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# Space Asset in Indonesian Diplomacy against Japan 2016-2021

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## Abstract

*The purpose of this research is to discuss Space Asset in Indonesian Diplomacy Against Japan 2016 to 2021. The research method used is a case study. Data collection techniques used are literature study, interview, and document study. The resource persons consisted of the LAPAN Foreign Cooperation Sub-Coordinator, Happy Rumiris Simanungkalit, S. Sos; LAPAN Aerospace Policy Analyst, Adhimantara Ibnu Nugraha, S. Sos; and the Head of the Center for Rocket Technology of the National Research and Innovation Agency, Dr. Heru Supriyanto, M.Eng. The results showed that Japan's motivation in cooperating in the field of space with Indonesia was based on research and science needs. Classification of diplomatic power in space assets consists of prestige, technology partnerships, access to space services, legal precedent, objective information, presence, and threat of punishment.*

Keywords
space; asset; diplomacy

## I. Introduction

Indonesian people are more familiar with the term "space" to denote an area above the earth's surface and so on upwards. This mention is understood to be the result of the introduction of language since the ancestors through songs, poetry and legend stories (Mardianis, 2016). The relationship between outer space and international relations is the study of the exploration and exploitation of outer space for social, political, economic, military purposes and the consequences for relations between sovereign states in the international system (Hammack, 2021). The success of the Soviet Union in launching its first satellite in 1957 through the world's first spaceport, the Baikonur Cosmodrome, has provoked the United States to do the same (Sokolski, 2022). Their rivalry creates a space race.

In recent years, the discourse on Asia's new identity has generated great excitement. Asia's new identity is based on beliefs, religion, culture, politics and economic inequality which Asian countries skillfully use for developmental purposes. Asian countries pragmatically embrace liberalism for the sake of development (Lele, 2013).

The discussion here focuses on only two actors, namely Japan and Indonesia. The Japanese government's organizational structure and policy process for the space program have evolved over time and now the government has completed its restructuring (Wakimoto, 2019). Organization must have a goal to be achieved by the organizational members (Niati et al., 2021). The success of leadership is partly determined by the ability of leaders to develop their organizational culture. (Arif, 2019). To arrive at the current national space policy, Japan went through three phases, namely (1) the first phase occurred in 1969-1990 (Uchinoura Space Center and Tanegashima Space Center were successfully built in this phase); (2)the second phase occurred in 1998-2007; and (3)the



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third phase occurred in 2008-until now (Kallender, 2016). This has led Japan to gain its space power. Japan's space force, which consists of three components, namely (1)Japan has the latest technology that reaches civil, commercial and military areas; (2)has developed legal and policy structures that normalize state positions and interpretations to be consistent with international space law; and (3)Japan has prioritized space diplomacy (Pekkanen, 2020).

After the issuance of Law (UU) Number 21 of 2013 concerning Space, in general the national space policy in Indonesia is based on the Act. Meanwhile, several important technical and operational matters are regulated in Government Regulations (PP) such as the draft PP on Procedures for the Development and Operation of Space Airports, Presidential Regulations (PERPRES) such as PERPRES Number 49 of 2015 concerning the National Aeronautics and Space Institute and PERPRES Number 45 Year 2017 concerning the Master Plan for the Implementation of Space Activities for 2016-2040, and Institutional Regulations (Hidayat, 2020).

In PERPRES Number 45 of 2017 has described the implementation of policies related to the 2016-2020 short-term launch activities. Identification of stages is an important step in planning the development of a spaceport. The planning stages of the development of the spaceport play a role in guarding and ensuring that development activities are carried out in a systematic and well-patterned manner. However, although the National Institute of Aeronautics and Space (LAPAN) has identified the stages, it is not directly proportional to its capacity.

One of the hopes for the implementation of spaceports in the territory of Indonesia is to encourage independence in mastering national space technology so that in the long term it can reduce dependence on the use of launch services from other countries and create a deterrence effect on national defense and security as well as open opportunities for economic growth both directly and indirectly or indirectly (Sitindjak, 2004).

Indonesia-Japan bilateral space cooperation is based on research and science needs. This is proven by the content and form of the cooperation agreement that has been carried out (Nugraha, 2018). In the 2016-2021 case study of spaceport development, Indonesia through LAPAN and Japan through the National Space Policy Secretariat (NSPS) of the Cabinet Office of the Government of Japan have held technical discussions and produced a Letter of Intent Between the National Institute of Aeronautics and Space of The Republic of Indonesia and National Space Policy Secretariat of The Cabinet Office of The Government of Japan Concerning Cooperation on Space System Infrastructure (LAPAN, 2021). Based on this, this article seeks to explain how Indonesia's space diplomacy strategy towards Japan in 2016-2021 uses liberalism theory and three concepts, namely National Space Policy, Cooperation, and Space Diplomacy.

