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1 Aim

- 1.1 The Bio-based Innovation Student Challenge – Europe (BISC-E) aims at stimulating entrepreneurship in bio-based fields through curricula at educational institutions at all levels. The programme offers student teams opportunities to practice entrepreneurship by addressing relevant technological, environmental, or societal challenges with innovative bio-based solutions.
- 1.2 The student teams can test and measure their proposals in competitions at national and international European levels, judged by international experts and the bio-based industry.
- 1.3 Each student team can practice performance to collectively reach pre-set goals in a multidisciplinary and diverse team, anticipating the working environment in the bio-based industry and the bioeconomy in general. This working environment is characterised by a high level of innovation, pursued by international, multidisciplinary, and diverse teams.
- 1.4 The student teams should make proposals that can contribute to creating a sustainable and circular economy, through bio-based solutions that can realise net-zero greenhouse gases emissions, zero pollution, protection and enhancement of biodiversity and environmental sustainability in general.

2 Structure and responsibilities

- 2.1 The Bio-based Industries Consortium (BIC) has adopted BISC-E and, since November 2022, owns all associated properties.
- 2.2 National BISC-E programmes are the basis of BISC-E. BIC's vision is that national BISC-E programmes are a partnership between academia (universities) and industry (companies), with the engagement and support of the government (e.g., via the national representative in the States Representative Group (SRG) of the partnership between BIC and the EC under HE (Circular Bio-based Europe Joint Undertaking – CBE JU).
- 2.3 The target countries for national BISC-E programmes are the EU Member States (MS) and the Associated Countries (AC; associated to the European framework programmes).
- 2.4 BIC will nominate a National Coordinator (NC) in each country (see 2.3) from the expressed interest/willingness through a survey thereto. Upon acceptance of this nomination, BIC appoints the NC and announces this to academia, industry and the SRG representative in the country.
- 2.5 The NC is either a university, a Research and Technology Organisation (RTO), a company, or a cluster of universities or companies. The NC needs to appoint a contact person to serve as the focal point for BIC and the European Coordinator (see 2.12). This contact person is further referred to as the 'NC' in this Regulation.
- 2.6 The objective is to nominate/appoint the NC on a rotational basis, to share this responsibility among different actors in the country. The rotation frequency could differ among the countries and should be on a 2-3-years basis.
- 2.7 The key task of the NC is to organise the national BISC-E by inviting all national universities to participate with student team(s) as per Article 2 4-6. A national BISC-E should be run with student teams from at least two different national universities.
- 2.8 If in a country there is only one motivated student team willing to participate in BISC-E, BIC will request another (preferably adjacent) country to include this student team in its national BISC-E programme.
- 2.9 Each country is free to select the format of its national BISC-E. Depending on the number of participating student teams, the NC can organise (a) first round(s) to select the student teams for the national final. A national BISC-E (final) could be run as part of an existing relevant (international) event in the country. The first round(s) if any, and the final could be either virtual, physical, or hybrid.

- 2.10 The NC also has the task to form a national jury to evaluate the proposals by the student teams. The jury should include academia and industry representatives, and preferably also a government representative (e.g., the country's SRG representative).
- 2.11 The NCs will receive guidance and (non-financial) assistance from BIC via the European Assistant/Coordinator (see 2.12). BIC will stimulate industry actors in the country (especially BIC industry full members if any) to support the national BISC-E. This assistance could be content-wise (providing candidate-challenges for the student teams), financially (prizes, logistics), and in the evaluation of proposals (as jury member).
- 2.12 In 2023, the Association for European Life Science Universities ([ICA](#)) will assist BIC in monitoring and coordinating the national BISC-E programmes. ICA, as the European Coordinator, will also provide guidance and assistance as needed to run successful national BISC-E programmes along the pre-set timeline (see XYZ).
- 2.13 The BISC-E back office (part of BIC staff) will provide administrative support to the BISC-E programme, including communication and publicity among targeted audiences, and will maintain a European BISC-E website with information of the national BISC-E programmes.
- 2.14 The national BISC-E winning student teams can proceed to the European final rounds. The European finals are covered in a separate Regulation.

3 Indicative timeline 2023 for the national BISC-E programmes

<u>Ultimate dates</u>	<u>for:</u>
31 March	Registration of student teams at the NC
April – mid-May	Student teams prepare their cases for the national BISC-E
15 May	Submit the business cases' and supporting documents to the NC
31 May	Running the BISC-E rounds to yield the national winner
9 June	Submit the national winner and its business case to the EC

The European BISC-E2023 final rounds will take place in Autumn (timing, location, and details to be announced by BIC).

