**Annex 2.**

**Students who are interested in taking part in the Olympiad should register using this link (**[**https://forms.gle/dHhNUvrMPfJ3t46P9**](https://forms.gle/dHhNUvrMPfJ3t46P9)**) until May, 13**

**Test Questions for the first section "Integrated Water Resources Management and Landscape Management":**

1. General questions on the Central Asian region
2. What arguments must be taken into account in order to develop a successful strategy for reforming water relations?
3. What are the key strategies for improving the poor quality of water management?
4. What types of ecosystem services do you know and how do they differ from each other?
5. What processes are contained in the definition of "land degradation" in the UN Convention to Combat Desertification?
6. What elements should be included in poverty reduction strategies in terms of agricultural production and water?
7. What instrument is a mechanism for integrating the conflicting interests of irrigated agriculture and other sectors of the economy?
8. What measures allow the agricultural producer to know in time how much irrigation water and when he will receive during the growing season?
9. Which state of Central Asia is the Chairman of the ICSD in 2017-2018?
10. What is “physical water scarcity”?
11. What are the principles of Integrated Water Resources Management, formulated at the 1992 Dublin Conference?
12. What is “economic water scarcity”?
13. What is the main contradiction between the “hydropower” and “irrigation” modes of operation of large hydroelectric power plants and their cascades in Central Asia?
14. On which river is the Toktogul HPP located?
15. On which river is the Nurek hydroelectric power station located?
16. What is the "greenhouse effect"?
17. What is the expected increase in global air temperature as calculated by the IPCC by the end of the XXI century?
18. Which of the Millennium Development Goals addresses water issues?
19. What is the minimum volume of water in the human body?
20. Who adopted the 2030 Agenda for Sustainable Development and who is the target audience or beneficiary of this Agenda?
21. Does the 2030 Agenda for Sustainable Development contain 17 Sustainable Development Goals (SDGs) that are comprehensive and indivisible, and strike a balance between the three dimensions of sustainable development? What are these three dimensions of sustainable development?
22. Which of the following is a key pledge of the 2030 Agenda for Sustainable Development?
23. Name all 17 Sustainable Development Goals (SDG)
24. What is meant by “means of implementation” in the 2030 Agenda for Sustainable Development?
25. Who sets goals at the global and national levels so that we know in 2030 whether the 17 Sustainable Development Goals (SDGs) have been achieved or not, and how progress is reported
26. Which country in Central Asia has registered the highest volume of remittances (in United States dollars) as a proportion of total GDP in 2020?
27. Which of below mentioned countries achieved the SDG 17.18.2 and has statistical legislation in line Fundamental Principles of Official Statistics in 2020?
28. Please, complete the definition of SDG 17.16.1 “Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that …. “.
29. What type of measures are defined in target 17.12 to be timely implemented for removing trade barriers?

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1. Integrated Water Resources Management - SDG 6

*a) Direction: Political alternatives and problems to be solved*

1. What areas are related to the principles of IWRM?
2. What is the advantage (effectiveness) of an integrated water policy?
3. What tools are important when implementing an integrated approach?
4. For what purposes does the "Water Law" apply?
5. Name the main factors determining "Water Law"?
6. What does the corrective nature of environmental protection measures include?
7. Name the main aspects of legal reform that helps in creating a solid foundation for IWRM?
8. At what levels does investment policy affect the water sector?
9. What aspects does the financial strategy include?
10. Indicate the main sources of loans.

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*b) Direction: The role of institutional change*

1. What is the role, scope of responsibility and functions of water organizations?
2. What parameters should an approach to water governance meet?
3. What is the basis of cross-border organizations?
4. What is a sign that the government is beginning to support and strive to apply IWRM?
5. What are the characteristics of integrated river basin management?
6. What are the functions of regulatory and enforcement agencies?
7. What benefits can water organizations receive from increased efficiency?
8. What are the factors that increase the productivity of water service providers?
9. How is the private sector involved in the provision of water services?
10. What is the role of Community Based Organizations (CBOs)?
11. In the context of IWRM, how can local authorities influence aquatic ecosystems?
12. What aspects are important to consider for establishing a water partnership?
13. At what levels is there a need for capacity building?
14. How can water users solve the assigned management tasks and influence IWRM?
15. What is important to implement in the training of water specialists?
16. What are the instruments for ensuring regulatory capacity?