The purpose of this research is to discuss Space Asset in Indonesian Diplomacy Against Japan 2016 to 2021.

## II. Research Method

The research method used is a case study to produce a detailed description of the interactions between actors (Octiva et al., 2018; Pandiangan, 2018). The description is generated by observing and analyzing the interaction of Indonesia's diplomacy with Japan and the use of space as a diplomatic asset.

Data collection techniques used are literature study, interview, and document study. Literature study as a series of activities related to the methods of collecting library data,

reading, and taking notes and processing research materials (Asyraini et al., 2022; Octiva, 2018; Pandiangan, 2015). Interview is a conversation between two or more people that takes place between a resource person and an interviewer with the aim of collecting data in the form of information (Jibril et al., 2022; Pandiangan et al., 2018; Pandiangan, 2022). Document study is a data collection technique by collecting and analyzing documents, both written documents, drawings, works of art, and electronically (Octiva et al., 2021; Pandiangan et al., 2021; Pandia et al., 2018).

Resource person is a general term that refers to a person, either representing a person or an institution, who provides or knows clearly about an information, or becomes a source of information for the benefit of reporting in the mass media (Pandiangan et al., 2022; Tobing et al., 2018). The resource persons consisted of the LAPAN Foreign Cooperation Sub-Coordinator, Happy Rumiris Simanungkalit, S. Sos; LAPAN Aerospace Policy Analyst, Adhimantara Ibnu Nugraha, S. Sos; and the Head of the Center for Rocket Technology of the National Research and Innovation Agency, Dr. Heru Supriyanto, M.Eng.

## III. Result and Discussion

### 3.1 Japan and Indonesia National Space Policy

The Japanese government has sorted out the organizational structure and policy process to effectively plan, create, manage, and revise the national space policy. The Committee on National Space Policy (CNSP) and the National Space Policy Secretariat (NSPS) appear to be doing a good job of leading intra-government coordination and inviting the opinions of experts from the private sector. Ministries and Agencies have established permanent councils, working groups and/or study groups to support and develop Basic Plans and Implementation Plans. As of January 2019, CNSP has held more than 200 meetings including working group meetings over the past six years. In order to reflect and adopt Japan's comprehensive national space policy, the government also reframed its defense strategy and created a seamless scheme to promote the space industry. The successful development of space-related laws and government reforms as well as the creation of a new military policy focused on the space domain represents the completion of Japan's comprehensive national space policy.

Since the issuance of Law Number 21 of 2013 concerning Space, the policy direction for space activities in Indonesia has become increasingly clear and one of its main mandates is that the National Institute of Aeronautics and Space (LAPAN) is obliged to carry out the implementation of outer space. Law Number 21 of 2013 also orders that a Master Plan for Space Operations be made for the period 2016-2040 (25 years) as stipulated in Presidential Regulation (PERPRES) Number 45 of 2017. In the PERPRES the vision of space for the next 25 years has been defined. very well, and to realize the achievement of the space vision, a strategic target map for space activities for 2016-2040 has been prepared, with clear short, medium and long term targets (Hidayat, 2020).

With the existence of the Master Plan for Space Operations, actually LAPAN has a very good policy foundation to carry out the implementation of outer space with the stages and targets that have been set. Of course, with the support of human resources, adequate facilities and funding and the 2016-2040 Space Reduction as a reference in preparing strategic plan documents and by involving all agencies related to the administration of space (Hidayat, 2020).

However, until now the implementation of space activities has not involved many other relevant agencies. Moreover, with the dissolution of the National Aeronautics and

Space Council of the Republic of Indonesia, it seems that LAPAN has difficulty coordinating all relevant stakeholders to be actively involved in the implementation of outer space. For this reason, in addition to the existing policies, it is still necessary to have a national space policy, in the form of a presidential directive for LAPAN and all relevant agencies so that the implementation of space in Indonesia can run well and achieve the targets that have been set. Things like this were also done by Japan, which should be emulated so that Indonesia's national space is able to catch up and can advance like Japan (Hidayat, 2020).

