

TERMS AND CONDITIONS OF PRELIMINARY MARKET CONSULTATION
WITHIN THE FRAMEWORK OF THE DESAL + STARTUPS INITIATIVE
"PROGRAMME FOR THE SUPPORT OF STARTUPS INVOLVED IN WATER
DESALINATION AND THE KNOWLEDGE OF THE DESALINATED WATER-
ENERGY NEXUS".

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1 Information about the Contracting Body of the Market Consultation

The **Instituto Tecnológico de Canarias, S.A.** (Canary Islands Institute of Technology, hereinafter referred to as "ITC") is a publicly owned company of private Law and a multidisciplinary technology centre of the Canary Islands Regional Government with over twenty-five years' activity, that, has been supporting science and technology as essential parts of the process of social and economic transformation and sustainable development in the Canary Islands, contributing to the competitiveness of the businesses in the Canary Islands and opening new paths towards new technological and industrial fields.

As an instrumental entity of the Canary Islands Government, ITC's activities cover the implementation of regional policies intended to promote research and innovation applicable to the productive industry, as well as the implementation of inter-regional and international collaborative and cooperative projects.

To undertake this project, ITC and Sociedad de Promoción Económica de Gran Canaria (SPEGC) launch the DESAL+ Startups Programme, financially supported by the **Council of the island of Gran Canaria (Cabildo de Gran Canaria)**.

2 Background

Seawater desalination is recognised as a cornerstone of the development of the Canary Islands' public strategies within the Macaronesia. In the Canaries, desalination is a priority industry in the Canary Islands' Research & Innovation Strategies (RIS3), as approved by the Governing Board of the Government of the Canary Islands in the session held on the 26th of December 2013.

The instrument known as RIS3 points out three major actions that are directly linked to the commitment to R&D and technological innovation in terms of desalination:

- To position the Canary Islands especially as a test and prototyping platform.
- To consider Africa and Latin America as preferential markets (the Caribbean area should be also included); and
- To promote the development of renewable energies linked to desalination processes as a major technological opportunity.

According to this strategy, the strategic lines transforming the Canaries into a test platform must be supported and moved forward in order to carry out actions linked to the following:

- Technological innovation and improvement of the desalination production processes.
- The improvement of the efficiency of the water treatment processes.

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- Technological innovation associated with the increase of the quality of the water intended for household, agricultural and industrial use.
- The boost of water regeneration, using both a centralised and decentralised (hotels, schools, public buildings, etc.) approach through the study of and the innovation in water treatment technologies.
- Fostering studies ensuring the reuse of the water regenerated and the provision of a sustainable future in terms of resources in the Canary Islands, in order to guarantee and protect the natural water resources.
- The implementation of monitoring and water quality improvement actions, minimising the impact of industrial waters discharge.
- The promotion of the use of renewable energies within the water cycle.
- The raising of awareness about the source, the transformation and the impact of the new generation of emerging pollutants incorporated by the human being and transported in water.

In this field, the possibilities to work on the following actions must be emphasised:

- Development and testing of innovative and sustainable technologies intended to supply power, water and to value the discharges, in order to carry out pilot projects in the Canary Islands to prove the technical and financial feasibility of solutions that can be subsequently transferred to less developed countries and with needs in this field.
- The provision of services and the transfer of knowledge and good practices in the development, good use and recovery of arid areas.
- The training and technical intervention to provide training and guidance on the sustainable use and management of natural resources and the proper, efficient use of power and water.

2.1 DESAL+ LIVING LAB Platform

The R&D and innovation DESAL+ LIVING LAB¹ Platform (www.desalinationlab.com), currently coordinated by ITC, was launched in 2017 in order to consolidate a common R&D&i platform in the

¹ The Living Labs are, on the one hand, organizations aimed at facilitating and fostering an open, collaborative innovation and, on the other hand, environments in real-world conditions where innovative solutions and processes can

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Macaronesia, characterised by high capabilities and an international excellence research infrastructure in terms of water desalination, the knowledge about the water-energy nexus and the exclusive use of renewable energies. This platform was created within the DESAL+ project, co-ed by the ERDF (85%) within the framework of the cooperation programme MAC 2014-2020.

As of this date, this open research platform is a physical and virtual ecosystem with a wide range of public and private key stakeholders that have arranged, integrated and coordinated all its efforts in order to become an innovative space of reference.

The members and collaborators of this network have active desalination plants and R&D infrastructure, and cooperate in research applied to desalination and to the desalinated water-energy nexus. The platform provides:

- Technical and logistic support for the installation and testing of prototypes and new devices focused on desalination, other related fields and desalination through renewable energies.
- Technical support and consulting services for the development, extension and demonstration, under real conditions, of innovative solutions, using the local desalination infrastructure at all scales that is open for R&D purposes.
- Training activities, educational programmes, knowledge transfer and desalination technology and the use of renewable energies.

The main aims of this collaborative innovation space include the following:

- To act as a vehicle to value the capabilities, infrastructure and the knowhow that have not been properly used to this date. This space would help to arrange all those resources around a common project and to become more present and visible internationally as an innovation space, in order to improve the scope and the competitiveness of the companies in the sector and to generate new sources of incomes.
- To become a world node of reference in the generation of innovation and knowledge in the field of desalination.
- To act as a testing platform, taking advantage of the resources installed in the territory and creating products and services around this possibility.

be studied and tested. The Living Labs provide projects (rationale to change) with a coordination and communication instrument amongst different stakeholders, as well as a work instrument oriented at innovation and continuing improvement, as well as at high visibility.

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- To stand as an open innovation space offering solutions to problems that may arise in any territory. This would facilitate the relations and collaboration with researchers and companies from all over the world.

This Platform concentrates and coordinates actions in terms of projects, studies, tests and infrastructure that increase the research capacity in this industry. This research ecosystem is supported by a Strategic Plan for R&D&i on Desalination that specifies the lines of interest that are required to increase innovation in desalination in the Canary Islands (2018-2025). This strategy, developed from the collaboration of different public and private entities that take part in this industry, puts forward the R&D&i opportunities that the Macaronesian area must lead, as well as a detailed list of measures to be implemented in this common innovation space.

2.2 DESAL+ Startups Programme

Once the strategic and innovation priorities of the DESAL+ LIVING LAB platform have been established to meet the goals set by Innovation Strategies RIS3 of the Canary Islands; the **DESAL+ Startups** Programme, funded by Cabildo de Gran Canaria, was launched in order to attract and generate knowledge and disruptive (pre-commercial) technology in Gran Canaria in the desalination industry, with a high international projection within a number of pre-set topics. For this purpose, the Living Lab aims to support the entrepreneurial ecosystem for the development of technologies and business models in desalination, facilitating the investment and testing of the solutions proposed by innovative startups.

With this initiative, Cabildo de Gran Canaria supports the innovation of a strategic sector such as desalination, with the capacity to obtain a competitive advantage for the desalination plants in the islands, the quality of the service and even the capacity to support future technological companies in this field.

The main interest lies in the highly innovative ideas and projects (from the Technology Readiness Level 2 o TRL2)² on strategic desalination areas that can lead to a solution closer to the market (at least TRL6), developing such projects and ideas directly from Gran Canaria. In addition, this initiative will lay the foundations to boost the development of a final product, even though it may be far from reaching the market, in order to favour the improvement of the industry and the increase of the knowledge-based economy from Gran Canaria.