**Literature:**

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*c) Management tools*

1. What is required to turn a knowledge base into an effective tool?
2. What IWRM tools include traditional assessments?
3. What is a Decision Support System (DSS)?
4. What factors are used as indicators of water management?
5. Which characteristics best describe the ecosystem assessment tool?
6. What are the stages of the process of formulating a national IWRM plan?
7. What is a Pool Management Plan?
8. What are the approaches to developing a groundwater management plan?
9. What are the steps usually involved in an Integrated Coastal Area Management plan?
10. Why is risk assessment necessary?
11. What best describes the Environmental Assessment (EP)?
12. What is social assessment?
13. List the necessary conditions for a successful economic analysis?
14. What mechanisms cause changes in attitudes and behavior of people with regard to water use?
15. In what ways can the application of the principles of recycling and reuse of water in industry be promoted?
16. What are the main measures to improve the efficiency of water use?
17. What are the opportunities for integrating water issues into general curricula?
18. What ways are there for the exchange of information between stakeholders?
19. How can the awareness of people about water issues be improved (ensured)?
20. What are the tools used in dispute management?
21. What is optimization modeling?
22. What are the supporting tools for reaching consensus?
23. What relates to regulatory instruments in IWRM?
24. What does the combined approach to wastewater discharge management imply?
25. What provisions regulating the amount of water should be used if the watercourse is interstate (transboundary)?
26. What is important in developing a regulatory framework for public and private water service providers?
27. What instruments are used for land use surveillance?
28. What is the purpose of setting prices for water supply services?
29. What are the characteristics of pollution charges related to the environment?
30. What are water auctions?
31. When can subsidies lead to overconsumption of water?
32. What types of information are involved in supporting IWRM?
33. What kind of characteristics are appropriate to describe a Geographic Information System (GIS)?
34. What technical parameters should the information and data sharing system meet?

**Literature:**

1. IWRM Toolbox in Russian:

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3. Agriculture and landscape management - SDG 2

1. According to FAO research, how many years does it take for drought-affected farmers and pastoralists to recover?

2. What traditional irrigation systems keep water available for food security?

3. What is the essence of food security according to FAO?

4. How many of the world's population are undernourished, according to 2020 estimates?

5. Which of the following countries in Central Asia has the highest percentage of undernourished people by 2020?

6. By how much should food production be increased by 2050 to eliminate hunger, according to FAO estimates?

7. Choose the correct definition: Land degradation in arid semi-desert and dry sub-humid areas due to various factors including climate change and human activities is called…

8. Continue the statement: Sustainable land management is..?

9. What is the leading direction of animal husbandry in most countries of Central Asia?

10. By what percentage did the proportion of undernourished people in Central Asia decrease in 2019?

**Literature:**

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**Annex 3.**

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**Test Questions for the second section "Climate change and clean energy".**

1. General questions on 2030 Agenda and SDGs

1. Who adopted the ‘2030 Agenda for Sustainable Development’ and who is the target audience or beneficiary of this Agenda?
2. The 2030 Agenda for Sustainable Development contains 17 Sustainable Development Goals (SDGs) which are integrated and indivisible and balance the three dimensions of sustainable development. What are these three dimensions of sustainable development?
3. Which of the below is a key pledge of the 2030 Agenda for Sustainable Development
4. Name all 17 Sustainable Development Goals (SDG)
5. What are the “Means of Implementation” in the 2030 Agenda for Sustainable Development?
6. Who sets targets at global and national levels, so we know in 2030 whether the 17 Sustainable Development Goals (SDGs) have been achieved or not and how is progress reported?
7. Which country in Central Asia has registered the highest volume of remittances (in United States dollars) as a proportion of total GDP in 2020?
8. Which of below mentioned countries achieved the SDG 17.18.2 and has statistical legislation in line Fundamental Principles of Official Statistics in 2020?
9. Please, complete the definition of SDG 17.16.1 “Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that …. “.
10. What type of measures are defined in target 17.12 to be timely implemented for removing trade barriers?