### 3.2 Indonesia-Japan Bilateral Space Cooperation

Japan's motivation in cooperating in the field of space with Indonesia was based on research and science needs. This is proven by the content and form of the cooperation agreement that has been made. Since the initial period of cooperation between LAPAN and the National Space Development Agency of Japan on August 23, 1994, until the latest Agreement between LAPAN and the Japan Aerospace Exploration Agency (JAXA) on March 26 2018, cooperation between Parties generally has outputs, including the use of data remote sensing for the purposes of atmospheric research, ozone, ionosphere, land monitoring, monitoring of carbon emission levels, disaster mitigation, to the use of the "KIBO-ABC" laboratory which is a Japanese space experiment module located at the International Space Station (Nugraha, 2018).

LAPAN's space cooperation is not limited to JAXA. Several Japanese educational and research institutions have collaborated with LAPAN. On September 8, 2000, LAPAN together with The Radio Science Center for Space and Atmosphere Kyoto University of JAPAN signed the Installation Agreement of the Equatorial Atmosphere Radar (EAR) for the Study of Equatorial Atmosphere Dynamics. The agreement contains the installation of EAR at Bukit Koto Tabang, Bukittinggi, West Sumatra to monitor the dynamics of the equatorial atmosphere using the EAR, Radiosonde using meteorological balloons, and other equipment at the EAR site, as an extension of the experimental collaboration conducted at Watukosek in 1990, Bandung in 1990. 1992-1996, and Pontianak in 1997 and 1998 (Nugraha, 2018).

The EAR facility was operational in 2001 on a 110m2 area owned by LAPAN. The data generated by the EAR is then processed to observe climate changes such as El-Nino and La-Nina. In addition to LAPAN and Kyoto University, domestic agencies such as the Meteorology, Climatology and Geophysics Agency (BMKG) and the Agency for the Assessment and Application of Technology (BPPT) also use EAR data for research purposes. EAR data is also open and can be used by researchers from other countries (Nugraha, 2018).

This cooperation shows that developed countries, such as Japan, have spent a number of budgets and invested them in Indonesia by placing a number of their space technologies to conduct research on the dynamics of space weather and the atmosphere. The benefits obtained by Indonesia in addition to getting a number of space technologies, namely an increase in the capacity of human resources. "Capacity building" is the key word in every international cooperation agreement made by LAPAN with other countries. It is recorded that a number of LAPAN employees with the positions of both Researcher and Engineer have received education in Japan, both degree and non-degree programs in the context of capacity building based on the framework of cooperation between the two Parties. In addition, by placing a number of technologies in Indonesia, there is a transfer of knowledge between researchers and engineers from these countries. Even though in reality many transfer of knowledge activities have stopped in the middle of the road due to

technical constraints such as the rotation of the employee and the absence of the next generation in the operation of the technology in question.

### 3.3 Indonesia's Space Diplomacy Against Japan

#### a. Space Assets to Influence International Actors

LAPAN is aware that the Biak spaceport is the first equatorial spaceport in the Pacific and the Association of Southeast Asian Nations (ASEAN) and supported by a space commercialization program, various launch vehicles from other countries can be used. The advantage of this location makes the launch 5.5% more efficient on rocket fuel.

The arrival of the survey team from the United States, Japan, India, and China to the construction site of the spaceport in Biak, Papua explicitly shows interest in launching from the Biak spaceport. However, the partners who have expressed interest in launching from the Biak spaceport come from the Asian region, but outside that there are none due to various considerations, such as the proximity of logistics supply.

Thus, the technical and non-technical potential of the Biak spaceport is still the key word to increase LAPAN's bargaining power in promoting the Biak spaceport to potential partners. Even though this narrative is successful, it needs to be added to its weight, such as emphasizing the prospect of Biak, Papua as a space island and offering the prospect of growing the space industry in Indonesia. This is in line with Japan's interest in adding one more spaceport to secure a foothold in the international space business.

#### b. Classification of Diplomatic Power in Space Assets

1.Prestige

LAPAN's desire to build a Biak spaceport changed NSPS's view of LAPAN. The NSPS has the view that it represents an increase in scientific capability as well as openness to political, economic and social systems. This was justified when, since 2020, Mitsubishi Heavy Industries, one of the companies operating the Tanegashima Space Center, was very enthusiastic about helping LAPAN (Rocket Technology Center) in the construction of the Biak spaceport (Supriyanto, 2022).

2.Technology Partnerships

Space technology partnerships offer a powerful impetus to promote or deter countries from certain behaviors. By offering other countries the opportunity to more easily access space, and thereby receive the prestige associated with the space program, or to partner with other space nations to lower the cost of certain space functions, LAPAN can achieve economic savings in both the space program and the space program shape the behavior of other countries.