This programme will reinforce four strategic lines:

² The Technology Readiness Level (TRL) codes can be checked in "[HORIZON 2020 – WORK PROGRAMME 2016-2017 General Annexes: G. TRL](#)".

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- Employment creation.
- Talent support.
- Boost of business innovation.
- Boost of internationalisation.

Considering the above and within the scope of the DESAL+ Living Lab Platform, ITC will enforce several Pre-commercial Public Procurement (PCP) procedures in order to contribute to the general purposes of the programme (described above). Such PCP will be based on the registered subvention granted by Cabildo de Gran Canaria to ITC, as set out in "Resolución 39/2020", dated 17/09/2020, intended to develop a comprehensive, experimental programme of R&D&i linked to the exploitation of the islands' marine resources, in accordance with the financial report submitted, which amounts to a total sum of SIX HUNDRED THOUSAND EUROS (€600,000). This funding is charged to the budget item 17240/463/753000220 "AI ITC, Prog. exp. e integral activ. I+D+I expl. recursos marinos insulares (MINECO)", within the framework of the Collaboration Agreement entered into between Cabildo de Gran Canaria and the Spanish Ministry of Sciences, Innovation and Universities.

ITC is an own instrumental mean and a technical service at the disposal of the of the Public Administration of the Autonomous Community of the Canary Islands and to the entities that are linked to or attached on the Autonomous Community. Besides, ITC acts as an awarding entity in the public procurement procedure and its business purpose includes "to foster and coordinate research applied to the Canary Islands" as well as "to boost the development of the productive system of the Autonomous Community", "the promotion of the business training level of the Autonomous Community" and "to promote and facilitate the creation, the development and the assimilation of technology by companies in the Canary Islands in order to improve their competitiveness". For this purpose, this entity has the powers required to launch PCP that the DESAL+ Startups Programme needs.

The Pre-Commercial Public Procurement to be carried out is a R&D Service Contract that is exempt from the Spanish Public Procurement Law: "Ley 9/2017 de 8 de noviembre, de Contratos del Sector Público (hereinafter referred to as LCSP), por la que se transponen al ordenamiento jurídico español las Directivas del Parlamento Europeo y del Consejo 2014/23/UE y 2014/24/UE, de 26 de febrero de 2014³" that would be translated as: Law 9/2017 of 8 November, on Public Sector

³ Literal title in the original language of the Spanish Law.

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Contracts, which transposes into the Spanish legal system the Directives 2014/23/EU and 2014/24/EU of the European Parliament and of the Council, of 26 February 2014 (hereinafter referred to as the **PSCL⁴-Public Sector Contracts Law-**), in accordance with Article 8 thereof.

The purpose of the public procurement procedure is to hire startups/companies from all over the world that are characterised by their disruptive ideas and their high market projection, the development of innovative solutions in the strategic lines SL7 or SL9 of the DESAL+ Living Lab Programme, sharing risks and profits with the Contracting Body.

Therefore, the public procurement procedure is intended to support innovation in order to search for and develop pre-commercial solutions in Gran Canaria characterised by a high market projection in the field of desalination (at least, technology readiness level (TRL) 6). This initiative covers the following actions, which can be performed in different stages of the R&D Service Contract:

- Development of the innovative solution by the provision of R&D services. These developments may include the creation of prototypes to be initially validated in a simulated environment. The development and testing environment will be provided by ITC, which will make its technical and human means resources for this purpose.
- Procurement of all the studies necessary to boost and accelerate the subsequent marketing of the results. This may include the subcontracting, by the potential winners of the Pre-commercial Public Procurement procedure, of technology, mentoring and business model services, as well as support to gain access to external funding, including the preparation of the winners to gain access to the funding (Investment Readiness).

In conclusion, the aforementioned R&D Service Contracts will allow the winners of the Procurement procedure to receive support to carry out their R&D activities prior to accessing the market. By these services to be contracted, ITC has established that the Pre-commercial Procurement Procedures must foster Innovation and Entrepreneurship from the demand side. Therefore, this initiative will allow the winners of the future procurement procedures to become more competitive in the market once they have finished the procedure, since they will be impacted by the following effects:

- Securing of funding through R&D activities before their access to the market

⁴ , Spanish Law 30/2007 on public sector contracts known as the "LCSP" Its acronym in Spanish is "LCSP".

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- Validation of the developments by specialised staff and potentially by customers launching those developments
- Design of a route map for the marketing and internationalisation of the development
- Benefit of further indirect support resulting from developing the solution together with ITC
- Additionally, following the usual practice in Spain and the European Union, the winner of the procurement procedure and ITC will also share the exploitation of the results of the PCP.

3 Legal Framework of the Preliminary Market Consultation

Section 115 of the LCSP (resulting from the transposition of articles 40 and 41 of Directive 2014/24/EU) provides for that *"the contracting authorities may conduct market consultations and consult the economic operators active in the market with a view to preparing the procurement and informing the said economic operators of their procurement plans and requirements to participate in the public procurement procedure. For this purpose, contracting authorities may seek or accept advice from third parties, including independent experts or authorities or professional associations or, exceptionally, from economic operators active in the market"*.

4 Call for proposals

Before launching prospective public procurement procedures, ITC finds it appropriate to collect information about the economic operators, social agents and knowledge agents, and to understand the state of the art and to identify and specify the features of the potential solutions that may adapt best to the requirements of the challenges identified in the following strategic lines of the DESAL+ LIVING LAB Platform:

- SL7. Brine and the circular economy: solutions and processes to increase the value of brine and/or the path to minimise the discharge of brine as much as possible.
- SL9. Emerging desalination: new desalination technologies, alternative or supplementary to reverse osmosis, including new sub-processes or non-commercial changes of the current technology that improve the energy efficiency of the desalination process.

This information, or a part of this information, can be incorporated, if appropriate, to plan and prepare the terms and conditions of subsequent procurement procedures.

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5 Purpose

This Preliminary Market Consultation aims to collect the information required to prepare a potential Pre-commercial Public Procurement procedure and to inform the economic operators about the plans and procurement requirements.

This consultation aims to encourage natural and legal persons to participate and submit innovative proposals intended to respond to the challenges listed in the Appendix I (*Anexo I*) (available on the [website of the DESAL+ LIVING LAB](#) Platform) through the development of disruptive (**pre-commercial**) techniques/technologies that, in the event that they reach their maturity or readiness after several research and demonstration phases, exceed the features and specifications of the current technologies that are available in the market.

These proposals will be used to assess the market capabilities in order to define functional specifications that imply innovation and are achievable through a potential Pre-Commercial Public Procurement Procedure.

6 Participants/Proposers

The invitation to participate in this Consultation is open and aimed at natural and legal persons, whether public or private.

A same natural or legal person, whether individually or jointly with other persons, will be entitled to submit several proposals.

7 Method to submit the proposals

To submit the proposals, participants must comply with the following rules:

1. Participants must prepare their proposals by completing the form contained in Appendix II (*Anexo II*) of this call for proposals. Such appendix can be downloaded in an editable format from the [website of the DESAL+ LIVING LAB](#) Platform. The form can be accompanied and supported by any supplementary documents that the participant may think fit. Such documents can be used to develop or elaborate the proposal in greater detail, although participants are encouraged to stick to the form in order to facilitate the analysis of the proposal.
2. To be reviewed and accepted, the form must be completed in full. The information recorded in the form of Appendix II will be able to be published or disclosed at any moment. The documents attached to Appendix II may be fully or partially confidential. ITC will be entitled to publish confidential information or documents with the prior consent of the entity that has submitted the proposal.

