Sustainable Development Summer School Activity Report

Samarkand | 3–9 September 2026

An international summer school was held in Samarkand on 3–9 September 2026 within the Sustainable Development and Sustainability Science (SDSS) course. This report presents the organisational preparations, daily sessions, study visits, participation in the regional water hackathon and concluding discussions in chronological order.

The summer school was hosted by the Samarkand Institute of Economics and Service. It was organised with the participation of the Swedish Aral Sea Society (SASS), the Silk Road International Research Institute, Karakalpak State University and other universities cooperating in the SDSS course. The Organization for Security and Co-operation in Europe (OSCE) provided financial support for the students' participation. The water hackathon on 7–8 September was integrated into the overall learning programme.

Purpose and coordination

The main objective was to connect local and regional sustainable development challenges in Central Asia with international experience, develop systems thinking, and strengthen participants' ability to analyse research information and present it in English. Lectures were complemented by a group project, field observations and discussions with experts.

Aqida Abdurakhmanova, Ibragim Ganiyev and Abbos Saydullayev contributed to local coordination. Björn Frostell led the international academic activities and the group project. Fourteen master's students were nominated for the programme, of whom thirteen participated.

2 September participant arrivals

Preparations included coordinating participants' travel to Samarkand, accommodation and attendance at the sessions. The programme designated 2 September as the arrival day and 10 September as the departure day. The main sessions were conducted in English.

3 September opening and academic introductions

The first day began at 09:00 with registration and an introduction to the summer school objectives and daily programme. Participants received information about the session formats, group work arrangements and practical matters.

At 10:00, Ibragim Ganiyev and Olim Pardayev delivered an introductory lecture on major sustainable development challenges in Central Asia and worldwide. Discussions focused on limited water resources, competing sectoral interests in their use and the need for regional cooperation.

Presentations of master's research projects began at 11:00 and continued after lunch. Students introduced their research topics and answered questions. This provided opportunities to connect research fields, clarify research questions and receive feedback on presentations. More extensive discussions of the theses also took place on the final day.



Figure 1. A lecture and discussion session during the summer school

An introductory walking tour of Samarkand's historic centre was organised in the afternoon. Participants explored the area around the Amir Temur statue and the Gur-e-Amir complex. The city visit promoted appreciation of cultural heritage and informal interaction within the group.

4 September the Aral Sea and wastewater treatment

At 09:00, Björn Frostell presented SASS perspectives on the Aral Sea crisis and sustainable development in the Aral Sea region. Discussions addressed water management, cooperation among partner organisations and the search for long-term regional solutions.

At 10:30, the group project “The Aral Sea Disaster — Past, Present and Future Scenarios” was introduced. From 11:00, participants formed six working groups and allocated responsibilities. The groups addressed the Aral Sea in 1500–1960, changes since 1960, three future scenarios and coordination of the overall report.

Students were instructed to use ChatGPT, Grok and Google AI for information searches. The objective was to develop skills in comparing and analysing collected information and synthesising it into a coherent text, rather than copying ready-made answers.

From 14:00 to 15:30, Alan Atkisson of Uppsala University delivered a Zoom lecture entitled “The Past, Present, and Future of Sustainable Development”. The session covered global environmental threats, international initiatives and the emergence of the sustainable development movement.



Figure 2. Wastewater before and after treatment during the study visit

A study visit scheduled for 16:00 introduced participants to the Samarkand Wastewater Treatment Plant. Staff explained mechanical and biological treatment stages, laboratory monitoring and the reuse of treated water. The visit connected water management discussions with an operational facility. The evening was allocated to group project work.

5 September regional scenarios and sustainability in daily life

At 09:00, Adiz Nasimov presented the host institute's perspectives on the Aral Sea crisis and sustainable development in the Aral Sea region. The lecture examined three scenarios for 2050 and discussed the need to strengthen existing water management efforts and measures to mitigate the consequences of the crisis.

From 11:30, the project groups continued collecting and analysing information. They synthesised historical evidence, current challenges and possible future developments. The task required consideration of economic and social consequences alongside environmental change when developing future scenarios.

From 14:00 to 15:30, Frans Lenglet of Global Action Plan International delivered an international online lecture entitled "Getting Closer to Sustainability in Daily Life and Practice". The session explored links between sustainable development, individual behaviour, everyday decisions and practical initiatives. It helped participants understand global goals at the level of individual and collective action.



