, png, pdf, doc, docx files (see submission form for details).

Q: Would you prefer a solution that tackles both issues (Air Quality + Heat Islands)?

A: Co-beneficial solutions will be looked at favourably, but in the context of all our stated criteria.

Q: Should solutions be more about urban design or more traditional architecture?

A: The primary concern is reducing air pollution and the harmful effects of the urban heat island effect. There is no preference in how these solutions are implemented. Keep in mind that we are emphasizing the adaptation of existing City infrastructure rather than building new neighbourhoods from the ground up.

Q: Is reduction in GHG emissions also an objective or only reduction of pollutants?

A: Co-beneficial solutions will be looked at favourably, but in the context of all of our stated criteria. The main objective of this Open Innovation Call is the reduction of pollutants but the City has a strong GHG reduction commitment so this benefit will be considered while evaluating submissions.

Q: If we submit a PowerPoint deck to supplement the application, is there a maximum presentation length?

A: First, you must make it into a pdf-file, and remember that with many applications, very long presentations are likely to be skimmed more than read carefully – be as concise and as clear as possible. We recommend 10 slides.

Q: Can ideas be existing solutions, but not implemented within Copenhagen itself?

A: Yes.

Q: Does hydrogen fuel cell vehicles qualify as a desirable solution?

A: If the solution reduces air pollution or the urban heat island effect, it will be considered desirable. Any solution that solves the presented challenge will be accepted.

Q: Do you prefer focused solutions that solve only one specific problem or broader solutions oriented to solve several dimensions of the problem?

A: Co-beneficial solutions will be looked at favourably but in the context of all our stated criteria.

Q: Are the submissions confidential?

A: This is stated about confidentiality in the Competition Manual at page 6: *"The Intellectual Property Rights (IPR) of the idea and related materials are owned by the contestant. However, we urge the contestants to bear in mind that this is an open innovation call that is looking for co-creation and joint development. The contestants will decide what kind of sensitive business information they would like, or need, to share in the competition. Individually confidentiality agreements to protect sensitive business information will be accepted to protect the business idea. It is the contestants' responsibility to point out the sensitive information and deliver the confidentiality agreement. All submissions will be published on Access Cities' website, as written documentation associated with the competition, on websites of the organizing partners and network or under other circumstances in which the organizing partners and network may want to inform others about the competition and its results. When contestants submit for the competition, they accept that their proposal can be published."*

Q: Can two entities collaborate on a solution, e.g. a data aggregator and another start-up?

A: Yes.

Q: Do you have to be incorporated as a for profit company to apply?

A: No.

Q: Is there a file size limit for submitting attachments? Can links to websites be submitted?

A: Yes, check the submission form for the relevant questions.

Q: Do I need to go to Copenhagen to participate in the competition?

A: All our events, interviews and consultancy will be offered online in English. You will only need to go to Copenhagen (at your own cost) for the Open Innovation Day, if selected for this. If travel is not possible, we can arrange for a video conference.

More Q&A's will follow the webinar on 9 September 2019 and displayed in this call's website.