2. Climate Change - SDG 13

1. What is the Climate Change?
2. In 2007, Climate Care Initiative was launched. What is the main goal of this Initiative?
3. How can companies reduce carbon dependence in their operations and supply chains of raw materials and products?
4. What are the gas components of atmosphere — both natural and man-induced — that absorbs and re-emits infrared radiation.
5. What is another name of “exhilarant gas”?
6. What Protocol regulates consumption and production of chlorine- and bromine-containing ozone-depleting substances?
7. How often the parties to the Montreal Protocol evaluate the regulatory measures stipulated by art. 2 ‘Regulatory measures’ based on the scientific, environmental, technical and economic information available.
8. Name the main greenhouse gases in Earth’s atmosphere.
9. Give a definition to “Anthropogenic”.
10. Intergovernmental Panel on Climate Change (IPCC) was established with the aim to:
11. ENSO is a scientific term defining temperature changes between ocean and atmosphere in Central-East Equatorial Pacific. What is the name of ENSO cold phase?
12. ENSO is a scientific term defining temperature changes between ocean and atmosphere in Central-East Equatorial Pacific. What is the name of ENSO warm phase?
13. What is the main source of greenhouse gas emissions in agriculture?
14. What is carbon footprint?
15. Which term defines the following: Human-induced emissions of greenhouse gases (GHG), GHG precursors and aerosols:
16. Which term defines the following: - Removal of greenhouse gases from atmosphere by human activities:
17. What is an approach to help orientate the actions required for reformation and re-orientation of agricultural systems in order to ensure efficient support of development and food security in changing climate conditions?
18. What is negatively Impacted by Climate Change?
19. In the light of climate change, it is reasonable to distinguish (the most frequent or frontmost?) at least three forms of people’s mobility
20. What Sendai Framework 2015-2030 is aimed at?
21. What are the main challenges for Climate Smart Agriculture (CAA)?
22. What is the name of anthropogenic intervention to reduce the number of sources or increase the number of sinks of greenhouse gases as defined by the IPCC?
23. Why is transboundary cooperation necessary and beneficial for climate change adaptation?
24. According to some projections, what percentage of wheat production in Central and South Asia will decline by 2050?
25. Who is mostly affected by impacts of natural disasters?
26. How much could the region's harvest decline by 2050 if effective adaptation measures are not immediately taken in the water and agricultural sectors in Central Asia?
27. The Climate Change Convention has created a technology mechanism that includes the Center and Network for climate change technologies. What is the goal?
28. Why the Financial mechanism under the UN FCCC - Green Climate Fund (GCF) - was established?

