

## 1. Outline

**【Name of project】** (Adopted year: FY2014, Country (Russia))  
Students and Researchers Exchange Program in Sciences (STEPS)

**【Summary of project】**

This project is designed to develop models for the exchange of students and researchers between Japanese and Russian universities and research institutes through: 1) collaboration centered on science and civil engineering disciplines of the University of Tokyo with Lomonosov Moscow State University and Saint Petersburg State University, two of the representative universities in Russia, and 2) promotion of exchanges among undergraduate and postgraduate students in science and engineering.

Fostering future leaders for the cooperative development of Japan and Russia

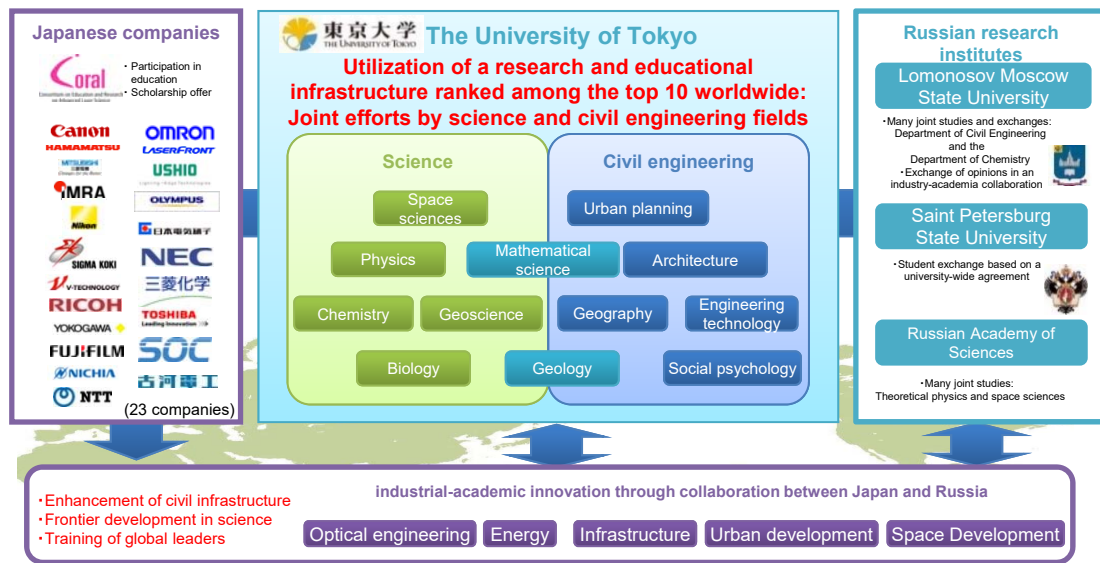


Fig. 1. Outline

**【Summary of Exchange program】**

Building upon existing frameworks at the School of Science, the University of Tokyo, including the University of Tokyo Research Internship Program (UTRIP), the Study and Visit Abroad Program (SVAP), the international undergraduate transfer program Global Science Course (GSC), and the Consortium on Education and Research on Advanced Laser Science (CORAL), this program aims to enhance student exchange by taking in undergraduate and postgraduate students from Lomonosov Moscow State University and Saint Petersburg State University, as well as by sending undergraduate and postgraduate students in science and engineering from the University of Tokyo to these two Russian universities and to research groups at the Russian Academy of Sciences where joint research is being conducted with these two universities.

**【Global Human Resources on the project】**

Through this program, we will foster future human resources with the following characteristics: (1) experts with international and social mindsets who can develop collaborative relationships between Japan and Russia, (2) researchers, policy drivers, and project managers with a solid grounding in scientific skills who can communicate internationally with researchers and business persons in different fields, across boundaries of industry, government and academia, and (3) researchers and advanced specialists who can rely on their high level of expertise and experience in cutting-edge fields to take on brave new frontiers, while exercising strong international leadership.

**【Feature on the project】**

A key feature of this project is the way in which it fosters young human resources from science and engineering fields to serve as key persons in Japan and Russia in building collaborations between the two countries, by natural science disciplines (physics, chemistry, biology, as well as earth and planetary science) and civil engineering disciplines at the University of Tokyo working together to drive students exchange with two representative universities in Russia, thereby building close bonds of collaboration in advanced fundamental science education and research.

