PERIODIC REPORT of the "TIIAME" National Research University on the work conducted within the framework of the HWCA project.

Part 1.

Following the project agreement, the "TIIAME" National Research University is involved in the implementation of project activities for WP1 - Assessment of existing curriculum, needs assessment, planning of activities (4 person-months), WP2 - Updating existing curriculum or development of new curriculum in two specializations (4 person-month), WP3 - Upgrading faculty skills and teaching methods (1 person-month), WP5 -Development of a regional program for Continues Professional Development and Research (1 person-month), and WP6 - Dissemination, organization of mobility (9 person-month). A total of 19 person-months.

Under the schedule of work on the project activities, the following works were performed by "TIIAME" National Research University during the reporting period:

Activities conducted within the framework of WP1 - Assessment of existing curriculum, needs assessment, and planning of activities:

The project team of NIU TIIIMSH participated in a project Kick-off meeting, in which tasks, their distributions, methods for achieving project goals, and the main expected results for each WP and the project as a whole were discussed. The team actively participated in the discussions and presented its work plan for implementing the assigned tasks.

Within the framework of the scheduled time and tasks assigned to it, the team focused on the tasks and deliverables D1.1—Review of water-related academic and educational capacities in Central Asia, D1.2—Review of existing curriculum and needs and capacities of collaborating partners, D1.3—Needs assessment of HEIs, and D1.4—Needs assessment of stakeholders in its activities.

Within the framework of the D1.1 – Review of Central Asia's water-related academic and educational capacities, an overview of the academic and educational potential at the National Research University was carried out. Thus, the following educational programs are offered at the university at the bachelor's level:

A. "Water Sector and Land Reclamation", where students study such disciplines as:
-Geology and hydrogeology;
-Hydrology of the land;
-Hydraulics;
-Irrigation and land reclamation;
-Agricultural water supply and irrigation of pastures;
-Integrated use and protection of water resources;

-Operation of hydraulic reclamation systems;
-Integrated water resources management (optional)
-Agricultural water management technologies (optional)

B. Jurisprudence "Transboundary water relations", where students study such disciplines as:
- Hydrology;
- Hydrogeology;
- Irrigation and land reclamation;
-Purification of water resources;
-Water supply and sanitation;
-Water cadaster;
-Water and sustainable development;
- Multi-purpose use and protection of water resources;
-National and international water relations;
- Environmental impact assessment;
-Interconnection -Water-Energy-Food-Environment;
-Water resources management;
- Water diplomacy;
- Modeling of water resources management;

C. "Ecology and Environmental Protection (water sector option)", where students study such disciplines as:
- Ecology and environmental protection;
- Hydrology, meteorology and climatology;
- Geology and hydrogeology;
- Hydraulics;
- Drinking water supply;
-Sanitation and wastewater treatment;
- Multi-purpose use and protection of water resources;
- Environmental impact assessment;

Educational programs at the university at the master's level:
A. "Water Resources Planning and Management", where students study such disciplines as:
- Purification of water resources;
- Integrated use and protection of water resources;
- Water cadaster. Integrated water resources management;
-National and international water relations;
-Environmental expertise;
- Hydrochemistry;
- Modeling of water resources management;
-Interconnection -Water-Energy-Food-Environment;

B. “Environmental Protection (sectoral options)", where students study such

disciplines as:
- Environmental impact assessment.
- Hydroecology;