3.Access to Space Services

Although similar to technology partnerships, three factors make this component different. One thing that the Japanese space industry lacks is a technically strategic location (located at the equator) and non-technical (the global geopolitical core of the 21st century) to launch rockets into Low Earth Orbit and this is owned by Indonesia through the Biak spaceport. Third, it offers the opportunity to achieve diplomatic gains in a faster timeframe than technological partnerships. Accepting Japan's offer to cooperate in the construction of the Biak spaceport will be a diplomatic advantage in a shorter period of time because Indonesia will have great influence in the Asia-Pacific Regional Space Agency Forum (APRSAF). For example, in 2019, Indonesian representatives in the 26th APRSAF established confidence building measures by conveying the space regulations that Indonesia is currently preparing, namely the Government Regulation (PP) for Mastering Space Technology. The PP is very important considering that there is space technology in

the Biak spaceport. Thus, LAPAN has explicitly promoted the Biak spaceport to potential partners to invest.

4.Legal Precedent

There are three areas of how the Biak spaceport can be used to set legal precedents which in turn shape the behavior of all countries (including the one that started the precedent) namely: (i)The field of science. Of course, the development of the Biak spaceport brings big data and knowledge sharing, this needs to be regulated in regulations and policies (Supriyanto, 2022); (ii)Commercial sector. It can be said that the LAPAN and NSPS LoI are the mainstreaming of space commercialization so that later countries in the Pacific and ASEAN will immediately issue legal products related to the commercialization of outer space (including discussing the export-import of space technology), just as Indonesia is currently preparing a Regulatory Plan. Government regarding Procedures for Commercial Space Activities; and (iii)Seeing the momentum in ASEAN, LAPAN should fight for the establishment of an ASEAN Space Agency, considering that such an agency generally requires a spaceport. The establishment of the ASEAN Space Agency will make the aspirations of the ASEAN Space Policy a reality. International legal personality will ratify an entity as a subject of international law and live with full rights and obligations in the international legal order.

5.Objective Information

The ability of a space system to record highly accurate and impartial information (i.e., photographic imagery, multispectral imagery, signal intelligence, infrared signature, radar return or environmental information) at a terrestrial location in four dimensions (height, width, length and time) provides unprecedented diplomatic awareness and influence on countries. Among the attributes of space assets that contribute to this aspect of diplomatic power are the field of view (satellites can collect information on very large fields of the earth at any time), access to denied areas (international law allows satellites to orbit over any state), the ability to revisit quickly (depending on orbital geometry) and persistence (depending on orbital geometry). While aerial collection platforms offer some of the same attributes, space-based vehicles maximize all of these attributes and offer unique diplomatic tools. In addition, objective information is the first component of the diplomatic power of space assets which can be coercive in the traditional sense.

6.Presence

The attributes that give space assets the unique ability to exert influence through presence have been stated, but have further description. First, the global view of space assets allows them not only to affect any location on earth, but also allows each satellite to affect multiple locations that may be separated by hundreds or thousands of miles. For example, the type of launch vehicle (rocket) provided by Japan will affect the launch range of the Biak spaceport. Second, the fast return rate of space assets means that every place in the world is repeatedly subject to the presence of space assets.

7.Threat of Punishment

The final component of the diplomatic power of space assets is the ability to coerce behavior by threatening to punish international actors directly if they do not comply with the demands of the assets. Because it is associated with small satellite vehicles which are inherent with intercontinental ballistic missiles, the threat becomes real. If the Biak spaceport has the involvement of investors from other countries (including Japan), then other countries have an obligation to protect its facilities.

### c. Diplomatic Use of Space Assets

First, emphasizing space diplomacy as a spectrum of conflicts in which the diplomatic use of space assets occurs. Considering that the Biak spaceport is a vital object, its military guard will be strengthened. Second, focus on preventing war, resolving conflicts and promoting peace. The Biak spaceport has a deterrence effect which lies in the number of investors and actors involved in the activities of building, operating and developing the Biak spaceport. With the joint use of several countries using the spaceport can promote peace. Third, the category of conflict in space diplomacy is war.

Thus, this last key aspect enables Indonesia (LAPAN) to (a)modernize the human resources and defense equipment of the Indonesian National Armed Forces through research and development activities; (b)Indonesia and Japan adhere to proactive pacifism so that the Biak spaceport can be used to promote peace also through international forums such as the Asia-Pacific Regional Space Agency Forum, which is based on research and development activities; and (c)the Biak spaceport can realize the initial idea of forming space forces for both Indonesia and Japan.

## IV. Conclusion

The results showed that Japan's motivation in cooperating in the field of space with Indonesia was based on research and science needs. Classification of diplomatic power in space assets consists of prestige, technology partnerships, access to space services, legal precedent, objective information, presence, and threat of punishment.

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