**【Exchange number】**

	2014	2015	2016	2017	2018
Outbound	25	25	25	25	25
Inbound	0	25	25	25	25

## 2. FY2014 Progress

【The University of Tokyo】

### 【Name of project】 (Adopted year: FY2014, Country (Russia ))

Students and Researchers Exchange Program in Sciences (STEPS)

#### ■ Exchange Programs

The following were implemented in FY2014:

- (1) Developing and improving the administrative framework of the project;
- (2) Developing prospective hosts for student exchange, and sending educators to Russia to discuss agreement signings and other preparatory measures; and
- (3) Short-term student exchange.

#### Student-Mobility

##### ○ Outbound

Twenty seven students were selected from 37 applicants, and seventeen were sent to Lomonosov Moscow State University while ten were sent to Saint Petersburg State University for the period of March 9-20. Each student was assigned to a laboratory which matched their major and interests, and given an opportunity to observe how research was being conducted in the hosting university, as well as interact with local students (Fig. 2).

##### ○ Inbound

The Department of Civil Engineering, Faculty of Engineering, the University of Tokyo, and the Department of Nature Management, Faculty of Geography, Lomonosov Moscow State University, which had started exchanges before the implementation of this program, took the initiative in holding a collaboration seminar on Sustainable Environment in Tokyo in March 2015. Lomonosov Moscow State University funded eight students' travel to the University of Tokyo, where they presented their research papers and to exchanged ideas with their University of Tokyo counterparts (Fig. 3).



Fig. 3. Exchange at the Collaboration Seminar on Sustainable Environment



Fig. 2. Members sent from the University of Tokyo (Photo taken in front of the school building of the Department of Chemistry, Saint Petersburg State University)

#### ■ Forming the University Network for Quality Assurance

##### (1) Organization of the STEPS Committee

This committee was organized in November 2014, and frameworks were developed to administer the program, including scheduling decisions and the screening of applicants for the outbound programs.

##### (2) Committee chair, committee member, and administrative staff member visiting Lomonosov Moscow State University

Two visits were made in December 2014 and March 2015, where agreements were reached to send students on short-term visits during the academic year and to cooperate toward the signing of a renewed agreement to facilitate future exchanges. In March, an agreement was signed to make it possible to send students during the academic year (Fig. 4).

##### (3) Committee chair, committee member, and administrative staff member visiting Saint Petersburg State University

Two visits were made in December 2014 and March 2015, in order to implement exchanges beyond the quota of the university-wide agreement. An agreement was reached to cooperate toward the signing of a division-level memorandum. It was decided that negotiations on the text of the memorandum would be continued.



Fig. 4. Talk between the chair of the Department of Geology, Moscow State University, and the STEPS Committee members

#### ■ Promoting a Student-Mobility Environment

Two temporary staff members were employed from January 2015 to manage the short-term sending of students. Moreover, in October 2014, a Russian staff member of the academic affairs division at the graduate school of science was assigned to this program. These measures enhanced communication with Lomonosov Moscow State University and Saint Petersburg State University, making it possible to smoothly implement the short-term outbound program. Russian classes were given by a native speaking lecturer before sending the Japanese students, so that those who were sent had some Russian skills necessary for everyday life. This enhanced the effectiveness of the student dispatch.

#### ■ Internationalization of the university

##### Information disclosure and Publication of outcome

Through this program, the foundation has been laid for student exchange between the University of Tokyo and Lomonosov Moscow State University as well as Saint Petersburg State University. Mutual collaboration frameworks have been formed to realize the bidirectional exchange of science and engineering students between the University of Tokyo and the Russian universities. In addition, a website for the program was prepared, to share the program contents.

<http://www.s.u-tokyo.ac.jp/en/STEPS/> (English) <http://www.s.u-tokyo.ac.jp/ja/STEPS/> (Japanese)

#### ■ Notices

Triggered by visits of the Committee members to Russia to implement the project, photon science researchers from the University of Tokyo, Lomonosov Moscow State University, and Saint Petersburg State University joined in Tokyo to hold the 1st STEPS Symposium on Photon Science in March 2015. This symposium bore fruits not only in terms of academic exchange, but also in discussing concrete plans for future student exchange (Fig. 5).



