Collaboration Potential and Possibilities With APSCO

Ferhat Fikri ÖZEREN¹
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¹Deputy Secretary-General, Asia-Pacific Space Cooperation Organisation, Beijing, China.

ORCID: F.F.Ö. 0000-0002-8028-3471

1. Introduction

The main objectives of the Asia-Pacific Space Cooperation (APSCO) are to promote cooperation and strengthen the joint development of space technology and its applications, carry out research in space science, promote education and training, tap the potential of member states, and contribute to the international cooperative activities for the peaceful uses of outer space.

APSCO is an independent, non-profit, intergovernmental, regional, and full international organization. It was established in 2008, and its headquarters are in Beijing, China. APSCO has a legal status by the convention registered under Article 102 of the Charter of the United Nations and granted the status of a Permanent Observer on the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) on 12 June 2009, during the annual meeting of the Committee held in Vienna. APSCO also holds Observer status at Group on Earth Observation (GEO) and the International Committee on Global Navigation Satellite Systems (ICG); having membership in International Astronautical Federation (IAF) and International Institute of Space Law (IISL).

The full members of APSCO are Bangladesh, China, Iran, Mongolia, Pakistan, Peru, Thailand, and Turkey. Indonesia is the signatory member state, and Mexico, Inter-Islamic Network on Space Sciences & Technology (ISNET) are the observers of APSCO.

All APSCO member states are developing countries. They have all-natural disasters of different or similar nature. All member states are in different time zones, and that’s why APSCO covers a vast geographical area on the Earth. Most of the member states lack the budget, technology, and trained human resources in terms of space science, technology, and application
development. But, all APSCO members’ total population is about 2 billion, which is 1/4 of the world’s population.

2. How Do We Work?

According to the APSCO Convention (APSCO, 2005), the organization’s highest decision-making body is the Council, the board of directors. The Chairman of the Council is rotated by the member states in alphabetical order every two years.

The Board of Directors, Council, convenes a meeting at the end of each year to make decisions and decide on organizational development, projects, finances, and activities.

The Secretariat is the executive body that organizes projects and activities, and the Secretary-General is the organization’s international legal person (Figure 1).

There are five departments in the APSCO Secretariat:

1. Department of External Relations and Legal Affairs
2. Department of Strategic Planning and Program Management
3. Department of Program Operation and Data Service
4. Department of Education and Training
5. Department of Administration and Finance

APSCO Convention provides the legal and administrative framework for cooperation.

APSCO Activities are divided into two main categories, which are defined in the Convention of APSCO (APSCO, 2005):

- **Basic Activities**: These include undertaking fundamental research in space technology, extending applications of advanced technology, organizing Training and conducting space education activities, and managing and maintaining branch activities and other necessary activities as approved by the Council. All member states are required to participate in basic activities. APSCO’s annual budget is utilized for basic activities, meaning member states do not have to contribute additional financial contributions to projects under this category.

- **Optional Activities**: Optional Activities are those activities that do not fall under the category of Basic Activities. Optional activities are open to those member states which choose to participate in such programs. Funding for Optional activities is not provided from the annual budget but on the contribution of participating member states on the principle of return on investment. The commercial return on an Optional Activity is shared among participating countries in proportion to their investment.

APSCO has established quite strong fruitful years since 2008, carrying out numerous cooperative activities in the fields related to space research, space technology development, capacity building of the Member States, and knowledge building in space law and policy. APSCO celebrated its 10th Anniversary with a high-level Forum under the “Community of Shared Future through Space Cooperation” theme in Beijing between 14th-16th November 2018. More than 100 official representatives from 24 Countries and eight space-related international organizations attended this Forum. During this vital milestone, APSCO Council Members endorsed “APSCO Development Vision-2030”, which will guide the organization in adhering to in-depth international exchanges and cooperation in outer space, based on peaceful use, equality, mutual benefit, and inclusive development (APSCO, 2018). Based on the principles of peaceful use of outer space, mutually complementary and beneficial cooperation, equal consultation, and benefiting the public, APSCO enhances capability in its Member States in the domain of space science, space technology, and space technology applications; establishes the basis of cooperation through sharing of data; promote talent cultivating by constantly conducting various education and training activities.