**Literature:**

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3. Energy - SDG 7

1. What is the purpose of SDG 7?
2. What percentage of total global greenhouse gas emissions is accounted for by energy sector?
3. How many people in the world do not have access to electricity?
4. Modern food systems depend heavily on fossil energy. What percentage of available energy is consumed by this sector?
5. In 2012, there were 4.3 million premature deaths due to indoor air pollution. In which social group the mortality rate was 60%?
6. What is the percent of households using solid fuels in Central and South Asia?
7. Which region has the largest electrical shortage?
8. What are the targets for the Sustainable Energy for all initiative launched in 2014 by 2030?
9. What does Sustainable Energy mean?
10. Define: "Any form of energy from solar, geophysical or biological sources that is replenished as a result of natural processes at a rate that is equal to or exceeds the rate of its use."
11. Give the definition: "The ratio of the input energy (in joules) to the economic output (in dollars) for which the input energy was used."
12. Give the definition “The ratio between the amount of useful energy or other useful physical product at the output of a system, transformation, transmission or storage process to the amount of energy at the input (measured in kWh and tonnes / kWh or any other physical unit of measurement of useful final product, such as a ton-km of transportation, etc.) ”.
13. Define the following: “Energy encapsulated in natural resources (eg coal, crude oil, natural gas, uranium and renewable energies)”.
14. What is related to non-traditional and renewable energy sources in accordance with the resolution No. 33/148 of the UN General Assembly (1978)? In biogas calculations, the notion of “animal unit” is used. What does it mean?
15. Give the definition: "Energy available in the form of heat released from the interior of the Earth, usually in the form of hot water or steam."
16. There are several types of commercial geothermal power plants. Indicate them.
17. What are the advantages of tidal power plants (TPP):
18. The total energy of ocean waves is greater than the energy of tides. The average wave power of seas and oceans is generally more than 15 kW per linear meter. With a wave height of 2 m, the power is about 80 kW/m, the energy conversion coefficient is up to 85%. What are the disadvantages of wave power plants?
19. Based on variations in output and flexibility, all renewable energy sources can be divided into 4 groups, name them.
20. When the Governments of the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan and the Republic of Uzbekistan signed the agreement on the parallel operation of energy systems in Central Asian states?
21. The mining and metallurgical sectors are the locomotives of the Central Asian industry, but they generate a large amount of wastes. What problems are caused by improperly disposed wastes?
22. Waste management is a complex issue. Which convention aims to protect human health and environment from harmful effects of hazardous wastes?
23. What is the Convention for prevention of marine pollution by dumping of wastes and other substances?
24. Name the main sources of industrial wastes in EECCA countries.

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11. <http://www.envsec.org/publications/vitalwaste3_rus_1.pdf>

**Annex 4.**

**Students who are interested in taking part in the Olympiad should register using this link (**[**https://forms.gle/dHhNUvrMPfJ3t46P9**](https://forms.gle/dHhNUvrMPfJ3t46P9)**) until May, 13**

**Test Questions for the third section "Industrialization, innovation and infrastructure and Sustainability of cities and towns".**

1. General questions on 2030 Agenda and SDGs

1. Who adopted the ‘2030 Agenda for Sustainable Development’ and who is the target audience or beneficiary of this Agenda?
2. The 2030 Agenda for Sustainable Development contains 17 Sustainable Development Goals (SDGs) which are integrated and indivisible and balance the three dimensions of sustainable development. What are these three dimensions of sustainable development?
3. Which of the below is a key pledge of the 2030 Agenda for Sustainable Development?
4. Name all 17 Sustainable Development Goals? (SDGs)
5. What are the “Means of Implementation” in the 2030 Agenda for Sustainable Development?
6. Who sets targets at global and national levels, so we know in 2030 whether the 17 Sustainable Development Goals (SDGs) have been achieved or not and how is progress reported?
7. Which country in Central Asia has registered the highest volume of remittances (in United States dollars) as a proportion of total GDP in 2020?
8. Which of below mentioned countries achieved the SDG 17.18.2 and has statistical legislation in line Fundamental Principles of Official Statistics in 2020?
9. Please, complete the definition of SDG 17.16.1 “Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that …. “.
10. What type of measures are defined in target 17.12 to be timely implemented for removing trade barriers?