Fig. 5. Exchange at the Symposium on Photon Science

Table 1. Implementation of student exchange

	2014	
	Plan	Result
Outbound	25	27
Inbound	0	8

### 3. FY2015 Progress

[Students and Researchers Exchange Program in Sciences (STEPS)] 【The University of Tokyo】

(Adopted year: FY2014, Country (Russia))

#### ■ Exchange Programs

The following were implemented in FY2015:

- (1) Recruiting Russian professors to host our students and dispatching our professors to establish or maintain agreements;
- (2) Short-term dispatching and accepting students; and
- (3) Establishing a system for dispatching and accepting students for long-term periods of study.

Table 1: Number of student participants

	FY2015	
	Plan	Result
Outbound	25	14
Inbound	25	1

#### Student-Mobility

##### ○ Outbound

According to a post-program survey given to FY2014 UTokyo participants, many students expressed wanting to study in Russia for a longer period of time. Therefore, this year a decision was made to extend the length of study by 1–3 months. Students select where they want to study, directly contact the professor or associate professor they want to study under, obtain approval, and formulate their joint research and training plan for their period of study. This makes it possible for program participants not only to conduct academic research that they are interested in but also to increase their opportunities for intercultural exchange and to enhance their experience as international students. Seven students were sent to Moscow State University (MSU) and seven to Saint Petersburg State University (SPbU) (Fig. 1). One of this year's participants found the experience to be quite meaningful and wanted to stay longer, which motivated them to participate in a long-term exchange program next year.

##### ○ Inbound

An explanation of how the program is operated was provided to both partner universities, and a mutual agreement was reached. After an agreement (memorandum) was concluded, our university started to accept Russian students this year (Fig. 2). Similar to outbound students, the period of study is 1–3 months and students select where they want to study. They also directly contact the professor or associate professor that they want to study under, obtain approval, and decide their joint research and training plan for their period of study.

A Russian student accepted by our university this year had learned about STEPS and developed a strong desire to study at our university after our student sent last year met lab members of the MSU Geology Department. Since the program was well-known, a large number of students applied for the program in FY2016 and it appears that more than twenty will be selected for the program.



Fig. 1: Students sent from our university and SPbU students (at Saint Petersburg)



Fig. 2: Students from MSU and lab members of our university

#### ■ Forming the University Network with Quality Assurance

(1) *Agreement on an exchange framework reached through visits to MSU and SPbU by steering committee chairperson, a member and program clerks, and visits to our university by MSU staff members responsible for STEPS*

Five visits to MSU were made in FY2015 and a university-wide agreement was concluded in August 2015 following a series of discussions. In addition, a memorandum specific to the STEPS program was concluded in February 2016, in which the mutual exchange of fifteen students a year, tuition waivers, conferment of a program completion certificate, and student support were agreed upon. A meeting was also held with students of our university studying at these universities through this program. Turning to SPbU, there were three visits in FY2015, and an agreement including the free use of dormitories, mutual exchange of fifteen students a year, student support, and other issues was reached. A school memorandum was concluded in October 2015. A meeting was arranged with local students planning to study at our university through this program (Fig. 3). There were also discussions of a long-term exchange program with SPbU's Management School. The School has adopted the European Credit Transfer System (ECTS), which our university has not done. Thus, materials indicating our credit system were submitted to have SPbU decide on the conversion rate for credits.

In January 2016, the deputy head of the department responsible for MSU's STEPS Program visited our university and met with President Gonokami and Executive Vice President Furuya, who is in charge of international affairs (Fig. 4). They held preliminary discussions with staff members of our university on running the program, and met with students who are expected to be sent to MSU.

(2) *Selection of students to be sent from and accepted by our university*

Students to be sent from our university are carefully selected after taking into consideration their statements of intent (which express their aspirations and research plans in English), and their supervisor's recommendation. The Russian counterparts are currently selecting students to be sent to our university by a selection scheme similar to the one we have developed in Tokyo.



Fig. 3: Meeting with SPbU students who plan to study at our university

#### ■ Promoting a Student-Mobility Environment

A Russian native proficient in Japanese had already been allocated as an administrative staff. In April 2015, another Russian administrative staff member proficient in Japanese was hired at the Department of Civil Engineering in the School of Engineering, and one Japanese staff member was hired at the School of Science, establishing a better administrative support system. Further, both MSU and SPbU staff members were appointed to be in charge of the STEPS program and act as contact personnel for the program.

