



1 Aim

- 1.1 The Bio-based Innovation Student Competition Europe (BISC-E) aims to raise awareness and involve students in the transition towards a bio-based economy. The ability to work in a multidisciplinary team is believed to be essential to design viable bio-based solutions; therefore, the requirements include technical, environmental, and economic elaborations. In addition, participation in the BISC-E will offer opportunities to interact with actors in the bio-based industry throughout Europe. This can be done during the preparation of the business cases and during the evaluation both at the national and the European level. This interaction can possibly lead to further relationship between students/graduates and the industry.
- The European final rounds are coordinated and financed by the Bio-based Industries Consortium (BIC).**

2 Organisation

- 2.1 The Bio-based Innovation Student Competition Europe is organized on a national level by (educational) federations in the participating countries. The target countries for this programme are the EU Member States (MS) and the Associated Countries (associated to the European framework programmes). After national finals a European final is organized where all national winners can compete for the European award.
- 2.2 Each participating country has a national contact person (NCP) who will select/appoint the entity (higher education institution or federation) to run the national Challenge. **In Italy the national competition is organized by Prof. Salvatore Fusco on behalf of the University of Verona, Department of Biotechnology.**
- 2.3 The European coordinating person (ECP) communicates with the NCPs and stimulates each country to participate. The ECP will receive administrative support from a secretariat for overall European tasks such as updating the BISC-E website and Facebook account, share relevant documents, etc. The ECP collects the results of the national Challenges and is the key contact person for BIC. Each year, the country of the winner of the European final in the previous year will host the ECP for the next year.
- 2.4 In 2022, the ECP is Delft University of Technology (www.tudelft.nl), host of Waterskins, the winning team of BISC-E 2021.
- 2.5 In 2022, the secretariat services to the ECP will be provided by TKI-BBE in Wageningen, The Netherlands.

3 Indicative timeline for the Italian National Challenges (these are ultimate dates)

10 June 2022	Registration deadline
20 June 2022	Kick-off with all participants
07 July 2022	Submission of presentation and supporting documents
21 July 2022	Presentation and Italian final
Autumn 2022	EU final (location to be decided by Biobased Industry Consortium)

4 Participants

- 4.1 Teams of 3 to 6 students are welcome to join the challenge.
- 4.2 At the moment of registration, all team members must be enrolled in a bachelor's or master's program at an Italian University. **PhD candidates are excluded from this Challenge.**
- 4.3 The innovations proposed by the teams are judged on technical, environmental, and economic criteria. With an eye on the multidisciplinary character of the Challenge it is highly advised, though not mandatory, to include students enrolled in curricula of different disciplines in each team.
- 4.4 **Each team must appoint one student as team manager.** The team manager coordinates the contact between the competition organizers and the other team members.
- 4.5 **Each team should be supported by one main supervisor** employed at one of the host institutions as e.g., lecturer, PhD candidate, assistant professor, associate professor, or full professor. More staff members can be asked for support or advice of course but these hold no official role in the competition.

- 4.6 **Students and supervisors can only join one team participating in the challenge.**
- 4.7 **At least 2 team members should be present at the kick-off meeting and finals.**

5 Registration

- 5.1 The registration for BISC-E can be done through the portal at www.bisc-e.eu
- 5.2 For registration for the challenge you need:
 - A team name
 - A team manager (one of the student team members)
 - A supervisor (as stated under 4.5)
 - A 150-word description of your bio-based innovative idea
 - Personal details of the team members
- 5.3 **The teams are checked to ensure they comply with the regulations as stated in this document.** In case the team or a team member is not eligible for this challenge, the team manager will be notified within 2 weeks after closing of the registrations.

6 Challenge

- 6.1 In this challenge student teams are asked to develop a bio-based product or bio-based process that could be integrated in the current (or near future) economy and help resolve societal challenges.
- 6.2 Within the scope of this programme, a **bio-based product** is: **“A product composed in whole, or for a significant part, of biological material derived from renewable biological sources, including plant, animal or marine materials, as well as gaseous biogenic carbon”**. The bio-based product could be either a substance, a mixture of substances, a material or object resulting from a bio-based process; this 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, or for a significant part, bio-based feedstock”**. 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-derived product /fossil-based process.
- 6.5 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 feed product as such are excluded from this programme.**
- 6.6 **Individual work, done in the framework of a MSc-thesis, is not eligible for this challenge. Further development in a team is eligible as long it is a clear team effort.**
- 6.7 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.
- 6.8 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.
- 6.9 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 for the Italian Final will comprise the following elements:

