



European
Commission

Horizon Prize

MATERIALS FOR
CLEAN AIR

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RULES OF CONTEST



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1. OBJECTIVES

In the European Union, the average life expectancy is estimated to be decreased by 8.6 months, because of exposure to particulate matter resulting from human activities. The inhalation of particulate matter can also lead to adverse effects in the respiratory, cardiovascular, immune, and neural systems. In addition to its effects on the human health, particulate matter can also have adverse effects on climate change and ecosystems.

The objective of the prize is to reduce particulate matter air pollution in urban areas through the development of innovative material solutions. These solutions should be design-driven, affordable and sustainable, and they should demonstrate that they can effectively remove and/or prevent the formation of particulate matter in the atmosphere (vehicle exhaust systems will be excluded).

2. EXPECTED RESULTS

Affordable, sustainable and innovative design-driven material solutions ([see 9.1](#)) that can effectively remove or prevent the formation of particulate matter ([see 9.3](#)) in the atmosphere (vehicle exhaust systems will be excluded) and works in the environment targeted for application.

3. AWARD CRITERIA

The prize will be awarded, after closure of the contest, to the entry that in the opinion of the jury demonstrates an innovative design-driven material solution that fulfils at least the minimum requirements and best addresses the following cumulative criteria. Please note that the solution must be both developed by the contestant and be novel.

3.1. Award criteria

3.1.1. Demonstrated reduction of particulate matter

Max. 6 points

Reduction of particulate matter ([see 9.2](#)) will be judged according to the following specific award sub-criteria:

- **Degree of reduction of concentration.** The solution should be able to demonstrated significant reduction of PM10 or PM2.5 or lower concentrations in an outdoor or indoor urban space ([see 9.4](#)) of at least $1 \mu\text{g} / \text{m}^3$. The potential and magnitude of the claimed PM reduction ([see 9.3](#)) should be demonstrated through robust estimations of the percentage by which PM concentrations are reduced as a result of the solution being implemented in the target urban setting. A greater value will be placed on innovative solutions able to demonstrate a significant reduction in PM2.5 and lower. Solutions that focus on the removal of particulate matter at direct source, e.g. from vehicle or other combustion exhausts, flues or equivalent are excluded.
- **Reduction of exposure.** When assessing effectiveness, the impact that the innovative solution will have on reducing population exposure to PM will be considered. A greater value will be placed on solutions targeting vulnerable population (e.g. schools, hospitals).

In order to allow for objective comparisons between solutions, the documentation supporting the reductions should detail the characteristics of the setting (e.g. ambient air temperature, pressure) and as well as the processes and measurement tools and methods used.

Method of measurement: Solution demonstrated in target setting and documentation supporting reduction claims of PM concentration and population exposure.

3.1.2. Demonstrated applicability in relevant environment

Max. 6 points

Applicability will be judged according to the following specific award sub-criteria:

- **Technology readiness level (TRL).** The achieved reduction should be based on calculations derived from the implementation of the innovative solution within a relevant testing environment. The innovative solution is expected to correspond to a Technology Readiness Level greater than or equal to 7. The relevance of targeted environment, the choice of the site and concentration of PM to be reduced should be described in detail.
- **Scalability.** The innovative solution should be able to be produced and applied at a mass scale, in order for the innovative solution to have a significant impact on reducing population exposure to PM air pollution and decrease associated health risks. Supporting documentation should highlight the predicted costs of scaling up the solution as well as opportunities for economies of scale. The ability of the solution to replicate reduction rates across different European settings should also be specified. Applicants are also expected to provide a detailed understanding of the proposed solution's limits of application and how this will affect scalability. With regards to the mass adoption of the solution, documentation should also address its 'social viability' or likelihood of being accepted and adopted by the target population, as well as strategies for ensuring this mass implementation.

Method of measurement: Supporting documentation on applicability, achieved TRL level and detailing the target setting and the potential of the solution to scale up to mass-production and replication across different European settings.

3.1.3. Sustainability

Max. 4 points

The proposed innovative solution should cause no or minimal damage to the environment throughout its lifecycle, production, use or disposal. Ideally, it should not produce any greenhouse gas emissions or generate additional air pollutants. Participants are expected to produce a life cycle assessment of the solution in order to demonstrate its sustainability.

Method of measurement: Life Cycle Assessment

3.1.4. Affordability

Max. 4 points

The innovative solution should be commercially viable or have good prospects to become commercially available in the near future.

The cost per $\mu\text{g} / \text{m}^3$ reduction of PM will be taken into consideration when assessing the affordability of solutions and comparing it to existing methods.

Supporting documentation should include the costs of developing and implementing the solution into the relevant settings as compared with existing solutions.