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3. The proposals will be submitted through the website using an 2-steps e-form specifically established for such purpose at this [link](#) (see Appendix II). Each proposal must be clearly linked to only one of the challenges suggested in the consultation and its acronym must be specified.
4. Participants will be able to submit successive versions of a proposal, using the same acronym. Please, note that each proposal submitted will fully replace the previous version (e.g.: "acronymproject_v2 (3,4...n)"). For this purpose, the new proposal must include all the aspects of the previous version that continue to be valid.
5. For proposals jointly submitted by a group of individuals or entities, such group will have one single representative and, therefore, there will be only one email address for the purposes of identifying the proposal and contacting the participants.
6. The submission of the proposal will not affect the possibility of new collective or individual calls, requests for information made in writing or over the telephone, electronic means or on the website of the DESAL+ LIVING LAB Platform, or even requests for demonstrations as an advance of the solutions being developed by the natural or legal persons that are participating in this call for proposals.
7. To clarify any doubts that participants may have during the preparation of their proposals, a Frequently Asked Questions (FAQ) document will be posted and regularly updated on the [website of the DESAL+ LIVING LAB Platform](#). Besides, participants will be able to submit their queries by sending an email to desal+@desalinationlab.com, quoting "DUDA CPP DESAL+" in the subject of the message, followed by the question that they may think appropriate and that helps identify the message.
8. ITC has no obligation to fund or to accept the proposals submitted to this call. Participants will be responsible for the costs incurred in their participation in this call.

8 Technical support

ITC may obtain support from other entities in terms of legal advice and procurement, as ITC may think fit, for the proper enforcement and resolution of doubts and queries raised during the Preliminary Market Consultation.

To analyse the proposals submitted, a Technical Committee may be appointed, made up by members of the staff of the organising body and/or other public entities that may be of interest. This Committee may collect the opinion of external experts, who will be entitled to speak but not to vote in the decision-making process.

The intervention of advisors/experts or of entities providing advice on the topics that are the subject matter of the consultation (water desalination, water-energy nexus), other than those submitting

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their proposal to the Preliminary Market Consultation, is not planned. However, in the case that any direct question needs to be asked to a third party, the identity of such third party will be previously published on the LCSP and on the [website of the DESAL+ LIVING LAB Platform](#).

9 Operation of the Consultation Procedure. Application of the principles of transparency, equal treatment and non-discrimination or distortion of competition

The participation in the Preliminary Market Consultation, the contact with participants and the exchange of information will be carried out under the common principles of transparency, equal treatment and non-discrimination. Such conduct will not result in the restriction or limitation of competition and will not grant advantages or exclusive rights on a potential subsequent participant. The failure to comply with this provision will be considered as a violation of the terms and conditions hereof. In such a case, ITC will take the appropriate measures in order to ensure the compliance with the said principles, both during the development of this call and in any other subsequent public procurement procedure.

To ensure the transparency of the procedure, the availability of as much information as possible and the effective exchange of experiences and opinions, participants will specifically grant their consent for ITC to keep their necessary non-confidential information on the proposals submitted, whether fully or partially, which will be duly accessible and updated.

Participating in the Preliminary Market Consultation will not grant any right or preferential right regarding the award of the contracts that may be entered into in the future on the field of the subject matter of this call. Therefore, participating does not entail any obligation to fund or to accept the proposals submitted.

ITC will assess all the proposals submitted. If necessary, specific participants may be individually required to present their proposals in detail, to provide further information on their proposals, products or services, and/or to clarify doubts or provide demonstrations.

ITC will be entitled to hold, at any time, information and/or technical sessions, events or meetings and any other actions that may be appropriate for the proper development of the consultation, provided that the principles of equal treatment, transparency and non-discrimination are complied with. Without affecting the use of other channels, all the updated information about the consultation will be available on the said [website of the DESAL+ LIVING LAB Platform](#). The non-confidential information exchanged within the framework of this call, such as advance sheets, information documents, early demand maps, etc., will be published on this website too.

The first information session (info-day) will be held on a virtual session at the end of November 2020. Registration of attendance will be available in the [website of the DESAL+ LIVING LAB Platform](#).

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The doubts and questions raised by the economic operators during the preliminary market consultation procedure will be answered on the said website, in order to ensure that all the participants share the same information. Besides, such information will be also published in a "Frequently Asked Questions" document.

ITC will take the measures necessary to avoid conflicts of interests in the case that public procurements are carried out for the needs identified. Conflicts of interests occur when the staff working for ITC that also participates in the development of the public procurement procedure or may have an influence on the result of the tender has a direct or indirect financial, economic or personal interest that may seem that compromises his/her impartiality and independence within the context of the public procurement.

Any situation that involves or may lead to a conflict of interests during the market consultation must be immediately reported to ITC through the means or channels that may be thought fit.

10 Term to submit proposals and term of the Preliminary Market Consultation

The term to submit proposals will start on the day following the publication of this call for proposals on the Contractor Profile section, found on *Plataforma de Contratación del Sector Público* (Public Sector Procurement Platform, hereinafter referred to as **PLACSP**), in section *Documentos "Consultas Preliminares"*. The term will finish within a term of **30 calendar days** from that date.

This term may be extended if necessary. In such a case, all the individuals and entities that have participated to that date will be notified through the email address they have provided and, at least, on the "Contractor profile" section and on the website mentioned above.

The consultation will be closed once the ITC finds that, for the two challenges published:

- ITC has received sufficient information on innovative proposals for that challenge in order to start a potential innovation public procurement procedure, or
- ITC finds that the challenge has not generated sufficient interest in the market to maintain the consultation, or
- ITC finds that the opportunity to deal with that challenge is no longer available.

The closing of the call for proposals will be announced with at least two weeks' notice, publishing such information on the website mentioned above. All the individuals and entities that have participated in the consultation to that date will be also notified by email to the address from which the proposal was submitted. The notice of the closing of the call for proposals may be withdrawn at any moment by notifying the participants by the same means.

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11 Update of the Preliminary Market Consultation

ITC may publish updates of the challenge of this call for proposals by publishing an amendment of Appendix I hereof. Therefore, ITC may add new challenges or amend the existing challenges as a result of the evolution of the Preliminary Market Consultation.

All the individuals and entities that have participated in the consultation to that date will be notified by an email sent to the address they have provided. Besides, any amendments will be published, at least, on the website mentioned above and on the "Contractor profile" section.

12 Language

The official language of this Preliminary Market Consultation is Spanish. To facilitate the participation of foreign individuals and entities, the terms and conditions and the form to participate in the call for proposals will be also published in English language.

Participants will submit their answers to this Consultation or their information in Spanish or English. The contact with participants during the consultation procedure to answer the questions raised will be in Spanish and English through a FAQ document available on the [website of the DESAL+ LIVING LAB Platform](#).

13 Results and final report of the Preliminary Market Consultation

ITC will assess the proposals submitted and will be able to use them, in accordance with the provisions of section 126 of the LCSP, in order to define the functional or technical specifications that can be used in the product or service procurement procedures that may be called afterwards.