- 6.9.1 Short description of the innovation
- 6.9.2 Introduction and explanation of the innovative aspect (supported by illustrations), including its sustainability aspects (of which positive environmental impacts detailed as per 6.9.4)
- 6.9.3 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
- 6.9.4 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)
- 6.9.5 Economic viability, e.g.:
 - Business model canvas with explanation
 - SWOT analysis
 - Quantitative and qualitative market analysis and a cost benefit analysis
- 6.10 **For the European Final a complete dossier must be submitted by each national winner.** A format is provided on the website. Limited appendices (e.g., references, additional figures, tables) are allowed but are not part of the material for evaluation. **The language for all submitted material for the European final is English.**
- 6.11 The presentation and the submitted dossier should contain work of the team members only. Included work by others should be properly referenced.
- 6.12 Each team will have the chance to present their bio-based innovation and prototype product/process animation to the jury. The oral presentation, supported by slides, lasts 10 minutes followed by the possibility for the jury to ask questions (5 minutes).
- 6.13 **All text and oral presentations must be in English.**

7 Jury and assessment

- 7.1 The jury will consist of experts in the field of bio-based economy / process technology / agriculture / environmental impact assessment, from academia and/or industry.
- 7.2 **Jury members cannot be involved in any way with any of the participating teams.**
- 7.3 **The jury members will not be announced before the submission deadline.**
- 7.4 The presentation, including the Q&A session, is considered by the jury. The innovations are evaluated by the jury on the following points:
 - **Innovation**
How creative and novel is the concept? Does it solve an existing problem, or does it replace a fossil-based product?
 - **Sustainability impact**
First, is the innovation truly bio-based? Is it also environmentally friendly, i.e., does it have a better environmental performance / 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? And how big is the 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 / process innovation the feasibility of the claimed advantages is considered.
 - **Economic viability**
Is there a market for the proposed product? Is there 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 is considered under this point.
- 7.5 **The jury's decision is final and cannot be contested.**

8 Award

- 8.1 The monetary award is provided 'as is' (any taxation should be paid by the receiving party) and is divided equally over the team members.
- 8.2 In case the winning team rejects the price (or in any way it does not comply with these regulations), the organization has the right to select another winner.

9 European finals

- 9.1 The aim is to have multiple European countries organising a national Challenge on the basis as described in these regulations. The winning teams of the national Challenges will compete in the European final for the European awards. The Bio-based Industries Consortium (BIC) has set as a target that 50% of the EU Member States should participate in the 2021 BISC-E programme by having a national BISC-E Challenge. Alternatively, as a transition step, the NCP can appoint a student team to represent the country in the European final. If this target is met, BIC will proceed with the European final rounds. **In case there is an EU final the team winning the first prize in the Italian competition can go to the European final.**
- 9.2 The European final will consist of two rounds. In the first round, an expert jury (academia and industry) will evaluate all submitted national winning innovations and select the top 5 – 6 for the final round. In the final round, the selected top 5 – 6 national teams will compete in front of BIC industry members, including a Q&A part. **Details of the European final, including the process, full evaluation, and eligible costs for reimbursement, will be provided to the national winners in due time.**
- 9.3 **Reasonable travel expenses, accommodation costs and entrance to the event are reimbursed to a maximum of € 1500 per team and a maximum of € 500 per team member.**
- 9.4 If a national winning team rejects the offer to participate in the European final, the national organisation can have another team represent the country at the European finals.

10 Intellectual property

- 10.1 Only the jury and the organisation have access to the presentation and submitted dossier – in case of the European Final - and personal information for matters related to the Challenge only.
- 10.2 **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 the Challenge. Foreground IP and know-how generated by the students during the Challenge rest with the students and can be protected or published in close consultation with the supervisor at the host institution.

11 General

- 11.1 **All deadlines mentioned in these regulations are 23:59 CET that day.**
- 11.2 The organization may always make exemptions to these regulations without notice or providing the reason.
- 11.3 The national organisation can exclude a participant or a team when not complying to these regulations, acting against the law, or otherwise acting immoral.
- 11.4 The BISC-E national organisation team reserves the right to amend, postpone or cancel the Challenge or to change the dates and conditions without incurring liability if circumstances beyond its control require to do so. This also applies for the BISC-E European organisation team if this may be the case for the European final.
- 11.5 All participants permit the organisation (national and European), free of charge, to use personal information and team information including information on the designed innovation and awarded prices for promotional purposes, and, with entering the contest, waiving all constraints imposed by national privacy legislation. Also pictures and other contributions provided in the context of the challenge can be used free of charge for promotion via different media channels.
- 11.6 In all situations not foreseen in this regulation or in case of a dispute the national organisation shall decide how to resolve the problem. At the European level this will be done by the European organisation team.