

## **Terms and conditions**

### **Regulations of the competition "Circular transformation - developing an industrial symbiosis strategy."**

#### **Competition for students.**

##### **§ 1 Basic information**

1. The organiser of the competition "Circular transformation - developing an industrial symbiosis strategy", hereinafter referred to as the competition, is the Institute for Innovation and Responsible Development with its seat in Warsaw, 38 Tyniecka Street, 02-621 Warsaw, NIP: 5213831236, REGON: 380515304.
2. The competition is organised as part of the "Circular Week 2024" event.
3. The aim of the competition is to increase students' knowledge and awareness of industrial symbiosis, to obtain information on existing and potential industrial symbiosis solutions and to develop an industrial symbiosis strategy.
4. The competition is aimed at students from universities operating in Poland.
5. The competition will be judged on entries prepared by teams of 3-5 people. Participants must have the status of a student on the date of entry as referred to in § 3.1.

##### **§ 2 Object of the competition**

1. The subject of the competition is a presentation including the development of an industrial symbiosis strategy according to the proposed outline, hereinafter referred to as the work.
2. The work should include industrial symbiosis solutions as defined below:

Industrial symbiosis is a collaboration between at least two entities in which by-products, waste or energy from one entity are used by another entity. The result of an industrial symbiosis is economic, social or environmental benefits. The actors involved complement each other through the efficient use of raw materials, technology or energy.

1. The solutions presented in the work must include:
  - a. a description of an innovative industrial symbiosis of two or more companies that could be implemented in Poland.
  - b. an up-to-date market analysis, determining bottlenecks, opportunities and possibilities in selected economic sectors, proposing the implementation of an industrial symbiosis, developing legislative challenges, creating an implementation plan and planning marketing activities.
2. The assignment must be submitted in the form of a multimedia presentation (max. 35 slides) and a text description in PDF format not exceeding 4,000 characters including spaces.
3. A detailed description of the competition task, referred to as 'the work', is available in Appendix 1.

4. The 10 teams whose entries are judged the highest by the Jury will be invited to present the competition task in the form of a presentation (max. 20 minutes) in front of the Jury during the Competition Final, on 22 October 2024 at the Warsaw School of Economics.

### **§ 3 Conduct of the competition and contact**

By 30 July 2024, project teams or individuals are required to apply electronically for participation in the competition. If the application is a group application, it is required to provide the composition of the team, which consists of between 3 and 5 people representing at least two different universities.

1. Individual applicants will be selected into interdisciplinary, intercollegiate teams. Information on the composition of the teams to be formed will be sent to participants' email inboxes by 20 August 2024.
2. Teams must complete the competition task as described in Appendix 1 by 10 October 2024. **The competition task must be sent to [kontakt@innowo.org](mailto:kontakt@innowo.org) by 23:59 on 10 October 2024.**
3. The 10 best entries will be selected by the Jury. These teams will be invited to the final of the competition, which will take place on 22 October at the Warsaw School of Economics. Each team will be required to present their solution in front of the Jury in the form of a group presentation using a multimedia presentation sent in advance. The presentation time is max. 15 min.
4. The organiser designates the following persons to be the contact person, to receive applications and works and to make arrangements for the changes referred to in paragraph 2: Marianna Rytlewska, e-mail address: [m.rytlewska@innowo.org](mailto:m.rytlewska@innowo.org).

### **§ 4 Task Evaluation**

1. Tasks that do not meet the requirements referred to in § 2 and tasks that are not submitted or not submitted on time will not be assessed.
2. The entries and presentations will be judged by a competition committee appointed by the Organiser.
3. The entries and presentations will be assessed against the following criteria:

Lp.	Criterion	Description	Maximum score
1	Implementability	The ability to implement a solution.	25

2	Complexity	The description of the symbiosis activities should take into account the operating characteristics of the enterprises in the selected industries, the realities of the business and the proven technologies.	25
3	Innovation	The proposed solutions should not directly duplicate already existing symbiotic applications, but could significantly develop them.	20
4	Effectiveness	The proposed solution should result in effects that are as likely as possible to convince companies to actually implement the solutions	30
Total			100

1. The winners will be selected by the Jury during the Competition Final. The announcement of the results and distribution of prizes will take place during the Competition Final. The results of the competition will also be posted on the event website.