4 Participants

- 4.1 Student teams for the national BISC-E must consist of at least 3 students and maximally 6.
- 4.2 All team members should be enrolled in a programme at an institute for higher education in Europe. These include students in their graduating years at universities of Applied Sciences, and at universities for fundamental research.
- 4.3 Since national Qualifications Frameworks differ across Europe, the teams can include students in the first 1-2 years PhD curricula, provided their current level is comparable/identical to others within the European Qualification Framework (EQF), and the overarching framework of qualifications of the European Higher Education Area (QF-EHEA).
- 4.4 Because of the multidisciplinary character of BISC-E, it is highly advisable that the teams include students enrolled in curricula in different disciplines.
- 4.5 Each team must appoint one student as the team leader. The team leader will be the contact person with the NC and with the European Coordinator as needed.
- 4.6 Each team must be supported by a supervisor employed at the host institution, or at one of the host institutions if the team includes students from more than one institution. The supervisor should be employed as e.g., lector, Postdoc, assistant professor, associate professor, or professor. Each student team can seek support from any/more staff member(s) at the institution, but these will have no official role in the national BISC-E.
- 4.7 Students and supervisors can only join one team participating in the national BISC-E.

- 4.8 At least 2 team members should participate in meetings called by the NC, and the national final round(s).

5 Registration

- 5.1 The registration for the national BISC-E will be arranged by the NC.
- 5.2 The team registration must include:
- The name.
 - The leader (one of the team members).
 - The supervisor (see 4.6) and his/her coordinates.
 - A 150-word description of the bio-based (business) case and the proposed innovative solution.
 - Names and coordinates of the team members.
- 5.3 The NC verifies that the teams comply with this Regulation (especially Art. 4) and communicates with a team as needed for clarification and/or correction to approve the registration.

6 Challenge

- 6.1 In this programme, student teams are asked to develop an innovative bio-based product or process help resolve technological, environmental, or societal challenges. It will benefit the proposed solution if it has been tested in a lab (or beyond lab) to provide an insight into its potential for integration in the current (or near future) bio-based industry and bioeconomy.
- 6.2 Within the scope of this programme, a **bio-based product is a product wholly or partly derived from renewable biological sources**¹. These sources can be plant-, forestry-, animal-, or marine/aquatic-based, and derived from gaseous biogenic carbon, or bio-waste². The bio-based product could be based on a ‘drop-in chemical’³, or a ‘dedicated chemical’⁴ resulting from a bio-based process. It can be an intermediate material, a semi-finished or a final product.
- 6.3 Within the scope of this programme, a **bio-based process is a process using only bio-based feedstock**, applying biotechnology, chemical, mechanical, physical, or any other appropriate technology, or combination of technologies. Bio-based feedstock is defined in 6.2. The process may yield intermediate or final products, preferably with a higher economic value than fossil-based alternatives.
- 6.4 The innovation may, but does not have to, replace a fossil-based product or fossil-based process.
- 6.5 **Aspects related to enhancing biodiversity and circularity, and to climate change mitigation will add value to the proposed solutions.**
- 6.6 This programme will not negatively affect the food chain. If food and feed residual (or excess) streams are used as a resource for bio-based products, the envisaged process should help increase effectiveness and competitiveness of the food/feed industry. The development of a new food or feed **ingredient** from these or other sources is allowed in this programme. However, the **development and production of a food and/or feed final product** as such, are excluded from this programme.
- 6.7 Individual work, done in the framework of a MSc-thesis, is not eligible for this programme. Further development of a subject/theme as part of such a thesis in a participating team is eligible, provided it is a clear team effort.

¹ See definition in EN 16640:2017.

² See https://environment.ec.europa.eu/topics/waste-and-recycling/biodegradable-waste_en

³ Chemically identical to an existing fossil-based chemical that has established markets.

⁴ Produced via a dedicated pathway and does not have an identical fossil-based counterpart.

- 6.8 The programme invites student teams to meet the challenges as described above, including a presentation of their findings with supporting information, on either of the two tracks mentioned in 6.8.
- 6.9 Two tracks can be followed:
1. For innovations regarding a bio-based product.
 2. For innovations regarding a bio-based process or improvements of a bio-based process step. Also, services or other innovations that will strongly advance the bio-based economy but not leading to a tangible (prototype) product are included in this track.
- 6.10 The teams will provide the business cases' presentation and supporting documents two weeks before the national final. The supporting documents consist of a description of the process or product (½ A4) and its contribution to sustainability, a description of the technical aspects (½ A4) and the outline of the business case (½A4). The claims in the business case and/or production process should be supported with basic calculations (additional).