ITC will issue a final report specifying the actions carried out with regards to the Preliminary Market Consultation. Such report will contain the list of participants in the consultation and will also establish the next steps that the DESAL+ LIVING LAB Platform will take. The report will be published in plenty of time on the Public Service Procurement Platform (in Spanish, PLACSP and on the [website of the DESAL+ LIVING LAB Platform](#)).

14 Publicity

The Public Sector Procurement Platform (PLACSP) will be the preferential, main space where the call for the Preliminary Market Consultation and the final report, upon the completion of the consultation, will be posted and publicised.

Notwithstanding the above, apart from the information published on the PLACSP, ITC will make further information available to the stakeholders, on a specific website, which can be accessed on

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the following [link](#). Such information will include additional information, answers to questions (FAQ) and information on the intermediate stages between the start and the closing of the consultation.

The relevant information of the proposals that has not been marked as confidential by the participants will be published.

ITC will be entitled to publish partial reports on the consultation by a public notice and a subsequent written notice by email sent to all the participants existing as of that moment. That notice may include the following:

- Announcement of the opening and description of the Consultation.
- Announcement of the expiry of the term to submit applications to participate in the Consultation.
- New unmet needs.
- Update on the unmet needs.
- Specific aspects of the unmet needs.
- Announcement of the end or termination of the Consultation procedure.
- Results of the Consultation.
- Agreements with other public procurers.
- Any other information that may be deemed appropriate or relevant for the participants.

Besides, the contracting body, if necessary, will simultaneously use any other appropriate means of publicity (the internet, Official Gazettes, local publications, Official Journal of the European Union/TED, etc.).

15 Personal data protection and confidentiality

ITC will store the personal details of the participants in the procedure for the exclusive purposes of establishing a channel of communication with the proposers during the Preliminary Market Consultation procedure. These data will be included in the participation form of Appendix II, in which the participants will specifically grant their consent and acceptance of the terms and conditions of this call for proposals, including the possibility to disclose their participation in the procedure in the cases this may be appropriate. Regarding these data, the participants will be entitled to exercise the rights of access, modification and cancellation for the exclusive purpose to facilitate contact during the Preliminary Market Consultation.

To ensure the transparency of the procedure, the availability of as much information as possible and the effective exchange of experiences and opinions, participants will specifically grant their

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consent for ITC to keep the information on the proposals that they have marked as confidential, whether fully or partially, which will be duly accessible and updated.

Without affecting the possibility to disclose the information contained in the proposals and in the definition of the specifications of the projects, the Administration will not be entitled to disclose any commercial technical information, if any, that participants have provided and marked as confidential.

For this purpose, participants will specify the documents or technical or commercial information of their proposal that is confidential. General statements declaring that all the information is confidential will not be accepted. The confidential nature of the information will protect, in particular, technical or commercial secrets and any confidential aspects of the solutions. Thus, the contents of the information entered in the form of Appendix II will not be considered as confidential and may be published. Only the data attached to this form may be marked as confidential, whether fully or partially. This circumstance must be clearly indicated (in any manner or on the margin) by the participant in the appropriate document.

16 Rights of Exploitation of Intellectual or Industrial Property

The text containing information about potential solutions, to be registered on this market consultation, will not contain any reference to trademarks, patent licenses or any product or element protected by intellectual or industrial property rights.

Similarly, the technological content of the solution itself should preferably be free from these references. In case that the solution is based on patented technology or subject to Intellectual and Industrial Property Rights (IPRs) belonging to the applicant or third parties, it must be explicitly stated in the proposal, indicating which components of the solution are protected, in what way and who holds the ownership; also a statement must be provided where the owner indicates his/her willingness to assign the rights of use or exploitation (IPRs) to the ITC contracting body.

The use of the content of the proposals is limited exclusively to its potential insertion in the project definition process that will be implemented among the specifications of a possible subsequent contracting procedure.

17 Public procurement

From the ideas of innovative solutions collected as a result of this call, ITC will be entitled to define the technical and/or functional specifications that will act as a basis to determine, with any necessary precisions, the purpose of the procurement of the subsequent Pre-Commercial Public Procurement regarding the appropriate challenges.

Such potential subsequent public procurement procedure will be open to all the bids that comply,

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if applicable, with the terms and conditions of such procedure, regardless whether they have participated or not in this Preliminary Market Consultation.

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APPENDIX I.

CHALLENGE 1: BRINE

Exploitation of brine from desalination plants within the framework of the circular economy strategy: solutions and processes that allow the recovery of brine in transit to the minimum possible discharge. .

The following specifications are provided by way of guidance. These specifications may evolve as the state of the art is updated in each of the fields.

Background

The Canary Islands have become pioneers in desalination. The first desalination plant in Europe was installed in Lanzarote in 1964. Since then, the number of desalination plants on the islands has dramatically increased. The desalination capacity exceeds 600,000 m³/d (DGA, 2019), a figure that reflects the high volume of brine that is discharged into the sea.

Desalination, is a basic instrument for the cycle of water on the islands. Only on the island of Gran Canaria, desalination accounts for 50% of the total offer (PHI Gran Canaria, 2nd cycle) and a high percentage of Gran Canaria's GDP depends on the availability of this water, which not only supplies most of the inhabitants in Gran Canaria, but also the tourism industry and almost the entire secondary sector on the island. Currently, a daily brine discharge close to 145,000 m³ per day is estimated, only on the island of Gran Canaria, (PHI Gran Canaria, 2nd cycle).

Seawater desalination plants have experienced a huge increase over the last decade, with a current estimated daily output of desalinated water of approximately 95.37 million m³/d (GWI, 2018). Every desalination plant, regardless of the technology used, creates a by-product known as brine, with a concentration of salt higher than the feed water in proportion to the plant's recovery rate. The daily volume of brine generated by desalination plants all over the world is estimated at 141.5 million m³/d (GWI, 2018).

Therefore, processes and technologies intended to increase the value of brine and to turn brine into a raw material must be encouraged and boosted, not only because it is necessary to incorporate concepts of circular economy into the industries, but also because of the need to reduce the environmental impact that brine has on the marine environment.

State of the art

The technologies and processes intended to treat the brine coming from sea water desalination plants have been the focus of attention of a large number of scientific-technological centres and

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companies over the last years, resulting in a considerable number of pilot solutions aimed to fully or partially increase the value of brine and to obtain added-value compounds or by-products.

Several emerging valorisation initiatives are currently at a development stage. These actions aim to extract chemicals and use them on site in the desalination plants or as a supply for other industries. This supports the circular economy strategy, highly relevant in the European Union's policies.

The relative stability of seawater in terms of chemical composition means that projects for recovering chemicals from brine can be easily extrapolated to other plants, depending mainly on the recovery rate. . The pre-treatment phases are of general interest, where the usual divalent cations and anions in brine (especially Mg^{2+} , Ca^{2+} y SO_4^{2-}) are the main objective to generate chemicals. In addition to the final salt conversion phase in which mainly Na^+ and Cl^- , present in a high proportion in the brine, can be converted into valuable and necessary chemicals in the industry, even in the desalination plant itself. Besides, due to the presence of several high-value metals in brine, such as lithium, the extraction of metals has become of great interest, as long as this can be carried out in a sustainable and economically feasible way .

Likewise, the exploitation of the potential energy of brine, using technologies that take advantage of the osmotic gradient between brine and a low-saline solution in order to produce energy, is being fully developed. This approach would also help to dilute the brine discharged to the sea, minimising its adverse effect on the marine environment.