Description of training programs

The curricula of all Bachelor's degree programs have the same structure, including blocks of "Humanities and natural sciences," "General Professional disciplines," and "Special disciplines." The curricula include compulsory and elective subjects (up to 30% of the total allocated 240 credits), which allow creating opportunities for mastering additional professions, considering the interests of students and customers. The subjects, modules, and language of instruction vary in the Bachelor's degree programs in water resources management, depending on their planned educational goals. For example, in the curriculum of the Bachelor's degree program 60812300 - "Water sector and land reclamation", 30 ECTS credits are allocated for the module of humanities (foreign language, modern history of Uzbekistan, Uzbek (Russian) language, philosophy, physical education and sports, psychology, etc.). These modules are completed in the first, second, and fifth semesters (see the curriculum in the appendix), taking into account the program of subjects, the prerogative, and the logical sequence of educational materials. The modules of the cycle of natural sciences in a professionally oriented form ensure the purposeful assimilation of these modules. The main task of the modules on the subjects of the natural science cycle is to familiarize the future Bachelor's specialist with the basics of the sections of mathematics, physics, and other sciences corresponding to the specialties to promote better assimilation of individual components in the future to improve the possibilities of solving problems arising in the work. Modules of natural sciences are studied in the first, second, and fifth semesters in the amount of 23 ECTS, considering the curriculum's prerogatives in the subjects. Modules of general professional disciplines, including compulsory and elective subjects, occupy a relatively large part of the academic curriculum. The modules of this cycle consist of logically sequentially arranged disciplines such as engineering geodesy, theoretical mechanics, Information Technology, Soil science and Crop Production, Geology and Hydrogeology, GIS, Resistance of Materials, Hydraulics, Hydrology, Hydraulic Engineering, etc. 106 ECTS credits have been awarded to subjects in this cycle. Modules of general professional disciplines are studied in the second, third, fourth, fifth, and sixth semesters (see the curriculum, appendix). Modules of general professional disciplines create a basis for students to master specialized disciplines. Modules in specialized subjects such as Irrigation and land reclamation, Integrated use of water resources, Operation and maintenance of irrigation and drainage systems, etc., are studied in the sixth, seventh, and eighth semesters. 81 ECTS credits are distributed in these subjects (see the curriculum in the appendix), taking into account the prerogatives of the curricula and the logical

arrangement of subjects in the curriculum. The modules of specialized disciplines also consist of compulsory subjects and elective subjects. The special subject's cycle of specialization is essential for the formation of a specialist and the achievement of planned learning goals. The university's education is organized in Uzbek (60-70%), Russian (15-20%) and English (10-15%).

Bachelor's degree programs also include four types of practice during the study period:

1. Introductory and educational internship. Introductory and educational internships are organized after the first year of study at the university and related organizations under the guidance of a teacher. Students will be introduced to the relevant production organizations and their work for six weeks, divided into several selected organizations.

2. Educational internship. After the second year of study, an educational internship is organized in the university's laboratories and selected modern organizations. Students conduct laboratory and technological work for 4-6 weeks under the guidance of a mentor teacher and strengthen their knowledge in selected subjects.

3. Qualification internship. The qualification internship is scheduled for six weeks after the third year of study. During the qualification internship, students are assigned to various selected modern organizations in the field of specialty. During the qualification internships, students work under the guidance of leading experts from organizations and perform professional duties. After completing the qualification internship, students receive credits and grades from the organization.

4. Pre-graduate industrial internship. The pre-graduate internship is scheduled for ten weeks in the second semester of the fourth year of study. Students will work and collect the necessary materials for their thesis in selected organizations. This internship allows students to study modern manufacturing technologies and analyze and work on their approaches to develop measures and recommendations.

For example, after the first year of study, students of the Bachelor's degree program 60812300 - "Water sector and land reclamation" go on an educational internship for two weeks in Engineering geodesy and two weeks in soil science. After the second year of study, students go to an educational internship, where they master the applied part of the theoretical knowledge gained in the classrooms. After the third year, students complete qualifying internships at specific and modern organizations and enterprises, such as regional irrigation management bodies, irrigation service companies, and the Ministry of Water Management Departments. Students work as assistants to specialists, doing the same work as full-time employees of the organization. Basic skills such as calculating water resources balance, planning water resources, Operating and maintaining irrigation and

reclamation systems and structures, documenting water resources management and use, etc., are acquired during the qualification internship. In the second part of the fourth year of study, students undergo a pre-graduate internship to improve their skills and collect data for their thesis. In all cases, the head of the university and the organization ensure the process runs smoothly. The head of the internship from the university visits the practice facilities several times to ensure that the student acquires the skills necessary to obtain an education/specialty.

The duration of the Bachelor's degree program is four years, two semesters of 15 weeks each during the academic year (8 semesters in total). The total number of ECTS for four years of study is 240, distributed for compulsory subjects (65-70%) and elective subjects (25-30%), practices of 18-20 credits, and the final defense of the project or state exam - 5 credits.