In 2020, APSCO established a new Development Plan Committee to lead the organization to the next level and plan the next ten years between 2021-2030. The Development Plan Committee (DPC) is a standing committee that handles drafting, reviewing, amending, updating, maintaining, and evaluating APSCO development plans and supporting actions and implementation plans. The DPC has prepared “the Development Plan of Cooperative Activities of APSCO (2021-2030),” and In December 2020, the 14th APSCO Council Meeting approved the Development Plan of Cooperative Activities of APSCO (2021-2030). This 10-year strategic plan will be used as the main guideline for implementing APSCO activities in the next decade, including cooperative projects, education and training, and space law and policy.
In the Development Plan of Cooperative Activities of APSCO (2021-2030), seven main action areas cover all related topics for any project in APSCO. These are:

3.1 Space Technology Applications
   3.1.1 Earth observation applications
   3.1.2 Navigation and positioning applications
   3.1.3 Communication applications
   3.1.4 Experimental Technologies and Applications
   3.1.5 Data Sharing Service Platform (DSSP) and Its Applications

3.2 Space Technology Development
   3.2.1 Satellite System Technologies
   3.2.2 Satellite payloads Technologies
   3.2.3 Ground system engineering Technologies
   3.2.4 Support Technologies for space projects

3.3 Space Science and Exploration
   3.3.1 Space environment, space weather, and solar physics
   3.3.2 Study on Astronomy and deep space exploration
   3.3.3 Study on space life and microgravity
   3.3.4 Suborbital Scientific Payload

3.4 Space Debris Mitigation
   3.4.1 Space observations, monitoring, and mitigation Technologies
   3.4.2 Space Debris Data Center
   3.4.3 Capacity Building on Space Debris Mitigation

3.5 Space Law and Policy

3.6 Education and Training
   3.6.1 Short training program
   3.6.2 Distance education program
   3.6.3 Degree education program
   3.6.4 Space education development program
   3.6.5 Space education for the future generation
   3.6.6 Space education resources network development program
   3.6.7 Space education international cooperation development program
   3.6.8 Professional Masters/Diploma Program

3.7 Capacity Building
   3.7.1 Data and information sharing and service capacity
   3.7.2 Mission planning and implementation capacity
   3.7.3 Infrastructure construction and management capacity
   3.7.4 Standardization and policy coordination capacity
   3.7.5 Space training and education capacity
These action areas are significant. Anyone who wants to propose project topic should fall into one of these action areas.

4. How to Propose Projects to APSCO and Some General Examples

4.1. Mechanism

There is no time limit to sending a project proposal to APSCO. The only policy is that any project proposal should be sent to APSCO through the Focal Organisations of the related member state. The project proposals must be forwarded to APSCO by the relevant focal organization by the end of the year, by the last day of December, whichever year you are in. If a project proposal reaches APSCO on 01 January, that project will undergo initial processing the following year.

After receiving a project proposal, it is first evaluated by the Development Planning Committee (DPC) in the year following its proposal. The project proposals are discussed and scored by the members of DPC. This is the very first step of the process. After this step, the related projects go to Administration Head Meeting (AHM) for review and recommendation of the Council Meeting (CM) and CM for review and approval. If the Council approves the proposed project, the related project joins our project bank to be initiated when the time comes.

All projects are collaborative or should have a collaborative nature in APSCO. APSCO member states are quite different countries, bringing extra effort to collaborate. All the members are developing countries, and their needs and capabilities are slightly different from each other. APSCO’s main intention is always to bring and meet all member states’ common interests and benefits in the space area. Having different capabilities is an excellent opportunity to share experiences and knowledge.

While the projects are presented, they should include one or more subjects among the seven main action areas mentioned above. In addition, the party proposing the project should also indicate in which area the relevant project is proposed. While the initial project evaluation is carried out in DPC, DPC members can make new proposals for the proposed area and request changes if necessary. This process clarifies which general directorate will follow the evaluated projects after acceptance. These general directorates are Strategic Planning and Program Management (SP&PM), Education and Training (E&T), Program Operating and Data Service (PO&DS), External Relations and Legal Affairs (ER&LA).

The action titles 3.1, 3.2, 3.3, and 3.4 are mainly in the SP&PM responsibility areas, 3.5 in ER&LA, and 3.6 in E&T General Directorates. The General Directorate of PO&DS manages shorter-term implementation projects related to data sharing for each member state and provides satellite data that member countries need in emergencies. However, when a project is completed in the SP&PM Department, it ends, and data generation begins. All subsequent operations of the relevant project are transferred to the PO&DS Department. That’s why the action titles of both episodes are almost the same.

4.2. Targets and Achieved Moments

Education and Training are among the most active and fruitful parts of APSCO. This part governs all educational platforms, such as degree education, short-term Training, distant
Training, hands-on Training, and new-generation cultivation, consisting of Space Science Schools, international competitions, and space contests.

Under the degree programs, APSCO is collaborating with the universities for Master’s and Ph.D. programs. Within the framework of these programs, students in various fields are admitted to master and doctoral programs in cooperation with Chinese universities, using Chinese state scholarships. Such contributions are also expected from universities and institutions in our other member countries.