Carbon Capture and Utilisation (CCU) solutions, combined with brine treatment technologies, is another interesting approach that may take advantage of significant synergies.

Unmet need

It is necessary to find solutions, processes or technologies that increase the value of the brine coming from sea water desalination plants and, at the same time, minimise the volume that is discharged back to the sea. These initiatives must be technologically feasible, robust and applicable at a large scale. Besides, they must generate an added value, be able to produce profit and, at the same time, must be environmentally friendly.

In the field of Circular Economy, the European Commission adopted a Circular Economy Action Plan in 2015, with an investment exceeding 10 billion euros of public funding for circular-economy-related projects. A part of the funding comes from the Research & Innovation Plan Horizon 2020, implemented by the European Union to boost breakthroughs, discoveries and world-firsts, by taking great ideas from the labs to the market. The European Commission has suggested that this programme should be continued with the new Horizon Europe programme, to be funded with a

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funding of 100 billion euros from the 1st of January 2021. This funding will be aimed at research and development projects that include, in particular, projects for the promotion of the Circular Economy and the Blue Economy. The European Commission published a New Circular Economy Action Plan in March 2020, which comprises the new European strategy to continue to develop the Circular Economy concept in Europe, transforming waste into resources, as in the specific case of increasing value of brine, i.e., the purpose of this technological challenge.

The Government of the Canary Islands is firmly committed to this European Action Plan and currently drafting the Circular Economy Strategy of the Canary Islands, which will be in the approval phase throughout 2020. The valorisation of brine will be a cornerstone of this strategy.

This consultation aims to identify solutions from a technology readiness level 2 (TRL2) that, to go forward, require to be supported by a pre-commercial public procurement, on their path to become commercial solutions with a high projection in the desalination market (achieving at least the TRL 6 within a term of 18 months). The R&D Service Agreement can be enforced in different phases through the public procurement procedure:

- Feasibility, market and business mentoring studies.
- Development of the innovative solution at pilot scale. These developments may include the purchase and construction of equipment, the creation of prototypes and pilots to be initially validated in a simulated environment of real brine. This development and testing environment will be provided by members of the DESAL+ Living Lab platform, making their technical means, their staff and their desalination infrastructure available to the programme.
- Validation of the solution at pilot scale in a real environment through the DESAL+ Living Lab, since the platform and its network of partners in the Canary Islands will provide their facilities, capabilities and skills for such purpose.
- Procurement of any studies required to boost and accelerate the subsequent marketing of the results. For this purpose, the individuals or entities awarded with the contract of the Pre-commercial Public Procurement may subcontract technological mentoring and business model services, support to gain access to external funding, being accompanied in the process of accessing to funding (Investment Readiness).

Thus, this initiative seeks an innovative solution with a non-commercial technology or process for the valorisation of the brine coming from sea water desalination plants that, after accessing to a pre-commercial public procurement procedure, continues to develop its R&D project in several phases to become a product with a high market potential after an 18-month term.

Innovative aspects of the project

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The goal of the project must be the partial valorisation of brine, of added-value products coming from or generated from brine.

The development degree of the project to be presented must have achieved at least the TRL 2. The project's innovative approach towards emerging, disruptive technologies to be validated in the lab will be considered. The project must demonstrate its potential, scalability and feasibility (at least TRL 6 within 18 months).

The following innovative aspects of the projects will be positively assessed:

- Circular economy. Promotion of circular economy not only for the main purpose of this project. The aim is to reduce the disposal, to generate new products from brine, using it directly or indirectly as a reagent for another process. The use of waste from another industry to generate synergies with other industries in sustainable manner, minimising the generation of waste, will also be positively valued .
- On site solutions in desalination plants. To increase the value of brine directly in the desalination plant, providing components to be directly used in these facilities. Or the implementation of a technology capable of recovering energy from the use of brine, reducing the power necessary in the process and, therefore, the emissions of CO2 into the atmosphere.
- Valuable products and diversification of the industrial activity. The generation of one or several chemicals related to the local needs, e.g., one product that largely depends on the foreign market.
- Green chemistry. A decline in the use of harmful chemicals in the idea/project, due to either a shift to a more sustainable product or the full avoidance or elimination of harmful chemicals in the process.
- Industry 4.0. Digitalisation of the processes, fostering a higher automatisation, connectivity and globalisation of the system.
- Increase of the produced water recovery rate. Any process that directly or indirectly involves an increase in the recovery rate of the plant in comparison to the initial feed, whether generating desalinated water with the necessary quality or brine with favourable conditions to be redirected to the feed flow of the reverse osmosis plant.
- Solutions representing or involving regulatory gaps or potential solutions without a clear regulatory framework will not be positively considered.

General objectives:

The resolution of the challenge aims:

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- Based on a pre-commercial public procurement procedure, to take advantage of brine in desalination plants within the framework of the circular economy strategy.
- To identify solutions and processes increasing the value of brine in the path to minimising the disposal of brine as much as possible.

Specific objectives

The major specific objectives of the challenge include:

- To generate the production of one or more valuable chemical compounds with the sufficient purity to be marketable or to be used on site in the desalination plants.
- To reduce the environmental impact that brine has on the marine environment, reducing its concentration and/or volume.
- To define a technically feasible proposal, considering the energy, materials or raw materials required to be applied in the market and, from the energy point of view, to define an attractive proposal for the existing desalination plants.
- Expectation to reach developments with the capability to be fed by renewable energies (the integration of renewable energies will not be the purpose of the Procurement procedure; the potential use of renewable energies will be only probed in this procedure).
- Achieve the diversification of the Canary Islands industrial sector.

Expected results

To enforce a R&D project, supported by ITC, from the state of the art or well-established proofs of concept (from the TRL2) to a validated prototype in lab or real conditions at a small stage (at least TRL 6) within an estimated term of 18 months and with strong possibilities to market the solution upon the end of the Pre-commercial Public Procurement procedure, both locally and internationally. The successful participants completing all the stages of the Public Procurement procedure may gain access to the direct procurement of R&D services and to external support services provided by ITC. These results are required to carry out the feasibility studies, the market plan, the purchase of equipment, the installation, demonstration, etc. of the concept, for a total maximum value of €200,000 per development.

Specifically, this project is expected to provide a real, attractive solution to be implemented and even exported to other plants located all over Spain and abroad. Therefore, the project must be technically and financially feasible and adaptable to other plants or related industries.

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The expectation is to implement a pilot plant resulting from the project proposed, which must be versatile and scalable, with the capability to deal with small unexpected changes in the flow or feed or even to adapt to any improvement/change that may be performed afterwards.

The project should consider parameters such as the lifetime of the plant and its components, the operational and maintenance procedures, the spare parts required, together with a safety and health plan.

Impact indicators to be considered

The projects submitted are expected to meet the following indicators:

- Economic profit generated from brine.
- Cost reduction as a result of a decline in the import of chemicals.
- Reduction of the flow/concentration of brine disposal in the case that the solution is provided on site.
- Reduction of the desalination plant's carbon footprint in case of energy solutions.
- Employment increase.

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CHALLENGE 2: EMERGING DESALINATION

Emerging desalination: new desalination technologies, whether alternative or supplementary to reverse osmosis (SL9), including new non-commercial sub-processes or changes of the current technology that improve the energy efficiency of the desalination process.

The following specifications are provided by way of guidance. These specifications may evolve as the state of the art is updated in each of the fields.

