



Air Navigation Sovereignty Through Indonesia-Singapore Fir Boundary Realignment In 2022

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ABSTRACT: This research examines the Flight Information Region (FIR) boundary adjustment between Indonesia and Singapore that affects Indonesia's air navigation sovereignty. Various efforts have been made by Indonesia to take over control of the FIR from Singapore, until finally reaching an agreement in adjusting the FIR boundary in 2022. However, in taking over the FIR, Indonesia faced problems, namely the difficulty of Indonesia taking over the management of the FIR which was previously managed by Singapore, as well as challenges in meeting international standards in FIR management. Although the agreement in adjusting the FIR boundary has been agreed, until now the effort has not achieved the expected results in realizing air navigation sovereignty in Indonesia. The purpose of this study is to evaluate how FIR boundary adjustment can improve Indonesia's air traffic management, national security and economic growth. Obstacles include sovereignty issues, international air traffic management standards, and diplomacy between countries. This research uses the policy analysis method by collecting primary and secondary data to analyze the agreement reached in 2022. The results of this study show that the 2022 Indonesia-Singapore FIR adjustment agreement has not fully guaranteed Indonesia's air navigation sovereignty, but this agreement provides significant progress in Indonesian territory. The implications of the results of this study include improving air traffic efficiency and strengthening Indonesia's sovereignty over its airspace, which can also provide insights for future foreign policy and international cooperation.

Keywords: FIR Boundary Realignment Agreement, FIR, Air Navigation Sovereignty



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INTRODUCTION

Flight Information Region (FIR) is airspace defined by a special agency of the United Nations (UN) called the International Civil Aviation Organization (ICAO) (Lestari, 2018). Considerations from ICAO can determine how much FIR power will be given to a country according to its ability to manage its airspace (Buyle et al., 2021; Surbakah, 2019). The FIR is an important part of the

global air navigation system and serves to ensure flight safety and efficiency ([Supriyadi et al., 2020](#)). Through this FIR, air navigation facilities and flight information services including commercial and non-commercial air traffic in the airspace of a country or a certain geographical area are provided to countries in the world. The process of determining and dividing FIRs is based on consideration of a country's geographical boundaries, regional cooperation, aviation safety considerations, and administrative and regulatory needs. For example, the United States has full control over the FIR in its territory ([Dobson, 2017](#); [Mintojati, 2022](#)). On the other hand, there are countries whose FIR management is still assisted or delegated by other countries. For example Laos whose FIR is delegated to Thailand and also Indonesia whose FIR is partially delegated to Singapore. For this reason, it is found that not all countries are given full control over the FIR in their airspace ([Prabandari, 2019](#)).

For countries that do not have full control over the FIR, delegation can be made to other countries or international organizations such as ICAO if the country's resources or capabilities are limited ([Abdurrasyid, 2009](#); [Michaelides-Mateou, 2017](#); [Sergunin & Konyshev, 2017](#)). In line with the opinion of John Cobb Cooper in his theory, which argues that a country's sovereignty over the space above its territory is limited to the country's ability to control the space physically and scientifically. According to Cooper, a state's sovereignty over the space above it applies to the extent that the state is able to control the area ([Cooper, 1957](#)). This limitation gives the assumption that the state is unable to regulate its own airspace. This results in the endangerment of air navigation control and state sovereignty as a whole. In fact, state sovereignty is defined as the absolute rights and powers possessed by a state to regulate and control all affairs within its territory, be it land, sea or air ([Berz & Bergamasco, 2017](#); [Fitriyanti, 2021](#); [Liu et al., 2020](#)).

A country that does not have control over its airspace is considered to have lost its air navigation sovereignty. This is because air navigation sovereignty is the right of a state to control and regulate the airspace above its territory. Air navigation sovereignty is a concept that refers to the exclusive power of a state in exercising administrative, legislative, and judicial powers in its national airspace ([Surbakah, 2019](#)). This concept is regulated in international law related to air navigation services listed in the 1944 Chicago Convention. This convention is also the legal basis for the Indonesian state to realize full and complete sovereignty in the airspace of the Republic of Indonesia. ("Convention on International Civil Aviation Chicago," 1944). This is implemented in an effort to take over the Indonesian FIR from Singapore. Indonesia believes that with full management of the FIR, the utilization of airspace will be more exclusive over its airspace

Indonesia's confidence in realizing full FIR management is evidenced by efforts to take over the FIR from Singapore since 1990. This effort continued, until in 2022 Indonesia and Singapore agreed to adjust the FIR boundaries ([Gawer, 2021](#); [Indonesian Government, 2022](#)). This adjustment agreement was ratified through Indonesian Presidential Decree number 109 of 2022 concerning Boundary realignment between the Jakarta Flight Information Region and the Singapore Flight Information Region. In the agreement, Indonesia has the right and responsibility for the Provision of Flight Services (PJP) in the flight information area which is the Indonesian FIR and in line with the territorial sea boundary ([Peraturan Presiden Republik Indonesia Nomor 109 Tahun 2022, 2022](#)).