### **§ 5 Adjudication of the competition**

1. The authors of the highest scoring entries will be awarded:

**1st place:** They will receive a cash prize of £5,000 and the opportunity to present on the main stage at the major Circular Week 2024 - **European Sustainability Congress** conference to be held the following day (23.10.2024). The event will be streamed online and can be viewed in real time at each of the collaborating universities in one of the halls/auditoriums.

**Second place:** They will receive a cash prize of PLN 3,000.

**Third place:** they will receive a cash prize of PLN 2 000.

1. The organiser reserves the right to distribute the prizes differently if two teams achieve the same result ex aequo.

## **§ 6 Final provisions**

Submission of a work constitutes acceptance of all the provisions of these regulations by all members of the author team.

1. The submission of a paper by an author team is tantamount to a declaration that its members are the authors of the paper.
2. By submitting an entry, all members of the author team agree to the use of their personal data in accordance with the Personal Data Protection Act of 29 August 1997 (Journal of Laws 2016, item 922, i.e.) to the extent necessary for the execution of the competition, in particular for the reception of entries and works, correspondence, announcement of results and documentation of the competition.
3. Personal data is collected on a voluntary basis. The provision of the data specified in the work form is a condition for participation in the competition. The participant has the right to inspect his/her personal data and to request its correction or deletion.
4. The winners of the competition consent to the publication of their personal data on the website <https://www.circularweek.com/>.

## **Appendix 1**

### **DESCRIPTION OF THE COMPETITION TASK**

Competition for students "Circular transformation - developing a strategy for industrial symbiosis."

Deadline for stage 3 'competition task': 1 September - 11 October 2024

In this stage, project teams complete a competition task which consists of developing and describing the circular industrial symbiosis strategy presented in the first stage of the competition. The strategy must include an up-to-date market analysis, identifying bottlenecks, opportunities and possibilities in selected economic sectors, proposing the implementation of an industrial symbiosis, developing legislative challenges, creating an implementation plan and planning marketing activities. The task is to be completed in the form of a presentation, which the entire project team will present to the Jury during the Competition Final.

## COMPETITION TASK

**Objective of the competition task:** To present a strategy for cross-industry industrial symbiosis to support the circular transformation of the national economy (of any chosen country).

**Format:** The assignment must be submitted in the form of a multimedia presentation (max. 35 slides) and a text description in PDF format not exceeding 4,000 characters including spaces.

**Deadline:** The competition task must be sent to [kontakt@innowo.org](mailto:kontakt@innowo.org) by 23:59 on 10.10.2024.

### Detailed task description:

The solution presented in the work must include:

1. **a description of an innovative industrial symbiosis of two or more companies** that could be implemented in Poland or in any chosen country.
2. **an up-to-date market analysis, determining bottlenecks, opportunities and possibilities** in selected economic sectors, **proposing the implementation of an industrial symbiosis**, developing **legislative challenges**, creating an **implementation plan** and planning **marketing activities**.

The work should include industrial symbiosis solutions as defined below:

An industrial symbiosis is a collaboration between at least two entities in which by-products, waste or energy from one entity are used by another entity. The result of an industrial symbiosis is economic, social or environmental benefits. The actors involved complement each other through the efficient use of raw materials, technology or energy.

Proposal for a multimedia presentation outlining a solution to the industrial symbiosis strategy:

1. Introduction
  - a. Description of the problem
  - b. General context
  - c. Analysis of the current market situation
2. Our approach
  - a. Entities involved in the symbiosis
  - b. Mode of cooperation in symbiosis
3. Results
  - a. Economic effects
  - b. Environmental effects
  - c. Social effects
4. Implementation options
  - a. Proposal of implementation method or plan
  - b. Resource flow diagram
  - c. Financial flow diagram
  - d. Planning of marketing activities

5. Barriers and opportunities
  - a. Identification of implementation bottlenecks
  - b. Technologies conducive to implementation
  - c. Potential legislative challenges
6. Summary and next possible steps

**Issue description:**

Around the world, the industrial sector is experiencing significant changes. Companies are adopting more efficient technologies, seeking sources of raw materials with low environmental impact and adapting to markets and regulations that increasingly value sustainability efforts. These changes are taking place against the backdrop of the larger challenge of the triple planetary crisis involving the climate crisis, biodiversity loss and pollution.