Background

The industrial desalination technologies have evolved from the first thermal-evaporation plants to the reverse osmosis plants, which are the most used nowadays (IDA, 2018), with a decreasing specific energy consumption. Membrane processes are also applied to treated wastewater, in order to reuse it for irrigation purposes.

The current major challenges in membrane desalination can be classified in the following main three groups: 1) minimisation of the power consumption, 2) optimisation of the membranes for a higher flow and the minimisation of fouling and 3) minimisation of the environmental impact, improving the management of brine disposal (development of zero liquid discharge (ZLD) systems).

The real minimisation of the specific energy consumption is addressed from several standpoints: from the improvement of the efficiency of the electromechanical equipment (pumps and energy recovery devices), the hybridisation of processes, the development of innovative technologies and the improvement of membranes (providing a higher permeability and a higher fouling resistance). With the development of increasingly efficient energy recovery systems, the levels of energy consumption have reduced below 2.5 kWh/m³ for seawater reverse osmosis, approaching the thermodynamic minimum energy. Over the last decade, forward osmosis (FO) has been considered as the greatest hope for the reduction of energy consumption. In practice, FO has significant constraints to be implemented, in particular, the energy required for the recovery of the draw solution, linked to the low flow of the FO membranes. However, FO features significant advantages, such as a fouling pattern lower than that in RO, an increased water recovery capacity and a lower passage of salt (Long et al., 2018).

The improvement of the membranes properties, intended to reduce their fouling propensity and to increase their permeability, has a direct impact on the OPEX and CAPEX. The fouling of the membrane depends on a number of factors, especially the pre-treatment efficiency and the intrinsic features of the membranes. The progress achieved after the introduction of carbon nanotubes (CTN) must be emphasised, as they promise a very high flow rate and a low fouling rate (Ralph, 2017). The same applies to the development of biomimetic membranes, based on or inspired by biologic concepts, ideas or systems (Yue-xiao Shen, 2014), such as the use of Aquaporin Proteins

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(AQP), which are known to be natural water channels in the hydration mechanism of cell membranes. Over the last decades, artificial water channels (AWC) have been developed in an attempt to build artificial analogues of Aquaporin proteins (Istvan Kocsis, 2018; Shen et al., 2019). Although further research is required, graphene-based materials also show a huge potential for the development of future membranes, given their high selectivity and permeability, polarisation and fouling resistance and chemical and physical stability (Homaeigohar & Elbahri, 2017) (Boretti et al., 2018). These technologies are theoretically applicable both to RO and nanofiltration (NF) and FO (Ke Zheng, 2018). On the other hand, to minimise fouling, significant progress is being made in the design of feed spacers, using 3D printing technologies (Siddiqui et al., 2016).

The zero liquid discharge (ZLD) processes are more and more considered as a part of a sustainable strategy for the supply of water, especially in industrial waters with harmful components or in brackish water plants in areas far from the coastline with no option to make safe discharges to the natural environment. Traditionally, ZLD has been employed using evaporation/crystallisation techniques with a high-energy consumption. However, over the last years, intensive work has been carried out on the application of energy efficiency techniques, based on membranes intended to treat high-saline ranges, such as high-concentration RO and crystallisation membranes (Ruiz Salmón & Luis, 2018). Membranes with a higher resistance against the hydraulic pressure and against scaling are required, as they would significantly increase the RO recovery rate. The emerging technologies are mainly based on membrane distillation (MD), forward osmosis (FO) and electro dialysis/reversal electro dialysis (E/EDR). Since these technologies are still in a non-mature development stage (Yaqub & Lee, 2019), they are usually combined with nanofiltration (NF) stages in order to avoid scaling issues. MD crystallisation provides significant advantages, but the problems with membrane scaling must be addressed (Ruiz Salmón & Luis, 2018). Furthermore, the ED technology is also becoming more and more popular in the ZLD field, as they incorporate new configurations that restrict the issues with scaling, such as Electro dialysis Metathesis (EDM) (Nunem & Panicot, 2018).

In the Canary Islands, due to water scarcity, a wide range of currently available innovative desalination technologies and systems have been tested and improved over time. In order to increase the existing knowledge, the purpose is to study potential emerging technologies for industrial desalination applications:

- Forward osmosis.
- Pervaporation.
- Membrane distillation.
- Capacitive deionisation.
- Graphene nanopores

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- Aquaporin biomimetic membranes.
- Microbial fuel cells.
- Electrolysis metathesis

State of the art

An entire series of emerging desalination technologies is being developed and drawing the interest of both the scientific community and the industrial water sector. Forward osmosis in combination with other membrane technologies is conceived as the most promising emerging desalination technology.

Current studies are analysing hybrid processes that improve the overall energy consumption, the permeate quality and the minimisation of the osmosis membrane fouling, taking advantage of the osmotic potential of the concentrate of the RO process by using two different strategies: a) through the osmotic dilution of the feed, usually employing an external source of more dissolved water (e.g., treated wastewater), a reduction of the specific energy consumption to 0.41 kWh/m³, for a degree of dilution of 33.33%, can be obtained (Kim et al., 2019); b) use of the osmotic energy of the concentrate, e.g., pressure retarded osmosis (PRO) or reverse electrolysis (RED). PRO generates hydraulic energy using the saline gradient between solutions with different concentrations. This technique is closer to be marketed in comparison with RED and, theoretically, it can lead to a decline in the energy consumption up to 0.56 kWh/m³, although the real rate is much lower (Kim et al., 2019). RED transforms the osmotic energy of the concentrate into electricity by an electrolysis cell with selective ion-exchange membranes. In all the cases, a low saline flow rate is necessary to achieve a sufficient osmotic gradient.

Even though the so-called emerging technologies appeared as a (failed?) attempt to replace reverse osmosis as a technology with a lower power consumption, it seems that they may be applied to brine differently (producing energy, minimising the discharge, etc.) or applied in hybrid systems combined with reverse osmosis, in order to improve the system's overall efficiency. Desalination technologies may become even more sustainable by improvements that use emerging technologies, which significantly enhance their energy efficiency and reduce the consumption of chemicals in the process. There is a technological challenge consisting of offering a free-chemical desalination technology, producing fresh water from seawater without the need of chemicals.

The emerging water treatment technologies in the 21st century must deal with a large number of major challenges. The cornerstone of these challenges is the production of good quality water by efficient processes, both from the energy and financial perspective. Capacitive deionisation, with its capability to store energy while reducing the concentration of salt of the influent water, is especially attractive and stands out as a real alternative to the existing desalination processes.

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Recent research has devoted extensive efforts to study new materials (zeolites, carbon nanotubes, graphene derivatives, etc.) that can be applied to emerging water treatment technologies such as forward osmosis, microbial cell desalination or capacitive deionisation (CDI).

The CDI applications on which research has been done include the desalination of brackish and sea waters (least studied), the softening of water, the production of ultra-pure water, the elimination of specific pollutants such as heavy metals, nitrates or boron, or the recovery of water from the brine produced in reverse osmosis plants. Within these applications, the treatment of brackish water (saline concentration < 5g/L) is probably the application that has drawn the most interest. In this field, Dutch researchers have recently shown the feasibility of the use of CDI in comparison to RO in terms of energy when the salt concentration is below 3 g/L. Another potential area of application of CDI is the reduction of the calcium and magnesium concentration in water ("water softening").