The presentation should contain the following elements:

1. Short description of the innovation.
 2. Introduction and explanation of the innovative aspect (supported by illustrations), including its sustainability aspects (of which positive environmental impacts detailed as per point 4 hereunder).
 3. Technical explanation of the innovation, e.g.:
 - Production process of a product or process scheme of a process.
 - Mass balances.
 - The bio-based materials used.
 - (Production)process energy use estimation.
 4. Elaboration of the positive environmental impact of the innovation, e.g.:
 - Product life cycle / process resource chain.
 - Input, output, and residual streams.
 - Comparison with conventional product or process (if applicable).
 5. Economic viability, e.g.:
 - Business model canvas with explanation.
 - SWOT analysis.
 - Quantitative and qualitative market analysis and a cost benefit analysis.
- 6.11 Each country is free to decide on the language used during the teams' presentations, i.e., it may be the national language. However, it is strongly advisable that presentation visuals and documents are made in English to enable their use (or improved versions thereof) in the European final rounds should the team result as the national BISC-E winner. The European final rounds are in English.
- 6.12 Details for the dossier for the European final rounds will be included in a separate BISC-E Regulation.
- 6.13 The presentation and the submitted dossier should contain work of the team members only. Included work by others should be properly referenced.
- 6.14 Details for the national BISC-E (rounds) will be provided by the NCs to the teams.

7 Jury and assessment at national level

- 7.1 The jury should consist of several experts in the fields of e.g., bio-based economy, process technology, primary and market applications sectors, environmental impact assessment. Members of the jury should be from both academia and industry.
- 7.2 Jury members cannot be involved in any way with any of the participating student teams.
- 7.3 The jury members will not be announced before the submission deadline.

- 7.4 The jury will evaluate the presented cases and proposed solutions by the following criteria (see added-value aspects mentioned in 6.5):
- Innovation
How creative and novel is the concept? Does it solve an existing problem, or does it replace a fossil-based product? In case of a product, does it demonstrate a better (functional) performance than alternatives?
 - Sustainability impact
First, is the innovation truly bio-based? Is it also environmentally friendly, i.e., does it have a better environmental performance, a more environmentally friendly production process compared to the product it replaces? Or does it enhance the sustainability of a process on total life cycle basis? Does it protect and enhance biodiversity? How big is the estimated positive impact for the environment if the product or process would be widely applied?
 - Technical feasibility
In case of a product, the technical feasibility of the proposed production process is considered. In case of a process innovation, the feasibility of the claimed advantages is considered.
 - Economic viability
Is there a market for the proposed product? Is there an economic incentive to apply the proposed product or process innovation? Is the product or process economically viable?
 - Presentation and prototype product / process animation
The presentation is judged on content and presentation skills together with the quality of the answers offered to the jury's questions.
Also, the appearance and professionalism of the prototype product / process animation are considered under this point.
- 7.5 The jury's decision is final and cannot be contested.

8 Awards

- 8.1 In case of a monetary award, it is provided 'as is' (any taxation should be paid by the receiving party) and is divided equally between the team members.
- 8.2 In case the winning team declines the prize, the NC will decide if it can be awarded to another participating student team.
- 8.3 The national organisation, led by the NC, covers the costs of the prizes.
- 8.4 The national winner can proceed to the European final rounds, representing its country. Costs for participating at the European level (e.g., pitching and video production training), and prizes for European winners are covered by BIC. (See separate Regulations for BISC-E European finals.)
- 8.5 If the national winning team declines the offer to participate in the European final rounds, the NC can have another team represent the country at the European finals.

9 Intellectual property

- 9.1 Only the jury and the NC have access to the presentation and submitted dossiers, and to personal/private information for matters related to BISC-E only.
- 9.2 All IP and know-how in the submitted materials of the teams remain the property of the original owners. Information submitted in the dossiers will not result in any transfer of ownership to the organisers, jury nor sponsors of BISC-E. Foreground IP and know-how generated by the students during BISC-E rest with the students and can be protected or published in close consultation with the supervisor at the host institution.

10 General

- 10.1 All deadlines mentioned in these regulations are 23:59 CET that day.
- 10.2 The NC can exclude a team member, or a full student team when not complying to this Regulation, acting against existing laws, or otherwise acting immorally.
- 10.3 The NC team reserves the right to amend, postpone or cancel the national BISC-E or to change the dates and conditions without incurring liability if circumstances beyond his/her control require to do so.
- 10.4 All participants (student team members and supervisors) grant permission to the NC to use submitted information for promotional purposes. This excludes private and proprietary information. The useable information can include the designed innovative solution targeting a specified challenge. It can also include the awarded prizes. Also, pictures and other contributions provided in the context of BISC-E can be used free of charge for promotion via different communication channels.
- 10.5 In all situations not foreseen in this Regulation or in case of a dispute, the NC shall decide how to resolve the issue.

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