Method of measurement: Documentation of costs required to develop and implement the solution in the target setting.

3.2. Evaluation process

The evaluation of applications will be carried out on the basis of a review of the written applications by a panel of independent evaluators during February-April 2018. There will be first a remote evaluation where the experts evaluate the applications individually at home; followed by a central evaluation in Brussels. Up to the five best applications that have passed the threshold of the central evaluation might be invited for a hearing that may include a demonstration of their solution.

At the evaluation phase, the expert panel will assess each submitted solution against the 4 award criteria and will then mark each solution up to a maximum number of 20 points. The thresholds and maximum scores are indicated in the table below. The application with the highest total points above the overall threshold will be awarded the prize.

Table indicating the award criteria and their respective thresholds and maximum scores

Criterion	Threshold	Maximum Points
1. Reduction of particulate matter	4	6
2. Applicability	4	6
3. Sustainability	3	4
4. Affordability	3	4

The threshold overall is 15/20.

Upon completion of their work, the members of the panel shall sign a record of all the entries examined, containing an assessment of their quality and identifying those to which the prize may be awarded. All contestants will be informed about the outcome of the evaluation by the end of 2018.

4. ARRANGEMENTS AND FINAL DATES FOR THE REGISTRATION OF CONTESTANTS, IF REQUIRED, AND ARRANGEMENTS AND FINAL DATES FOR THE SUBMISSION OF ENTRIES

The website <http://www.ec.europa.eu/horizonprize/cleanair> will act as the primary source of information for both applicants and the public for information about the prize. Information on how to apply and application template will be provided in the website.

Deadline for the completed applications, including supporting documentation, is 23 January – 2018 17:00 (Central European Time). Applications are submitted through the Participant Portal.

Timeline	
Launch of the Prize	16 April 2015
Opening for submission of applications	26 January 2017
Deadline for submissions of applications	23 January 2018 at 17:00 (Central European Time)

5. AMOUNT OF PRIZE(S) INCLUDING SPECIFIC AMOUNT FOR EACH PRIZE, IF APPLICABLE

A single prize of EUR 3 000 000.

6. ARRANGEMENT FOR THE PAYMENT OF THE PRIZE TO THE WINNER AFTER ITS AWARD

Prize money (3 000 000 EUR) will be paid after the award ceremony (planned to be held in 2018) by bank transfer, provided the winners have submitted the required evidence as regards their eligibility. Winners of the Contest are expected to use the prize money to further develop the innovation, but no strict condition is set as regards the use of the funds.

7. CONDITIONS FOR CANCELLATION OF THE CONTEST, IF ANY

The Commission has the right to terminate the contest before its closing date without any obligation to indemnify contestants in case the objective of the contest has been achieved by a non-registered or non-eligible contestant.

The Commission has the right to decide not to award any prize if no entries are received or if no entries are to be awarded by the contest jury.

8. CONDITIONS FOR PARTICIPATION

The contestant must not have received any other Union prize before that is the subject of the current competition.

All information given by the contestant in the application must be correct and complete.

8.1. Eligibility criteria

Any legal entity (including single persons) or group of legal entities established in EU Member States or countries associated to Horizon 2020. Annex F to the WP specifies the common Rules of Contest for Prizes.

8.2. Exclusion criteria

Exclusion criteria are set out in Articles 106(1), 107, 108 and 109 of the Financial Regulation.

Contestants will be excluded from participating in the competition if they fall under any of the following situations¹:

The contestant:

a) is bankrupt or being wound up, is having its affairs administered by the courts, has entered into an arrangement with creditors, has suspended business activities, is the subject of proceedings concerning those matters, or is in any analogous situation arising from a similar procedure provided for in national legislation or regulations;

b) has been convicted of an offence concerning professional conduct by a judgment of a competent authority of a Member State which has the force of res judicata;

c) has been guilty of grave professional misconduct proven by any means which the European Union bodies can justify including by decisions of the European Investment Bank and international organisations;

¹ Contestants which are in one of the situations referred to in Article 106(1) and Articles 107, 108 and 109 of the Financial Regulation are excluded from participating in the contest.

d) is not in compliance with all its obligations relating to the payment of social security contributions and the payment of taxes in accordance with the legal provisions of the country in which it is established, with those of the country of the authorising officer responsible and those of the country where the activity is to be implemented;

e) has been the subject of a judgement which has the force of *res judicata* for fraud, corruption, involvement in a criminal organisation, money laundering or any other illegal activity, where such activity is detrimental to the Union's financial interests;

f) is subject to an administrative penalty for being guilty of misrepresenting the information required as a condition of participation in a procurement procedure or another grant award procedure or failing to supply this information, or having been declared to be in serious breach of its obligations under contracts or agreements covered by the Union's budget. Natural persons with power of representation, decision-making or control over one of the contestants that are legal entities, must not be in the situations referred to in b) and e) above;