Brief description of the Master's degree programs in water resources, non-technical subjects (economic, financial, institutional, social, political aspects of water resources management): Educational Master's degree programs at the "TIIAME" National Research University, in accordance with the State Educational Standard of the Republic of Uzbekistan, provide for the study of modules (disciplines) of the following academic cycles:

Mk.1 - Cycle of compulsory disciplines (MD) - 32 ECTS;

M.2 - Cycle of elective disciplines (ED) – 18 (ECTS):

M.3 - Research Activity (RA) -70 ECTS:

- Internship (scientific, qualification);

- Research work of a graduate student, including completing a master's thesis, state certification: registration and defense of a master's thesis - 40 (ECTS).

The duration of the master’s program is two years, two semesters of 20 weeks each academic year (4 semesters in total). The total number of ECTS for two years of study is 120.

At the University, some courses included in the curricula of disciplines at the undergraduate level are taught in English. There are study groups in Uzbek (60-65%), Russian (20-25%), and English (10-15%). Starting from the 2022-23 academic year, mandatory requirements for English language proficiency at a level not lower than B2 have been established for applicants to master's and doctoral studies. Approximately 20-25% of the University's teaching staff are fluent in English.

The University has two departments of English: 1. The Department of "Languages", where courses in English, German, and French are taught to students of engineering and economics faculties. The majority of students choose English as a foreign

language. Students with international certificates of knowledge of a foreign language with a score of B2 and above are exempt from foreign language classes; 2. The Department of English Language and Philology (recently organized) teaches students in the English language educational program.

The average level of knowledge of students in the 2nd year of the Master's degree in English A2 and B2. The average level of knowledge of students in the 1st year of the Master's degree in English B1 and B2.

642 faculty members in seven faculties work for the University, of which 480 teachers work full-time. The scientific potential is 58%.

Creating a special series of English language courses and organizing short-term internships in foreign English-speaking developed universities will help raise teachers' interest and motivation and provide opportunities for professional networking and growth.

Part 2.

The "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University (TIIAME-NRU) HWCA project team has actively participated in D1.3 – Needs assessment of HEIs and D1.4 – Needs assessment of stakeholders in its activities. Here is information on activities conducted in collaboration with need assessment mission experts.

9 October			
09:30 – 10:00	**Meeting with the rector of "TIIAME-NRU"**	Main building of TIIAME-NRU	A.Salokhiddinov J.Mirzaqobulov
10:10 – 11:00	**Meeting with teaching staff representatives**: 1. M.V.Radkevich – *Professor department of Ecology and WRM, Waste management, Environmental engineering.* 2. B.K.Karimov – *Professor department of Ecology and WRM, Environmental engineering.* 2. O.A. Ashirova – *PhD. Associate of professor, department of Ecology and WRM, Water supply and treatment.* 3. R.I.Razzakov – *PhD. Senior teacher department of Ecology and WRM, Ecology and environmental protection.* 4. N.Gadoev – *PhD. Associate of professor department of Operation and maintanance of hydromeliorative systems, Operation and Maintenance of Hydromeliorative Systems.* 5. J.Ishjanov – *PhD. Associate of professor department of Irrigation and melioration, Water Sector and Land Reclamation* 6. F.R. Begov – *Head of The English language department.*	Innovative Cluster	A.Fakhullayev B.Norov A.Xomidov I.Begmatov A.Sherov

	7. D. Khodjaev – *Associate of professor, Head of Academic-Methodical Department.* 8. Students		
11:30 – 13:00	**Development Partner**. Meeting with IWMI representative, Mr.Aytura Anarbekov		O.Aranbekov A.Salokhiddinov J.Mirzaqobulov
13:30 – 14:30	Meeting with Mr.A.Nazarov – First Deputy Minister, The Ministry of Water Resources.	The Ministry of Ecology, Environmental Protection and Climate Change	A.Salokhiddinov J.Mirzaqobulov
15:30 – 16:30	**Private Sector:** Meeting with Dr.Madina Kholmirzayeva – Director of Nazar Business & Technology (NBT.UZ)	NBT office 27 Imom At-Termiziy, Tashkent	M.Kholmirzayeva J.Mirzaqobulov
10 October			
13:30 – 14:00	Meeting with Dr. D.Ziganshina - Director of the Scientific Information Centre of the Interstate Commission for Water Coordination in Central Asia	B-11, Karasu-4, Tashkent Meeting Room	D.Ziganshina J.Mirzaqobulov

We organized a "Needs Assessment Mission." This two-day mission evaluated the preparedness and requirements for an updated curriculum at the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIIAME-NRU) and the University of World Economy and Diplomacy (UWED).