Likewise, the exploitation of the potential osmotic gradient between brine and a low-saline solution in order to produce energy is being fully developed, using technologies such as FO and PRO. This approach would also help to dilute the brine that is rejected to the sea, minimising its adverse impact on the marine environment.

Unmet need

The Canary Islands have become pioneers in desalination. The first desalination plant in Europe was installed in Lanzarote in 1964. Since then, the number of desalination plants in the islands has increased dramatically. The desalination capacity exceeds 600,000 m³/d (DGA, 2019), a figure that reflects that high volume of brine that is discharged into the sea.

Desalination, however, is a basic instrument for the water cycle in the islands. Only in the island of Gran Canaria, desalination comprises the 50% of the total offer (PHI Gran Canaria, 2nd cycle) and a high percentage of Gran Canaria's GDP depends on the availability of this water, which not only supplies most of the inhabitants in Gran Canaria, but also supplies the tourism industry and almost all the secondary sector in the island. According to current estimates, only in Gran Canaria, a brine volume close to 145,000 m³ per day is rejected to the sea (PHI Gran Canaria, 2nd cycle).

It is necessary to find solutions, processes and technologies that help to reduce the carbon footprint and the volume of the brine discharge from desalination plants, while also reducing the consumption of chemicals used in the processes, the most part of which are discharged together with the brine. These initiatives must be technologically feasible, robust and applicable at a large scale and, at the same time, environmentally sustainable.

This consultation aims to identify non-commercial solution (at least TRL2) requiring support to progress by a pre-commercial public procurement procedure in their path to become commercial

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(or virtually commercial) solutions with a high projection in the desalination market. The R&D Service Agreement can be enforced in different phases through the public procurement procedure:

- Feasibility, market and business mentoring studies.
- Development of the innovative solution at pilot scale. These developments may include the purchase and construction of equipment, the creation of prototypes and pilots to be initially validated in an environment. This development and testing environment will be provided by members of the DESAL+ Living Lab platform, making their technical means, their staff and their desalination infrastructure available to the programme.
- Validation of the solution at pilot scale in a real environment through the DESAL+ Living Lab, since the platform and its network of partners in the Canary Islands will provide their facilities, capabilities and skills for such purpose.
- Procurement of any studies required to boost and accelerate the subsequent marketing of the results. For this purpose, the individuals or entities awarded with the contract of the Pre-commercial Public Procurement may subcontract technological mentoring and business model services, support to access to external funding, being accompanied in the process of accessing to funding (Investment Readiness).

Therefore, the aim is to find innovative solutions using non-commercial emerging technologies, through standalone or hybrid solutions by which some competitive advantages can be achieved: to reduce the discharge or disposal of brine, to achieve a chemical-free desalination and/or to significantly reduce the specific energy consumption; besides, after gaining access to the pre-commercial public procurement procedure, the R&D solution must progress across different phases or stages to become a product with a high potential in the market.

Innovative aspects of the project

The project must be perceived as an efficient, competitive alternative or supplement to reverse osmosis. The necessary support should help this technology accomplish different goals: to minimise the discharge of brine, to achieve a chemical-free desalination process, to increase the energy efficiency or to reduce the specific energy consumption.

The development degree of the project to be presented must have achieved at least the TRL2. The project's innovative approach towards emerging, disruptive technologies to be validated in the lab will be considered. The project must demonstrate its potential, scalability and feasibility to achieve the intended pre-market maturity within a term of 18 months.

The following innovative aspects of the projects will be positively evaluated:

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- Technologies alternative and/or supplementary to reverse osmosis using non-commercial sub-processes or modifications requiring research to assess its feasibility in real conditions.
- Circular economy. Promotion of circular economy, not only for the main purpose of this project, but also to reduce the discharge of brine or to minimise its impact and to generate new products from brine (ZLD).
- Valuable products. The implementation of a technology with the capability to use the osmotic energy of brine, reducing the energy required in the process and, therefore, CO2 emissions into the atmosphere, while also diluting the brine flow, minimising the impact of the discharge.
- Green chemistry. A decline in the use of harmful chemicals in the project or in previous or subsequent stages of the desalination process or its complete elimination, due to either a shift to a more sustainable product or the full avoidance or elimination of harmful chemicals in the process.
- Increase of the produced water recovery rate. Any process that directly or indirectly involves an increase in the recovery rate of the plant in comparison to the initial feed, whether generating desalinated water with the necessary quality or brine with favourable conditions to be redirected to the feed flow of the reverse osmosis plant.

General objectives:

The Pre-commercial Public Procurement procedure wishes to work on emerging seawater desalination technologies: new desalination projects, whether alternative or supplementary to reverse osmosis, including new non-commercial sub-processes or changes of the current technology that improve the energy efficiency of the desalination process.

In other words:

- Based on a pre-commercial public procurement procedure, the aim is to progress in the technological readiness level (TRL) of a solution that helps achieve, within a few years, a technology more efficient than those currently available.
- To progress, within a term of two years, in a development that can be tested at pilot scale (small scale).
- To identify solutions and processes reducing the energy consumption of the process clearly below 2 kWh/m³ by improving, implementing or hybridising technologies. The contribution of renewable energies (RE) will not be considered in the case that its use is exclusively intended to reduce the carbon footprint but it does not result in an improvement of the energy efficiency of the process.

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- Improvement of the properties or configuration of the membranes (flow increase, reduction of the fouling propensity, etc.).

Specific objectives

The major specific objectives of the challenge include:

- To define a technically and financially feasible proposal, attractive to the operators of desalination plants, intended to increase the output of quality water and to reduce the overall energy consumption of the process.
- To reduce the environmental impact caused by the brine discharge into the marine environment, reducing the concentration by the dissolution and/or the volume of the brine (zero liquid discharge (ZLD) technologies).
- To achieve significant advances towards a more sustainable, chemical-free desalination process.

Expected results

To enforce a R&D project, supported by ITC, from the state of the art or validated proofs of concept (from the TRL2) to a validated prototype in lab or real conditions at small scale (at least TRL 6), within an estimated term of 18 months and with strong possibilities to market the solution upon the end of the Pre-commercial Public Procurement procedure, both locally and internationally. The successful participants completing all the stages of the Public Procurement procedure may gain access to the direct procurement of R&D services and to external support services provided by ITC. These results are required to carry out the feasibility studies, the market plan, the purchase of equipment, the installation, demonstration, etc. of the concept, for a total maximum value of €200,000 per development.

Specifically, this project is expected to provide a real, attractive alternative to be implemented and even exported to other plants located all over Spain and abroad. Therefore, the project must be technically and financially feasible and adaptable to other plants or related industries.

The expectation is to implement a pilot plant (small scale) resulting from the project proposed, which must be versatile and scalable, with the capability to deal with small unexpected changes in the flow or feed or even to adapt to any improvement/change that may be performed afterwards.

The project should consider parameters such as the lifetime of the plant and its components, the operational and maintenance procedures, the spare parts required, together with a safety and health plan.

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Impact indicators to be considered

The projects submitted are expected to meet all or several of the following indicators:

- Reduction of the carbon footprint in the desalination process through a decline in the energy consumption of the process.
- Reduction of the volume or flow of the brine discharge (zero liquid discharge (ZLD) technologies).
- Environmental benefit as a result of the impact caused by the disposal or brine discharge.
- Cost reduction as a result of the decline in the use of chemicals.
- Increase of the efficiency of the desalination process through improvements of the membrane properties (higher flow, lower fouling).
- Generation of valuable by-products, apart from desalinated water.