Contestants must:

g) have no conflict of interests in connection with the prize; a conflict of interests could arise in particular as a result of economic interests, political or national affinity, family, emotional life or any other shared interest;

h) inform the European Commission, without delay, of any situation considered a conflict of interests or which could give rise to a conflict of interests;

i) have not been granted, and will not grant, have not sought and will not seek, have not attempted and will not attempt to obtain, and have not accepted and will not accept any advantage, financial or in kind, to or from any party whatsoever, where such advantage constitutes an illegal practice or involves corruption, either directly or indirectly, inasmuch as it is an incentive or reward relating to the award of the prize;

In case of award of a prize, the following evidence shall be provided upon request and within the time limit set by the European Commission:

For situations described in (a), (b) and (e), production of a recent extract from the judicial record is required or, failing that, a recent equivalent document issued by a judicial or administrative authority in the country of origin or provenance showing that those requirements are satisfied. Where the contestant is a legal person and the national legislation of the country in which the contestant is established does not allow the provision of such documents for legal persons, the documents should be provided for natural persons, such as the company directors or any person with powers of representation, decision making or control in relation to the contestant.

For the situation described in point (d) above, recent certificates or letters issued by the competent authorities of the State concerned are required. These documents must provide evidence covering all taxes and social security contributions for which the contestant is liable, including for example, VAT, income tax (natural persons only), company tax (legal persons only) and social security contributions.

For any of the situations (a), (b), (d) or (e), where any document described in the two paragraphs above is not issued in the country concerned, it may be replaced by a sworn or, failing that, a solemn statement made by the interested party before a judicial or administrative authority, a notary or a qualified professional body in his country of origin or provenance.

If the contestant is a legal person, information on the natural persons with power of representation, decision making or control over the legal person shall be provided only upon request by the European Commission.

8.3. Sole liability of contestants

The Commission may not be held responsible for any claim relating to the activities carried out in the framework of the contest by the contestant. The Commission shall not be held liable for any damage caused

or sustained by any of the contestants, including any damage caused to third parties as a consequence of or during the implementation of the activities related to the contest.

8.4. Checks and audits

The contestants accept that, if they are awarded a prize, the Commission, OLAF and the Court of Auditors may carry out checks and audits in relation to the contest and the received prize.

8.5. Publicity

8.5.1. Publicity by the winner of the prize

The contestants accept, if they are awarded a prize, to promote the action and its results, by providing targeted information to multiple audiences (including the media and the public) in a strategic and effective manner.

Unless the Commission requests or agrees otherwise or unless it is impossible, any communication activity related to the action (including in electronic form, via social media, etc.) must:

- (a) display the EU emblem and
- (b) include the following text:

“This action has been awarded the prize [name of the prize] from the European Union’s Horizon 2020 research and innovation programme”.

When displayed together with another logo, the EU emblem must have appropriate prominence.

For the purposes of its obligations, the winner of the prize may use the EU emblem without first obtaining approval from the Commission. This does not, however, give it the right to exclusive use. Moreover, the winner of the prize may not appropriate the EU emblem or any similar trademark or logo, either by registration or by any other means.

8.5.2. Publicity by the Commission

The Commission may use, for its communication and publicising activities, information relating to the action, documents notably summaries for publication and public deliverables as well as any other material, such as pictures or audio-visual material that it receives from the winner of the prize (including in electronic form).

The Commission will publish the name of the winner, its locality, the amount of the prize and its nature and purpose and that the contestant may request the Commission to waive such publication if disclosure risks threatening its security and safety or harm its commercial interest.

Photos and videos taken by the Commission either in preparation of the award ceremony or during the award ceremony are the sole property of the Commission.

8.6. Processing of personal data

Registration and submission of application shall be made in writing, which implies by letter or by electronic means (as specified in the rules of the contest), provided that they are non-discriminatory in nature and ensure integrity, confidentiality and protection of personal data. All personal data contained in the application shall be processed in accordance with Regulation (EC) No 45/2001 of the European Parliament and of the Council (OJ L8 of 12.01.2001, p1) on the protection of individuals with regard to the processing of personal

data by the Community institutions and bodies and on the free movement of such data. Such data shall be processed by the Controller solely in connection with the implementation and follow-up of the application of the winner, without prejudice to a possible transmission to the bodies in charge of a monitoring or inspection task in accordance with European Community and European Union legislation.