The FIR boundary realignment agreement between Indonesia and Singapore has provided progress for Indonesia ([Kania et al., 2020](#)). However, the agreement still does not fully benefit Indonesia. Singapore will still have control over some parts of Indonesian airspace ([Margaretha et al., 2023](#)). The management of airspace above 37,000 feet, which Singapore has ceded to Tanjung Pinang Air Traffic Control (ATC), has low strategic and economic value. This range of airspace is not a potential area of aviation traffic and represents only a small fraction of the total aviation traffic passing through the airspace ([Supriyadi et al., 2020](#)). Although heavy aviation traffic can provide economic benefits to the country, such as revenue from air navigation fees and increased economic activity related to the aviation industry, Indonesia has not fully benefited economically from its airspace ([Mintojati, 2022](#)).

The FIR boundary adjustment agreement between Indonesia and Singapore has caused Indonesia to experience problems related to security and economy. The unclear delimitation of airspace has led to struggles between countries seeking to expand their control over airspace for security and economic purposes. The 1944 Chicago Convention, which aims to regulate air navigation, does not provide a clear definition of the vertical limits of airspace, which has been a source of debate and uncertainty ([Polkowska, 2018](#)). Therefore, it is difficult for the state to see and determine where the air sovereignty should be maintained. Different interpretations make air navigation sovereignty not clearly defined. As a result, the full implementation of air navigation sovereignty for each country becomes difficult to realize ([Goedhuis, 1955](#)).

The implementation of air navigation sovereignty that is difficult to realize creates problems for Indonesia and Singapore related to air navigation policies and FIR borders. The problems faced by these two countries show differences in air navigation regulations between them ([Supriyadi et al., 2020](#)). Indonesia seeks to secure its air sovereignty and increase full control over its airspace, while Singapore maintains partial control over Indonesia's airspace, especially in the Riau Islands, Natuna, and Batam regions. This underlies the actions of both countries in realizing their national interests.

In the journal Alwafi Ridho Subarkah, the concept of national interest is explained to arise from interactions in international relations from the relationship of actors who each have interests. Prioritizing national interests is something that needs to be prioritized, especially when needs cannot be met in their own country ([Surbakah, 2019](#)). For this reason, it can be seen that national interest is the basis for explaining the behavior or foreign policy or foreign policy of a country. For Hans Morgenthau, national interest is a guide for policymakers to make foreign policies ([Morgenthau, 1949](#)). When referring to the ratification of the FIR boundary between Indonesia and Singapore in 2022, it can be understood that this is the goal that Indonesia wants to achieve in the agenda of taking back the management of airspace as it should be. This is because the airspace in the Riau Islands and Natuna is part of Indonesian territory so that the control of the Flight Information Region is sought to be on the Indonesian side in full.

This effort to fully control the FIR will realize air navigation sovereignty for Indonesia. Where in Goedhuis' journal the concept of air sovereignty is explained as the principle that the state has authority and control over the airspace above its territory. This concept developed along with the development of international aviation and has been the subject of debate and change throughout

history ([Goedhuis, 1955](#)). The issue of air navigation sovereignty in the Riau Islands, Natuna, and Batam are concrete examples of the challenges faced by states in exercising their air sovereignty and air navigation sovereignty. Despite the challenges and obstacles, Indonesia must strive to maintain and uphold its air navigation sovereignty to protect its national interests and sovereignty.

Therefore, this research is more focused on analyzing how much influence the agreement between Indonesia and Singapore in adjusting the FIR boundary has on air navigation sovereignty in Indonesian territory. This research will look at various sides that can be a factor in realizing full and complete air navigation sovereignty. Where decision-making related to air navigation policies taken by both countries can be explained by looking at the national interests of each country that underlies its actions in this agreement.

METHOD

This research uses a qualitative approach. According to Creswell, the focus of qualitative research lies on the processes that occur in research. In qualitative research methods, the research process and the results obtained are obtained using sentences or writings that describe in detail and clearly about the behavior of the subjects observed ([Creswell & Creswell, 2018](#)). Based on research on the Flight Information Region (FIR) boundary realignment agreement on air navigation sovereignty in the Riau Islands, Natuna, and Batam regions in 2022, this research uses policy analysis method. This method was chosen because it allows researchers to understand the policy-making process, the factors that influence decisions, and the impact of the policy on Indonesia's air navigation sovereignty. Policy analysis involves a systematic evaluation of the policy content, the process of making it, and the results achieved, as well as considering the political, economic, and social context in which the policy is implemented.

The primary data used is the 1944 Chicago Convention document which regulates international civil aviation. This convention is also the standard for establishing an orderly and peaceful air navigation procedure (["Convention on International Civil Aviation Chicago," 1944](#)). In addition, there is a document of Presidential Regulation of the Republic of Indonesia Number 109 of 2022 containing the ratification of the agreement between the Government of the Republic of Indonesia and the Government of the Republic of Singapore regarding the Boundary realignment between the Jakarta FIR and the Singapore FIR. The existence of this regulation indicates that the airspace above the Riau Islands has been transferred to the authority of the Government of Indonesia ([Peraturan Presiden Republik Indonesia Nomor 109 Tahun 2022, 2022](#)). Secondary data used for research is obtained through several sources such as journals where researchers access several online journals to serve as references in writing. In addition, researchers also used books and news sites that discussed the ratification of the FIR agreement between Singapore and Indonesia.