As for creating a system of long-term exchange programs, the School of Engineering will launch a trial program with the SPbU Management School. Based on the memorandum accompanying the mutual recognition of credits concluded in January 2016, there are plans for one student from our university to be sent at the end of August 2016 and two Russian students to be accepted in September of the same year.

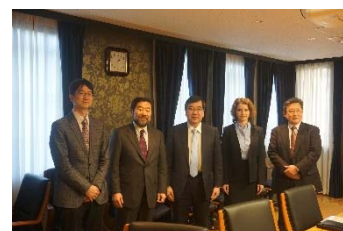


Fig. 4: Courtesy call to President Gonokami and Executive Vice President Furuya by the MSU STEPS staff

#### ■ Internationalization of the University

##### Information Disclosure and Publication of Outcome

A website for the program, which had been created in the previous year on our university website, is regularly updated to announce the latest information and results. In addition, both MSU and SPbU have webpages for the program as part of their university's website, which is mainly used to inform their students of the program and to recruit students from both universities to the program. (MSU, [http://www.msu.ru/int/tokio.php?sphrase\\_id=631175](http://www.msu.ru/int/tokio.php?sphrase_id=631175); SPbU, <http://www.phys.spbu.ru/steps.html>)

##### ■ Notices

Following the success of the 1<sup>st</sup> STEPS Symposium on Photon Science held in March 2015 in Tokyo, the 2<sup>nd</sup> STEPS Symposium on Photon Science was held in Peterhof, a suburb of Saint Petersburg. At this symposium, 33 researchers, including our two graduate students, gave presentations and held discussions. Furthermore, an undergraduate student of our university studying at SPbU through the STEPS program also participated in the symposium and actively interacted with researchers (Fig. 5).



Fig. 5: Participants at the 2<sup>nd</sup> STEPS Symposium on Photon Science (at Peterhof)

# 4. FY2016 Progress

[The University of Tokyo]

**[Name of project ] (Adopted year: FY2014, Country (Russia ) )**

Students and Researchers Exchange Program in Sciences (STEPS)

Table 1. Number of student participants

	2016	
	Plan	Results
Outbound	25	13
Inbound	25	31

## Exchange Programs

The following were implemented in FY2016:

- (1) Recruiting Russian professors to host our students and dispatching our professors to establish or maintain agreements;
- (2) Short-term dispatching and accepting students; and
- (3) Long-term dispatching and accepting students.

## Student-Mobility

### Outbound

Between May 2016 and the end of March 2017, we sent our students overseas – seven to Lomonosov Moscow State University (MSU) and five to Saint Petersburg State University (SPbU) – to participate in a one to three month-long program. The students decided the length of stay, their research topics, etc., with their host faculty members in advance, which allowed their research at the host research lab to run smoothly. In addition, the School of Engineering sent one student to participate in a long-term program, which was launched jointly with SPbU's Graduate School of Management. The program was a complete success, as the students were able to acquire extensive knowledge in fields the student has few opportunities to study at our university, although the fields of study were related to the student's major.

### Inbound

Between April 2016 and the end of March 2017, we hosted students from overseas – 14 from MSU and 15 from SPbU – for a period of between one and three months (the same length as our program for sending students overseas) (Fig.1). The students decided the length of stay, their research topics, etc., with their host faculty members in advance, which allowed their research at the host research lab to run smoothly. The students were able to enjoy student life thanks to the support of their host research lab as well as the Russian staff members, from even before their departure to the day they returned to Russia.

In addition, we hosted two students from SPbU in the form of a long-term program. One of the students, in addition to attending classes, participated in an internship at a Japanese company.