However, action towards a more sustainable future is still insufficient. They are taking place too slowly and on too small a scale. One possible solution to this situation is to demonstrate the benefits of cooperation for a more efficient use of resources. Industrial symbiosis could be a solution. This is an approach to commercial operations - using, recovering and diverting resources for reuse - that results in resources remaining in productive economic use for longer. This creates business opportunities, reduces demand on natural resources and is a step towards a circular economy.

Activities of this kind start with simple ideas, backed up by sound analysis. This is what the student competition to which we invite you is all about.

**Evaluation criteria for the competition task:**

The evaluation of the main task will be carried out by the Jury according to the same criteria as in Stage 1. It will be evaluated:

1. **Implementability** - feasibility of the solution - 25 points.
2. **Comprehensiveness** - the description of the symbiosis activities should take into account the operating characteristics of the companies in the selected industries, the realities of the business and proven technologies - 25 points.
3. **Innovativeness** - the proposed solutions should not directly duplicate already existing symbiotic applications, but can significantly develop them - 20 points.
4. **Effectiveness** - the proposed solution should result in effects that are most likely to convince companies to actually implement the solutions - 30 points.

**The second stage of the Competition - the Final:**

The 10 best entries will be selected for the Competition Final.

Each of the 10 selected teams will have to present their solution in front of the Jury during the Final. The presentation time is max. 15 min.

Date of the Final: 22.10.2024

Place of the Final: Warsaw School of Economics

## **Examples of industrial symbiosis with description**

### **Symbiosis in Kalundborg (Denmark)**

The network in Kalundborg has evolved over five decades. It all started in 1961, when the local refinery needed a water supply. The first pipes supplying water from a nearby lake were laid by the town of Kalundborg and financed by the refinery. In 1972, the refinery entered into an agreement with a local gypsum company to supply surplus gas from the refinery's production. The gypsum manufacturer used the gas to dry the plasterboard produced in their furnaces. The following year, 1973, the power plant was connected to the Statoil water supply. Over the years, more and more companies were combined in the Kalundborg symbiosis, and in 1989 the term 'industrial symbiosis' was used for the first time to describe the cooperation. The Kalundborg symbiosis now has 17 private and public partners and involves around 50 symbiotic exchanges. The Kalundborg Symbiosis was developed based on commercial agreements between the partners. The early development of the network was based on the initiatives of the companies themselves, especially the efforts of the refineries to find a solution for the supply of water to the refineries. Several industries are located in close proximity, which made it possible to install pipes for water and energy exchange. The companies are not key competitors to each other, which facilitated mutual trust. This trust was essential in the development of the network.

More information: <https://www.symbiosis.dk/en/>

### **Symbiosis at Kawasaki in Japan**

The challenge that led to the implementation of Industrial Symbiosis in Kawasaki was the need for the municipality to find a solution to dispose of municipal waste in a sustainable way, while strengthening the local economy. The linkage process began in 1997. The national government funded the establishment of several waste recycling facilities in the region to enable the reuse of municipal and industrial waste in the area. The municipality then began a series of discussions with local companies to identify and implement potential waste exchanges.

The main prerequisite for implementing Industrial Symbiosis at Kawasaki was the presence of relatively large iron, steel and cement industries. These industries proved to be suitable consumers for a wide range of different waste streams. In addition, some exchanges involving iron and steel mills and cement were already well known and widely used at the time (e.g. the use of blast furnace slag for cement production).

More information: <https://www.sciencedirect.com/science/article/abs/pii/S0360544213009675>

### **Symbiosis in Kwinana, Australia**

Australia has developed an Industrial Symbiosis project where the entire city of Kwinana shares water, energy and waste. There are about 150 resource flows operating on a commercial basis among industrial companies located in the area. These exchanges have developed organically over at least 40 years.

According to data provided by the official website of the town of Kwinana, the industrial symbiosis has avoided the disposal of around 25 000 tonnes of waste per year, thus reducing the industry's CO<sub>2</sub> emissions by around 100 000 tonnes per year. An example of the link created is as follows: the chemical industry supplies cooling water to the steel company, while slag from the steel industry is used as a base material for asphalt. The by-products are considered an input product for the chemical processes of others. Energy in the form of steam or hot water is seen by someone else as an economically viable resource.

More information: <https://kic.org.au/industry/synergies/>