Figure 3. Participants discussing the group project

The programme scheduled a presentation on sustainable development by Samarkand local authority representative Sh. Jurakulov at 16:00, followed by a student-organised social event in the evening. These activities were intended to introduce local governance experience and strengthen cooperation among participants.

6 September interim presentations and international experience

Working groups delivered interim presentations at 09:00. Under Björn Frostell's guidance, participants reviewed the information collected, the project structure and approaches to scenario development. The interim results showed that some groups had concentrated on finding proposed solutions rather than analysing the consequences of different scenarios.

From 10:30, the groups continued working in response to the feedback. The coordination group worked to combine individual contributions into a coherent structure. Particular emphasis was placed on showing the relationships between assumptions, proposed actions and expected environmental, economic and social consequences.

From 14:00 to 15:30, Professor Lars Rydén delivered a Zoom lecture entitled "How the European Union Implements Sustainable Development". Participants learned about European experience, environmental policy and approaches to implementing sustainability initiatives. The lecture placed local challenges within a broader policy and institutional context.



Figure 4. Summer school participants visiting the Imam Al-Bukhari complex

A visit to the Imam Al-Bukhari complex took place as part of the cultural and educational programme scheduled for 16:00. Participants explored the complex and its museum exhibition. The visit complemented academic sessions with an introduction to cultural heritage. The evening was allocated to preparing project materials.

7 September regional dialogue on water resources

On 7–8 September, summer school participants attended the OSCE event “From Data and Technology to Action: Regional Water Hackathon on Water Resources Management”. The first day at the Zarafshon Parkside Hotel was devoted to scientific and practical dialogue on water management.

The programme began at 09:30 with opening remarks and a group photograph. The first panel, at 10:45, discussed technologies needed to address water challenges in Central Asia. Björn Frostell and Aqida Abdurakhmanova moderated the panel. Experts presented experience in water-saving agriculture, technological solutions and engagement with farmers.

The report highlighted Master Fruit’s experience with solar energy and efficient water and energy use, together with a CNH representative’s presentation on opportunities to reduce agricultural water consumption. Discussions focused on applying technologies under actual farming conditions.

The second panel, scheduled for 11:45, addressed the participation of young people and women in water cooperation. Summer school students Ravshanjon Abdunabiyev and Maftuna Abdullayeva were also included in the panel programme. This theme linked water management with public participation and cooperation.



Figure 5. A field visit to agricultural land during the water hackathon

A field visit to cotton fields near Samarkand was organised in the afternoon during the programme’s 14:00–17:00 session. Participants observed water use and agricultural practices on site. The visit connected classroom discussions with farming conditions.

8 September youth water hackathon programme

The second day focused on enabling young professionals to develop practical solutions to water management challenges. The daily programme followed a sequence from identifying a problem to teamwork, solution development and a short pitch presentation.

Morning discussions and team formation

A recap of the first day, the use of data and digital tools, and anticipatory decision-making were scheduled for 09:30–10:00. A brainstorming session from 10:00 to 11:00 was planned to identify risks such as drought, glacier melting, data gaps and pollution. The sessions were scheduled to be moderated by OSCE representatives Letizia Zuliani and Gala Rak.

An introduction to hackathon rules, assessment criteria and expected outputs, followed by team formation, was scheduled for 11:00–11:30. The programme identified four workstreams: satellite data for understanding water issues; water quality; the water–energy–food nexus; and good water governance and participatory citizen science initiatives.

The designated facilitators were Umid Sayfudinov and Dilshod Mir-Akilov; Gala Rak and Elyor O‘razaliyev; Marhabo Yodalieva and Mariya Genina; and Letizia Zuliani and Ozod Tayirov.

Teamwork and final presentations

According to the programme, teams were to work on their selected challenge from 11:45 to 13:00 and from 14:00 to 15:30, then finalise their solutions and presentations from 15:30 to 16:30. A final review and rehearsal with facilitators was scheduled for 16:45–17:00, followed by youth team pitches from 17:00 to 18:00.

The period from 18:00 to 18:15 was allocated to expert selection of a promising solution, followed by closing remarks and certificates from 18:15 to 18:30. A joint dinner was planned for 19:00–21:00. The summer school students’ active participation in the two-day event was recorded; the detailed sequence for this day is presented on the basis of the hackathon programme.