By nature, APSCO is an intergovernmental organization that brings many space-related regulations between the member states and other states. Besides, APSCO is one of the space-related organizations, one of two organizations by nature. The other is European Space Agency (ESA). That’s why space law is one of the main topics in APSCO’s Development Plan for 2021-2030. APSCO focuses on the following areas in the field of space law and policy (APSCO, 2018):

a) Capacity building in space law and policy.

b) Active participation of APSCO at the Legal Sub Committee of UNCOPUOS and other international important forums related to space law and policy.

c) Organizing executive courses for senior management of Member States.

d) Cooperation with UNOOSA for Legal Advisory Services to support the Member States in drafting national space law.

e) Cooperation with the Member States and international organizations on knowledge enrichment and focused capacity building for drafting National Space Policy.

f) Cooperation with the International Telecommunication Union (ITU) to support Member States for a deeper understanding of ITU regulations and related guidelines through joint workshops/activities.

g) Creating an alliance with institutes/organizations of space law in the Member States and other renowned international organizations to support research work in space law and policy, sharing of resources among the Member States, and availing opportunities for participation in each other’s events, such as conferences, workshops and support publications of articles, etc.

h) Research contemporary issues in space law and policy through alliances and active participation in developing new laws and guidelines at the UN level or any other crucial international forum and assist the Member States on contemporary issues. A pool of experts shall also be created to support these activities.

Before the new development plan, APSCO contributes to building space law and its member states’ policy capacity. APSCO has been biennially organizing the “Space Law and Policy Forum” since 2011 as part of its two knowledge-exchange platforms (APSCO, 2018). Space law can be described as the body of law governing space-related activities. As a regular
international law, it comprises a variety of international agreements, treaties, conventions, United Nations General Assembly resolutions, and rules and regulations of international organizations.

The five international treaties and five sets of principles controlling outer space that were created under the auspices of the United Nations are the ones that are most frequently linked to when the phrase “space law” is used. Many states also have national laws controlling space-related activity in addition to these international agreements.

Space law covers a wide range of topics, including the protection of the Earth’s environment and that of space, the use of space-related technologies, international cooperation, the resolution of disputes, the rescue of astronauts, and the accountability for harm caused by space objects. The idea that space is the domain of all humans, the freedom of exploration and use of space by all states without restriction, and the idea of non-appropriation of space are just a few of the fundamental principles that govern the conduct of space operations.

With this perspective, APSCO is in collaboration with the European Space Agency (ESA) and China Institute of Space Law (CISL) and organized the Space Law Workshop in Sanya, China, on 6-8 September 2021, themed “Regional Cooperation Schemes on Space Law and Policy”. Participants from 10 Chinese institutions as well as ambassadors from member countries’ embassies in Beijing, attended the event. In addition, the workshop featured online participation from over 100 delegates from APSCO Member States, ESA Member States, and officials from space organizations and institutes from almost 40 nations.

Thirty-eight space organizations, institutions, and colleges from the APSCO Member States met to consider forming the APSCO Space Law Alliance (ASLA). This proposal will be discussed at the 16th Council Meeting in November 2022.

Additionally, in February 2022, APSCO and UNOOSA agreed to collaborate on organizing a technical workshop on national space legislation for the member states of APSCO. The program will include complete capacity building for APSCO Member States to draft National Space Legislation in four implementation phases.

The symposium “Space Popularization for the Next Generation” was organized by APSCO during the fifty-ninth session of the STSC in February 2022. Renowned international speakers presented their initiatives and worked on knowledge-building and space popularization. The symposium has inspired the youth, professionals, and participants to pursue their space dream.

With the approval of the Council, APSCO has established a partnership with the National Space Science Center (NSSC), Chinese Academy of Sciences and Land Satellite Remote Sensing Application Center (LASAC), Ministry of Natural Resources of the People’s Republic of China, for expanding cooperative filed in Space Science, and expanding data recourse for APSCO Data Sharing Service Platform.

APSCO is also planning to take the initiative of a CHARTER-like disaster responding service among the Member States and establish a supply chain to facilitate its Member States to develop space capacity.

An opportunity for APSCO Member States to deliver their payloads to the Chinese Moon
Mission and involve their specialists in collaborative research on lunar samples and the International Lunar Research Station has been made available by the China National Space Administration and APSCO (ILRS).

5. Conclusion

Considering the rapid development of the space sector and the challenging nature of regulatory perspectives of space activities, the role of international and regional organizations in space has become more critical. Regulations and policies at the national, regional, and global levels provide the necessary basis for their space activities. It is critical to identify regional space cooperation programs and their impact on developing countries, regions, and the space industry as a whole.

References