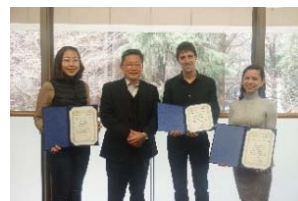


Fig.1 Completion Ceremony for inbound students

## Forming the University Network with Quality Assurance

(1) Visit of steering committee members and administrative staff member to Moscow State University

The visits took place in May and August of 2016 and in March of 2017. At the Faculty of Geography, our representatives met with students from our university who were participating in the program and also engaged in discussions on how to run the joint seminars, which we have continued to carry out. At the Faculty of Psychology, ideas were exchanged on the possibilities for exchange in new fields such as East Asian Culture and cross-cultural psychology. At the business school, our representatives submitted a list of English-taught courses offered by the School of Engineering, along with course descriptions. They also submitted a departmental draft memorandum to the respective persons in charge and asked them to look over it. The goal is to complete a Memorandum of Understanding as quickly as possible in an effort to implement a credit transfer system during 2017. At the MSU Administration Bureau, staff members who would represent MSU at the seminars that will be held in St. Petersburg in March 2018 were chosen. The parties agreed to continue engaging in discussions concerning the details.

(2) Visit of steering committee members and administrative staff member to St. Petersburg University

The visits took place in August of 2016 and in March of 2017. At the Institute of Earth Science, our representatives met with students from our university who were participating in the program as well as the host faculty members and made arrangements to provide a program that would better meet student needs. In the meetings with students that our university would be hosting, they discussed what preparations students will need to make before departing for Japan. In addition, staff members who would represent St. Petersburg University in the seminars that will be held in St. Petersburg in March, 2018 were chosen. The seminars will mainly be on areas such as oceanography, hydrology, urban planning, geographical information, and meteorology. At the School of International Relations, the decision was reached to begin the recruitment process for hosting students at our university, which had never been done before. At the Graduate School of Management, our representatives confirmed the students' status of preparations before departing for Japan under the long-term program. They also engaged in discussions on the timing for the long-term sending and hosting of students during the fall term and agreed to continue cooperation.

## Promotion of Student-Mobility Environment

The STEPS Office, which has three full-time staff members (including two Russian staff members who are fluent in Japanese), performs duties related to running this program through collaboration with the International Liaison Office, and the Office of Research Strategy and Development, School of Science in a centralized manner. Both MSU and SPbU have STEPS program coordinators (Fig.2), and systems of communication and student exchange supports between Japan and Russia have been put in place in which the STEPS Office plays a key role. We also provided intensive Russian language courses before sending students off to study in Russia, which allowed students to acquire practical Russian which they would be able to use immediately after arriving in Russia.



Fig. 2 Meeting with STEPS program coordinator at Lomonosov Moscow State University

## Internationalization of the university

### Information disclosure and Publication of outcome

This year, we began publishing program reports online, which were submitted by students who were sent overseas as well as students we hosted in Japan (<http://www.s.utokyo.ac.jp/ja/STEPS/program/report.html>) (Fig. 3), on our website in an effort to continue enhancing information. The reports painted a colorful picture of specific activities in the program, which we believe will make more people interested in applying. We have also put together a written report (a roughly 40-page brochure containing information on our activities to date) and distributed it on and off campus (Fig. 4). The report is available in Japanese and English.



Fig. 3. Program Reports on STEPS website



Fig. 4. Activity Report

## Notices

In the STEPS student special workshop entitled "Innovation for Japanese-Russian new generations," which was held at our university in April 2016, faculty members and students from our university as well as SPbU engaged in group discussions on three main topics, higher education, the marine environment, and international conflicts, which are important issues for Japan and Russia (Fig. 5).

In August 2016, the 3rd Russian-Japanese / The 2nd STEPS Collaboration Seminar for Sustainable Environment "Environmental Risks for Socioeconomic Development" was held at MSU. In addition to faculty members and students from our university as well as SPbU, representatives of the National Research Institute for Earth Science and Disaster Resilience and the International Geographical Union participated in the event. The theme of the event was environmental risks of socioeconomic development. Through these events, wide-ranging exchanges that go beyond disciplinary boundaries or positions were carried out (Fig. 6).



Fig. 5. Exchange at the special workshop on Innovation for Japanese-Russian new generations



Fig. 6. Exchange at the Collaboration Seminar on Sustainable Environment

# 5. FY2017 Progress

【The University of Tokyo】

【Name of project】(Adopted year: FY2014, Country (Russia ))  
Students and Researchers Exchange Program in Sciences (STEPS)

Table 1. Number of student participants

	2017	
	Plan	Results
Outbound	25	19
Inbound	25	23

## ■ Exchange Programs

The following were implemented in FY2016:

- (1) Recruiting Russian professors to host our students and dispatching our professors to establish or maintain agreements;
- (2) Short-term dispatching and accepting students; and
- (3) Long-term dispatching and accepting students.