9 September final presentations and overall results

The final day was devoted to group project presentations, research discussions and course evaluation. Project presentations had been scheduled for 09:00, 10:30 and 14:00. At participants' request, an additional three-hour session was introduced for more extensive discussion of master's theses, and the time allocated to the group project was adjusted.

A total of thirteen master's research projects were presented and discussed during the summer school. The report noted improvements in students' slide preparation and oral presentation skills in English compared with the spring SDSS course.

The six groups presented their work on the Aral Sea. They collected substantial information and presented results for their respective sections. However, the planned integrated report of 30–40 pages was not completed during the summer school. The coordination group was assigned to compile the report according to the agreed structure and circulate it to participants for comments.



Figure 6. Presentation of certificates at the end of the summer school

Oral and written evaluation and the closing ceremony were scheduled for 16:00. Participants received certificates at the final event. The programme also included a farewell dinner and participants' departure on 10 September.

Results and follow-up

The summer school combined three international online lectures, three local in-person lectures, master's thesis discussions, a project involving six groups, study visits and a two-day water hackathon. Future programmes should align project scope with the available time, clarify scenario analysis requirements in advance, support communication in English and expand local expert involvement. Completing the

group report and consolidating evaluation feedback remain the principal follow-up tasks.

Participant survey results

Responses from eight participants were analysed. Rating questions used a scale of 1–5. The results below reflect the views of those who responded; blank answers were excluded from the averages. All eight respondents rated overall satisfaction and organisation at 5.

Assessment area	Mean score	Comment
Overall summer school	5.00	All respondents rated it 5
Thematic lectures	5.00	Content was highly rated
Zoom guest lectures	4.43	Scores 4–5; one blank response
Student presentations and discussions	4.50	Scores ranged from 4 to 5
Aral Sea group project	5.00	All respondents rated it 5
OSCE water hackathon	5.00	Practical focus was highly rated
Field visits and excursions	5.00	All respondents rated them 5
Student and teacher interaction	5.00	All respondents rated it 5
Social activities	4.88	Seven scores of 5; one of 4
Overall organisation	5.00	Schedule and coordination
Balance between activity types	4.38	Time allocation could improve
Networking with experts	4.38	More interaction time could help
Severity of language barrier	2.13	1 = not serious; 5 = very serious

Note: n is the number of respondents answering the item. Averages are rounded to two decimal places. The language barrier score measures difficulty rather than satisfaction: a lower score indicates less difficulty.

All eight respondents reported presenting their master's research and attending the city walking tour and wastewater treatment plant visit. Seven respondents (87.5%) attended the Imam Al-Bukhari complex visit. Self-reported participation in the group project averaged 96.9%. All eight respondents recommended the summer school to others in their open-ended responses.

Participant feedback and recommendations

Open-ended responses highlighted the value of lectures and presentations, the wastewater treatment plant visit, teamwork and the practical relevance of the water hackathon. Participants identified time management, communication in English, understanding interdisciplinary connections and learning about technologies applicable to their research as important outcomes.

A respondent who worked on the “Good Water Governance” project during the hackathon reported that the activity helped them understand water management challenges and combine different ideas into a solution. This feedback illustrates how the hackathon complemented classroom sessions with practical teamwork.

The main difficulties concerned collecting information on the current state of the Aral Sea and developing realistic solutions. One respondent reported no major difficulties. Four respondents provided identical wording in their open-ended answers; these repeated statements were therefore not interpreted as separate independent pieces of evidence.

Recommendations for the next summer school

First, more time should be allocated to group projects and discussions, and the scope of assignments should match the programme duration. Providing datasets, a scenario example and the report structure in advance would help clarify the project task.

Second, respondents suggested considering a study visit to Karakalpakstan, or direct meetings with local communities and specialists, in future sessions on the Aral Sea. This would support a deeper understanding of how environmental challenges affect living conditions and regional development.

Third, student exchanges and opportunities to learn from international experience should be developed, alongside more time for consultations with experts. Brief English-language preparation before presentations and a glossary of relevant terms could also be useful.



Figure 7. SDSS summer school participants and organisers

The survey results indicate that the summer school was highly rated by the participants who responded.