Day 1: TIIAME-NRU, The mission began with a meeting at the main building of TIIAME-NRU, including discussions with Prof. A. Salokhiddinov and J. Mirzaqobulov. Subsequent meetings with key Ecology and Water Resources Management department faculty covered crucial aspects such as English language proficiency and readiness for the curriculum update. The session concluded with a meeting with a development partner, Mr. Aytura Anarbekov of the International Water Management Institute (IWMI). A productive afternoon included a luncheon at the Institute Cafeteria, hosted by J. Mirzaqobulov. Later, meetings were held with Mr. A. Nazarov, Deputy Minister of the Ministry of Water Resources, and Mr. J. Kazbekov, Deputy Minister of Ecology, Environmental Protection, and Climate Change. The day concluded with a private sector engagement with Dr. Madina Kholmirzayeva, Director of Nazar Business & Technology (NBT.UZ).

Day 2: UWED The second day commenced with a meeting at the main building of UWED, including discussions with N. Nugmanov, M. Khamdamov, and S. Turaeva. Subsequent meetings with teaching staff from various departments assessed their readiness for the updated curriculum, focusing on English language proficiency. After interesting meetings in UWED we included meetings with a representative from the Ministry of Foreign Affairs, Mr. A. Umarov, Deputy Director of the Institute of Advanced International Studies, and Dr. D. Ziganshina, Director of the Scientific Information Centre of Interstate Commission for Water Coordination in Central Asia.

Key Findings:

1. **Academic Readiness:** Faculty members demonstrated a keen interest and commitment to the updated curriculum. English language proficiency varied among staff, highlighting potential areas for targeted support.
2. **Government Collaboration:** Meetings with government officials from the Ministry of Water Resources and the Ministry of Ecology, Environmental Protection, and Climate Change underscored their support for the educational initiatives and highlighted potential areas for collaboration.
3. **Private Sector Engagement:** The interaction with Dr. Madina Kholmirzayeva of Nazar Business & Technology emphasized the importance of private sector involvement in educational programs, providing real-world perspectives.

Recommendations:

1. **Language Support:** Consider implementing language proficiency programs to enhance the English language skills of faculty members.
2. **Government Partnerships:** Strengthen collaborations with government ministries for mutual support in curriculum development and implementation.
3. **Private Sector Integration:** Explore opportunities for increased private sector engagement to bridge the gap between academic knowledge and industry requirements.

Part 3.

WP3 - Upgrading faculty skills and teaching methods and WP5 -Development of a regional program for Continues Professional Development and Research

The team has developed a reasonable list of equipment to perform the tasks provided for in WP3 and WP5.