2. Infrastructure and Industrialization - SDG 13

1. What is the purpose of SDG 9?
2. What are possible negative consequences of the lack of measures to improve infrastructure and promote technological innovations?
3. Why the infrastructure requires investments?
4. The main driving force of industrial development in developing countries are small enterprises. Adequate financing is a key to their growth. Why?
5. What sector of industry is the main driving force for economic development, employment and social stability?
6. According to UN Women, what percentage of women in the world are scientists?
7. What is the name of SDG 9?
8. What percentage of the world population has no access to mobile broadband?
9. China’s Initiative "One Belt and One Road" adopted in 2013 aims to:
10. The UN General Assembly adopted Resolution A/RES/70/212 (link is external) to proclaim the International Day of Women and Girls in Science. When is this day celebrated?
11. The development of Internet and “Internet of things” opens up great economic opportunities - these are positive aspects. What are possible negative consequences to consider?
12. Decipher an abbreviation: STEM?
13. Gender equality is one of the key components in achieving sustainable development. According to UNESCO, what largely determines girls' attitudes towards science and technology?
14. Research has shown that more than 30% of all citations in the scientific literature related to field experiments in the Arctic refer to work carried out in the territories adjacent to only two research stations: near Tulik Lake in Alaska, USA, and in Abisku National Park in Sweden. What could be the result of the lack of interdisciplinary and multifaceted research?
15. Name the Central Asia-South Asia high voltage power transmission line that will connect Kyrgyzstan and Tajikistan (hydropower exporting countries) with Pakistan and Afghanistan.
16. Under what circumstances existing trade barriers could be removed?
17. On a sub-regional level, the CA already has interstate structures that promote cooperation between countries in several sectors Name one of them.
18. What should landlocked countries like Central Asia have in order to integrate into world markets?
19. What does the term “nexus” mean in the context of energy, water and food?
20. What are the key challenges to impede the trade between SPECA members and with other countries?
21. What are the major issues affecting cross-border trade between SPECA countries?
22. What is the Central Asian regional initiative aimed at reduction of costs and transportation time?
23. What are the member states of TRACECA Regional Initiative?
24. OECD identifies 4 types of innovations. Name them.
25. What is one of the main factors inhibiting innovations?
26. The tool promoting sustainable business development is a new concept of “Triple Bottom Line”, i.e.:
27. Give the definition of “Sustainable Development” based on the definition provided by the United Nations.
28. How public authorities at local, national, regional and global levels can influence the sustainability of consumption and production?
29. The recently emerging “bottom line” concept has become a tool for promoting sustainable business development. What is another well-known name for this concept?
30. What was the aim of the UN Special Programme for the Economies of Central Asia ("SPECA") launched in 1998?
31. What are the three areas where, according to FAO, innovations combat the climate changes.
32. Give the definition: “All fresh water which is used for production and delivery to end users at all stages of value chain”.
33. The report of Springmann et al. considered the methods for ensuring the environmental sustainability of food production. Name one of them.
34. What is needed to prevent food losses during transportation?
35. What can the creation and development of public water supply infrastructure contribute to?
36. Define the concept: “Buildings are being refurbished to be as energy efficient, healthy and environmentally friendly as possible; new buildings under construction must comply with “net zero energy” or “positive energy” standards.
37. Give a definition to the following concept: “Climate-neutral city is an integrated complex of residential, working, commercial, entertaining, recreational and green areas. An extensive network of bicycle paths and conditions for bicyclists has been created in the urban space. The bicycle and pedestrian infrastructure is safe and convenient, including for children, elderly and people with reduced mobility”.
38. Give a definition to the concept: “In a climate-neutral city, the policies are being implemented to minimize wastes and encourage their recycling”.
39. What is one of popular alternative complementary mechanisms to combat the ‘heat island effect’ and control precipitations?

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3. Urbanization and sustainability of cities and communities - SDG 11

1. As of 2021, how much of the world's population lives in cities?
2. Which characterization of cities is correct?
3. Which UN organization is responsible for housing and urban development?
4. In which regions has the percentage of the population living in slums increased dramatically in the last few years?
5. What are the risks for cities arising from the growth of urban slums?
6. Does SDG 11 include targets for universal access to adequate, safe and affordable housing and basic services and slum upgrading?
7. What is the situation with air quality observed in most cities of the world?
8. Synergy, with which international agreement is defined in the framework of the implementation of SDG 11?
9. What the portion of population coves their needs in electricity by solar panels?
10. Urban areas in Afghanistan are prime contributors to climate change as they consume some 70 percent of the country’s energy and produce nearly half of its CO2 emissions. What is the main sources of these gases in urban areas?

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