Contestants may, on written request, gain access to their personal data and correct any information that is inaccurate or incomplete. They should address any questions regarding the processing of their personal data to the Controller, via the contact person announced in the rules of the contest. Please send in addition a scanned copy of your letter to the email address announced in the rules of the contest.

Contestants may, at any time, lodge a complaint against the processing of their personal data with the European Data Protection Supervisor.

The Commission shall be authorised to publish, in whatever form and on or by whatever medium, the following information:

- The name of winner(s);
- The locality of winner(s)
- The general purpose of the activities of the winner(s) in relation to the award of the prize, in the form of the summary provided by the winner(s);
- The amount of the prize awarded.

8.7. Applicable law and competent jurisdiction

The contest is governed by the applicable Union law complemented, where necessary, by the law of Belgium. The General Court or, on appeal, the Court of Justice of the European Union, shall have sole jurisdiction to hear any dispute between the Union and any participant concerning the interpretation, application or validity of the rules of this contest, if such dispute cannot be settled amicably.

If international organisations are eligible, this general rule may be complemented by the special conditions proposed in the model grant agreement on dispute settlement - arbitration and applicable law.

8.8. Applicability of penalties

By virtue of Article 212 of Commission Delegated Regulation (EU) No 1268/2012 of 29 October 2012 on the rules of application of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union and with due regard to the principle of proportionality, a contestant which has committed irregularities or fraud, has made false declarations shall be liable to:

(a) administrative penalties consisting of exclusion from all contracts, grants and contests financed by the Union budget for a maximum of five years from the date on which the infringement is established and confirmed following a contradictory procedure with the contestant; and/or

(b) financial penalties of 2% to 10% of the value of the prize.

In the event of another infringement within five years following the establishment of the first infringement, the period of exclusion under point (a) may be extended to 10 years and the range of the rate referred to in point (b) may be increased to 4% to 20%.

8.9. Dissemination and exploitation obligations

Obligations regarding dissemination of results laid down in Title III of the rules for participation and dissemination in Horizon 2020 (Regulation 1290/2013) apply, as well as any additional rules provided in the Work Programme.

9. GLOSSARY

9.1. Design-driven innovative material solution

Through the term 'design-driven material solution' we aim to encourage collaborations between creative designers or other societal interpreters and innovative material scientists to develop new materials or make use of novel materials currently not utilised for such applications. The aim is to create a material-based solution able that can effectively reduce the concentration of particulate matter in urban areas.

It is acknowledged that the roles are not always clearly defined and that both designers and material scientists can often employ skills or approaches associated with the other profession; however, what we are interested in is seeing sustainable solutions which place a significant emphasis on the end user and have a strong understanding of the business model underlying the product, with the ultimate goal of enabling its large scale production and societal relevance.

9.2. Particulate Matter (PM)

Particulate matter² is the general term used for a mixture of particles (solid and liquid) suspended in the air, with a wide range of sizes and chemical compositions. PM_{2.5} refers to 'fine particles' that have a diameter of 2.5 micrometres or less. PM₁₀ refers to particles with a diameter of 10 micrometres or less. PM₁₀ includes the 'coarse particles' fraction in addition to the PM_{2.5} fraction.

9.3. Reduction of PM

The core aim of this Challenge Prize is to encourage the development of solutions able to demonstrate a significant reduction in PM concentrations in urban areas of particulate matter with a diameter of 10 micrometers or less (PM₁₀). However, a greater weight will be placed on solutions able to demonstrate a significant reduction in concentration of particulate matters with a diameter of 2.5 micrometers or less (PM_{2.5}) concentration.

This could be achieved either by solutions preventing the resuspension of PM into the atmosphere or solutions able to remove existing PM from the atmosphere.

Currently, PM statistics are able to assess concentration levels, but research is still limited in terms of accurately tracking the composition of the PM and the exact sources. Therefore this inducement prize will focus on solutions that remove existing PM from the atmosphere. The removal of PM relates to PM that has already been emitted into the atmosphere.

Solutions that focus on the removal of PM at direct source, i.e. from vehicle or other combustion exhausts, flues or equivalent are excluded.

9.4. Urban areas

By 'urban area' we refer to spaces with a high density of human structures such as houses, commercial buildings, roads, bridges, and railways. This can include towns, cities and suburbs.

² See European Environment Agency "Air Quality in Europe – 2013 Report" | No 9/2013 ISSN 1725-9177

The site within the urban area where PM reductions are achieved is open to the participants. It can be indoor or outdoor. However, the site should be chosen in order to have the greatest potential to reduce exposure and health risks in that area.

When choosing the site or source of PM to be reduced, participants should also take into consideration how often this site or source occurs within EU countries and how a potential solution would be able to replicate reductions across these settings to increase the overall potential impact of the solution.