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APPENDIX II. PARTICIPATION FORM

This participation form is available on Plataforma de Contratación del Sector Público (Public Sector Procurement Platform), under "Consultas Preliminares" (Preliminary consultations). However, this form must be completed (step No.1 and No.2 with additional document in pdf format) directly through the [website of the DESAL+ LIVING LAB Platform](#).

All the section of the participation form must be fully completed to be assessed.

BASIC DETAILS		
Name of the proposing entity		
Name of the proposal		
Acronym		
Challenge that the proposal deals with (tick one box only)	<input type="checkbox"/> BRINE <input type="checkbox"/> EMERGING DESALINATION	
DETAILS OF THE CONTACT PERSON/REPRESENTATIVE		
Contact person (or representative in case of joint proposal)		
Telephone		
Email		
Address		
DETAILS OF THE PROPOSING ENTITY/INDIVIDUAL		
Natural person	<input type="checkbox"/>	
Legal person	<input type="checkbox"/>	
Industry or field of business (CNAE ⁵ code):		
Type of entity (self-employed, private company, public company, research centre, university, technological centre, other):		
Joint proposal submitted by several natural or legal persons	YES <input type="checkbox"/>	NO <input type="checkbox"/>

5 CNAE: Spanish Business Activity Classification code.

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Please, tick YES or NO			
Current size of the entity (no. of staff members)			
Sites and main R&D resources (staff and materials) in the EU, Spain and the rest of the world			
Total turnover of the entity for the last 3 years (€)	2018	2017	2016
ADDITIONAL INFORMATION			
For the last 3 years, does a part of the turnover of your entity come from technologies similar to the one included in this proposal? Please, answer YES or NO	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
If you have answered YES in the previous question, please state the approximate turnover for the last 3 years coming from technologies similar to the technology included in this proposal (total amount for the 3 years)			
Do you think that your entity has relevant references and experience to undertake the challenges that you aim to address? Please, answer YES or NO	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
If you have answered YES in the previous question, please state the certifications (max. 300 characters)			
Do you think the staff of your entity has specifically relevant professional capabilities and qualifications to undertake the challenge that you aim to address? Please, answer YES or NO	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
If you have answered YES in the previous question, please state the qualifications (max. 300 characters)			
Have you invested in R&D over the last 3 years? Please, answer YES or NO	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
If you have answered YES in the previous question, state the amount invested over the last 3 years (overall amount for the 3 years)			
Has your entity received public funding from a competitive tender for R&D projects over the last 3 years? Please, answer YES or NO	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
If you have answered YES in the previous question, state the amount of funding received			

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over the last 3 years (overall amount for the 3 years)		
For the challenge presented, provide detailed information regarding research done, development of solutions, publications, etc., completed or ongoing, on a subject matter similar to the challenge put forward	Research. Description in detail. Development of solutions. Description in detail. Publications. Description in detail. Other. Description in detail.	
Experience related to the entire or a part of the challenge (not binding to participate in the consultation)		
Do you have experience in desalination? If so, please state the main projects you have participated in.	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Do you have experience in industrial and process design? If so, please state the main projects you have participated in.	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Do you have experience in the valorisation of brine? If so, please state the main projects you have participated in.	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Do you have experience in the study and testing of emerging desalination solutions? If so, please state the main projects you have participated in.	YES <input type="checkbox"/>	NO <input type="checkbox"/>

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Statutory statements

I hereby authorise ITC to use the contents of the proposals. Such use will be exclusively limited to the potential inclusion of the contents thereof in the process to define the lines of action, to be specified in the potential terms and conditions of prospective tenders to be arranged later on as a Pre-commercial Public Procurement process.	<input type="checkbox"/>
The proposal submitted is free from commercial patents, copyrights or any other author's or business' rights that may prevent its free use by ITC or any other entity collaborating in the development of prospective projects.	<input type="checkbox"/>

Authorisation to use of the data provided (please tick YES or NO)

Warning: I hereby authorise ITC to incorporate this information into a file for the purposes of managing the details of the participants in the market consultation, subject to the responsibility of ITC, provided that the users do not state otherwise. The rights of access, rectification, cancellation and objection can be exercised by sending a notice to the following email address: lpd@itccanarias.org.

YES NO

This information, or a part of it, will be published in the conclusions of the Preliminary Market Consultation in order to facilitate the collaboration between the participants, as well as with stakeholders that have not participated in the consultation.

(In order to keep the technical aspects of the proposals confidential, this second part of the questionnaire will be provided by a report attached to the participation form)

Description of the proposal of solution to the challenge

Brief summary of the solution proposal: functional specification (max. 1,250 characters) <i>Description of the potential idea that may meet the need presented. Please, describe it from a functional approach</i>	
Expected duration for the implementation of the proposal put forward (months)	
Estimated cost of the development of the solution put forward (€) (between €100,000 and €200,000), including studies, design, equipment, installation of the controlled demo at appropriate scale.	
Phases comprising the proposal, specifying the expected results at the end of each phase and the validation method proposed to assess such results	
Is the project put forward in line with your business strategy? Please, explain the line and how	

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Is your entity experienced in developments related to the project put forward? ¿Which ones? (Please, provide details for each project: year of implementation, amount, brief description of the results)			
Innovative elements (new technologies and innovative solutions delivered) or expected R&D results. Please, specify the distinguishing elements of your proposal in comparison to the products and services available in the market (max. 850 characters)			
Technological needs, laboratory, testing spaces, etc. to verify your proposal (please, state an example)			
Level of current maturity of your solution (in case of knowing the level of technological readiness (TRL ⁶) of your proposal, please state)			
R&D results expected (max. 850 characters)			
Please, list the regulations and laws associated with the need presented			
In your opinion, is there any specific barrier or limitation for the deployment of the product in the market? Which one?			
Is the scope of the project present clear and feasible?			
State the services provided by third parties that may be required, both for the development and the market launch of the product, in order to maximise the feasibility of your proposal and the subsequent commercial success			
In comparison to other proposals, which are the main advantages of the solution you are putting forward? Please, state the distinguishing values of the proposal			
Regarding the Intellectual and Industrial Property Rights (IIPR), based on the	<table border="1"> <tr> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> </tr> </table>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
YES <input type="checkbox"/>	NO <input type="checkbox"/>		

6 TRL codes can be checked on [HORIZON 2020 – WORK PROGRAMME 2016-2017 General Annexes: G. TRL](#)

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characteristics of your entity, does your entity have restrictions to share IIRP with the contracting body or to establish a royalty on prospective sales of the solution put forward?		
If you have answered YES in the previous question, please state which ones. If there are no restrictions, which is the percentage that may be shared with the contracting body? Which percentage of the sale price may be established as a royalty?		
In your opinion, what are the main risks of your project?		
Do you plan to participate in prospective tenders related to the challenge?	YES <input type="checkbox"/>	NO <input type="checkbox"/>

List of documents/attachments provided

In the case that you have provided documents attached, please state the document accompanying your proposal and provide further information about the idea put forward.

File name:	Brief description:	Confidential*
	Description of the proposal of solution to the challenge <u>(part 2 of the form - mandatory)</u>	<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>

*Please, tick the box in the case that the corresponding document is confidential.