## Student-Mobility

### ○ Outbound

Six students were sequentially dispatched to Lomonosov Moscow State University (MSU) and thirteen to St. Petersburg State University (SPbU) from May 2017 to the end of March 2018. They had obtained prior permission from the professors or associate professors of the subject which they major in after consulting about the dispatch period and activity contents. Therefore participation in the program has less impact on students curriculums.

### ○ Inbound

Between April 2016 and the end of March 2017, we hosted students from overseas – 13 from MSU and 10 from SPbU. After coming to Japan, participants got guidance at the STEPS Office and received training at the laboratory of each research field under the instruction of the professors or associate professors who accepted them (Fig.1). In each laboratory, they conducted experiments and laboratory practices in line with their research subjects, acquiring a variety of skills.



Fig.1 At the host laboratory

## ■ Forming the University Network with Quality Assurance

(1) Visit of steering committee members and administrative staff member to Lomonosov Moscow State University

The visits took place in July of 2017 and in March of 2018. At the Faculty of Geography, parties decided the person in charge from MSU after discussion about management of the joint seminar which has been continuously held. At the School of Business, our representatives discussed the most appropriate dispatch period for students. In addition, they confirmed the draft memorandum and it was decided that MSU would consider it. At the MSU Administrative Bureau, parties discussed future academic exchanges.

(2) Visit of steering committee members and administrative staff member to St. Petersburg University

The visit took place in July of 2017. At the Institute of Earth Sciences, our representatives confirmed the schedule and outline of the 3<sup>rd</sup> STEPS seminar, scheduled to be held in March 2018. In addition, they agreed on proactive implementation of future acceptance and dispatch in the frame of STEPS. At the Graduate school of Management, parties discussed the long-term dispatch and acceptance toward the new semester. There was also an explanation about teaching methods at the Graduate school of Management (Fig.2).

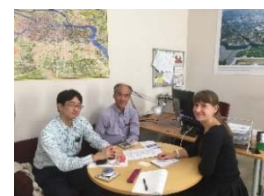


Fig. 2 Meeting with Student Exchange Manager at Graduate School of Management

## ■ Promotion of Student-Mobility Environment

The STEPS Office, which has three full-time staff members (including two Russian staff members who are fluent in Japanese), performs duties related to running this program through collaboration with the International Liaison Office, and the Office of Research Strategy and Development, School of Science in a centralized manner. Both MSU and SPbU have STEPS program coordinators, and systems of communication and student exchange supports between Japan and Russia have been put in place in which the STEPS Office plays a key role. We also provided intensive Russian language courses before sending students off to study in Russia, which allowed students to acquire practical Russian which they would be able to use immediately after arriving in Russia.

## ■ Internationalization of the university, Information disclosure and Publication of outcome

We publish program reports on our website (<http://www.s.utokyo.ac.jp/ja/STEPS/program/report.html>), which were submitted by both dispatched and accepted students in an effort to disclose further information. The reports painted a colorful picture of specific activities in the program, which we believe will make more people interested in applying.

## ■ Notices

The 3<sup>rd</sup> STEPS Symposium on Photon Science was held in Moscow in March 2018, following the symposium held in Peterhof in March 2016. The presentation was delivered from the viewpoint of a variety of fields such as chemistry, physics, and earth and planetary science under the theme of Photon Science.

The 4<sup>th</sup> Russian-Japanese / The 3<sup>rd</sup> STEPS Collaboration Seminar <Sustainable Environment for Socio-Economic Development> was also held in SPbU in March 2018. The presentation under the theme of environmental risks in socio-economic development was delivered and the technical visit of relevant facilities such as high tide disaster prevention complex was conducted at the seminar. Afterwards, a workshop for Japanese-Russian students, focusing on a group discussion, took place in Moscow.

Professors, associate professors and students from the University of Tokyo, MSU and SPbU participated in both symposium and seminar. Participants also included graduate student of our university, who are currently dispatched to MSU in this program, and many students who had participated in the program held in the past, promoting continuous academic exchanges between Japan and Russia.



Fig.3 Exchange at the Symposium on Photon Science



Fig.4 Exchange at the Seminar on Sustainable Environment