LIST OF EQUIPMENT TO PERFORM THE TASKS PROVIDED FOR in WP3 and WP5

#	Items	Quantity	Price	Total price	Source
1	**All in one PC** Windows 11 Pro, Intel® Core™ i3-13100T (up to 4.2 GHz with Intel® Turbo Boost Technology, 12 MB L3 cache, 4 cores, 8 threads) 68.6 cm (27") diagonal, FHD (1920 x 1080), IPS, three-sided micro-edge, anti-glare, 250 nits, 72% NTSC Non-touch screen Snowflake White HP True Vision 5 MP wireless IR privacy camera with integrated dual array digital microphones 8 GB DDR4-3200 MHz RAM (2 x 4 GB), 256 GB PCIe® NVMe™ M.2 SSD, 1 TB 5400 rpm SATA HDD, NVIDIA® GeForce® MX450 (2 GB GDDR6 dedicated) 180 W Smart AC power adapter, Realtek RTL8822CE 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 combo Microsoft Office 365 Personal - Save 10%, McAfee Livesafe (30 day), HP 710 White Wireless Keyboard and mouse combo	21	883	18543	https://www.hp.com/us-en/shop/ConfigureView?langId=-1&storeId=10151&catalogId=10051&catEntryId=3074457345620713818&urlLangId=&quantity=1
2	Smart board	1	611,28	611,28	https://www.indiamart.com/proddetail/smart-board-sb480-interactive-whiteboard-22470117848.html
3	Projector	1	1289,78	1289,78	https://www.epson.com.au/products/projector/EB-580.asp?groupid=19
4	Videoconference set	1	1349	1349	https://www.amazon.com/Logitech-Conferencing-Bundle-Expansion-Meeting/dp/B01BBKZ520
5	Canon ImageClass MF7470 Multifunction Printer	1	2699	2699	https://copyfaxes.com/product/1057/Canon-ImageClass-MF7470-Multifunction-Printer?key=4
6	Software: WEAP LEAP ArgGIS Windows 11 Office 2023 Antivirus	1 1 1 1 1	3100	3100	
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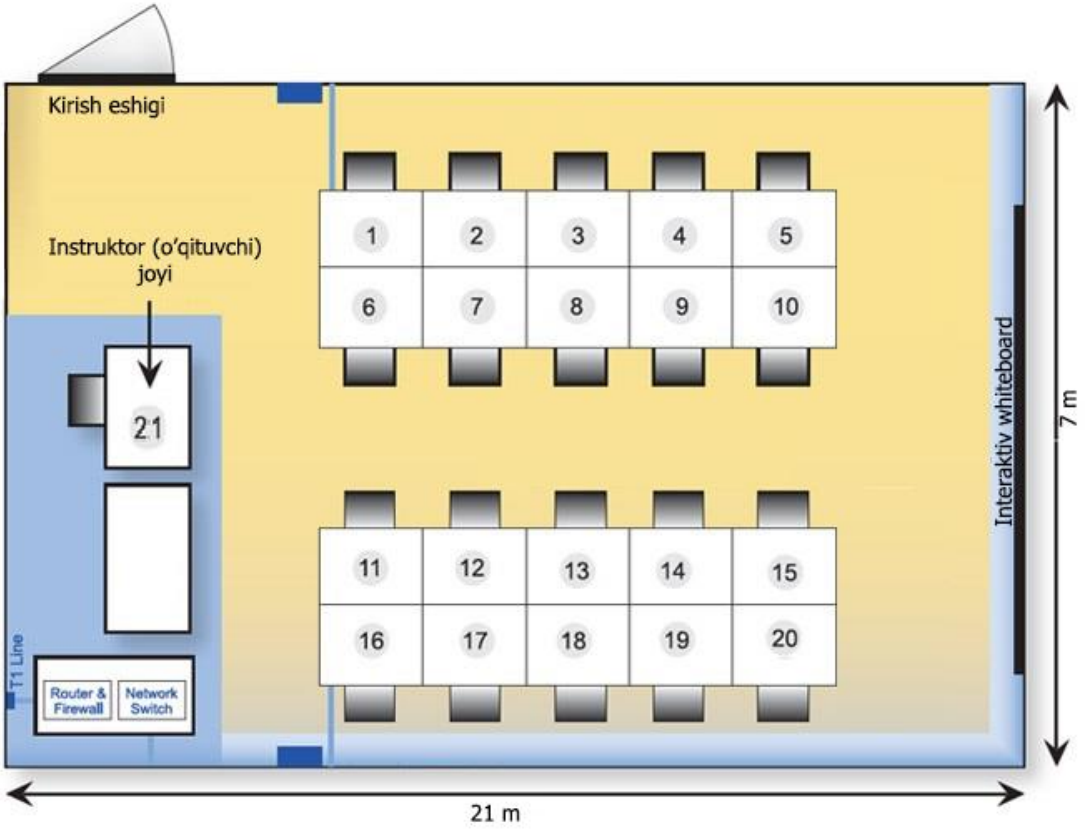

We have trayed to purchase planned equipment followed existing rules, but we could not find contractor to provide the service. We will try again and purchase the planned set of equipment in 2024.

We were provided with recommendation of rules of financial operation during a seminar and we are following them. We would appreciate support from the project in purchasing of suitable equipment within allocated budget or contribution.

We propose organizing one of summer school in Uzbekistan in TIIAME-NRU.

Project Management:

The project in "TIIAME" NRU is managed by the project coordinator, Abdulkhakim Salokhiddinov Temirkhojaevich, Vice-rector on International Corporation.

The Project Management Board provides overall guidance to the project

The Project Steering Committee provides operational guidance to the project. Abdulkhakim Salokhiddinov Temirkhojaevich, Vice-rector on Vice-rector on International Corporation is the member of the Steering Committee of the project from "TIIAME" NRU site.