After the data is collected, it is analyzed using theories and concepts that are in accordance with the issue of air navigation sovereignty in the FIR boundary realignment agreement between Indonesia and Singapore in 2022. This research communicates the data obtained through literature review so that the data can be analyzed and connected to the concept of international relations

used, namely the concept of national interest and the concept of air sovereignty. The data that has been processed and analyzed is then compiled so that conclusions can be drawn that can answer research questions ([Creswell & Creswell, 2018](#)).

RESULT AND DISCUSSION

Details of the FIR Boundary Realignment Agreement between Indonesia and Singapore

The boundary realignment between the Jakarta FIR and the Singapore FIR is carried out based on ICAO approval and without prejudice to the claims or positions of either party in relation to maritime boundaries. The FIR boundary adjustment is clearly presented in the map attached to the agreement.

Figure 1

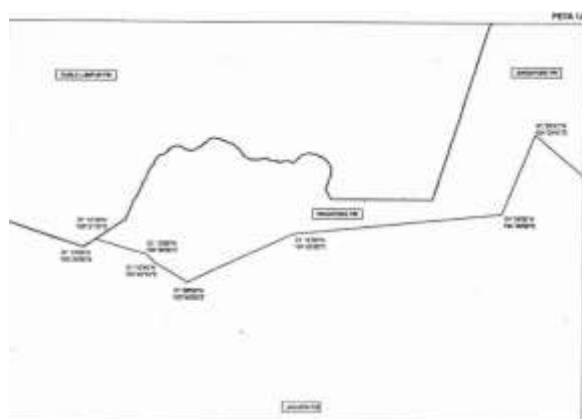
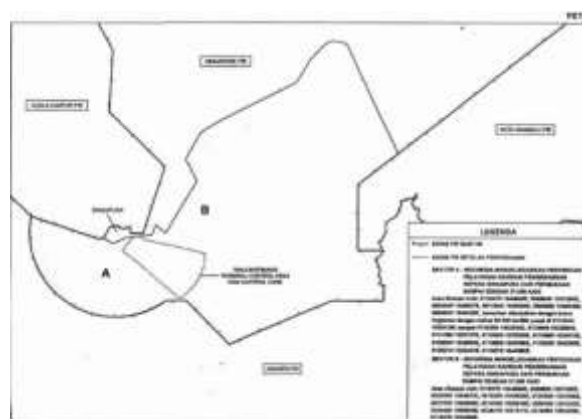


Figure 2



Map of Indonesia and Singapore FIR boundary adjustment. Source: (Pemerintah Republik Indonesia, 2022)

Based on the map, the Republic of Indonesia delegates to the Republic of Singapore the provision of flight navigation services in the airspace within a radius of 90 nautical miles from certain coordinates at an altitude from the surface of up to 37,000 feet within the adjusted FIR boundary of Jakarta and the southern part of Singapore, designated as Sector A. Indonesia also delegates the provision of flight navigation services in the airspace at the same altitude within the adjusted FIR boundary of Jakarta, and designated as sector B ([Pemerintah Republik Indonesia, 2022](#)).

In the coordination and safety of aviation navigation authorities, both countries are required to establish a separate agreement detailing the coordination procedures between Indonesia and Singapore to ensure the safety, regularity and smooth flow of aviation traffic. These coordination procedures must be agreed upon by both Parties. In addition, Indonesia and Singapore agreed to conduct Civil and Military ATM Cooperation (CMAC) in aviation traffic management regulated in a separate agreement in accordance with ICAO standards and practical recommendations. On the economic side, this agreement stipulates that the cost of flight navigation services for civil

aircraft passing through Sector A and B will be mutually agreed upon by both parties ([Pemerintah Republik Indonesia, 2022](#)).

The entry into force of this agreement will supersede the 1995 FIR agreement and all actions taken under that agreement will cease to have legal force. This FIR agreement 2022 shall be valid for 25 years from the date of its entry into force and may be extended by mutual consent if both parties find it beneficial to do so. Consultations between the parties and ICAO shall be conducted at least 2 years prior to the expiry of this agreement to work out arrangements for the continued safety and efficiency of international civil aviation in the region. An operational evaluation may be conducted every 5 years at the request of either party ([Sekretariat Kabinet Republik Indonesia, 2022](#)).

Impact of the 2022 FIR Realignment Agreement on Indonesia

a. National Security

Security factors are the focal point of the Indonesian government's efforts to adjust the FIR boundary with Singapore. This is because the delegation of the FIR area to Singapore has limited Indonesia in running the defense system. Singapore's control over the airspace above Indonesia's territory eliminates Indonesia's control function as a sovereign state over its territory. Flight paths and flight permits, both civilian and military, are also determined by Singapore. In addition, military operations also cannot be carried out by Indonesia in areas delegated to Singapore. Where Singapore determines the "Danger Area" that must be avoided by the Indonesian side if it passes through the region. This phenomenon is certainly detrimental to Indonesia, which has no control over its territory ([Surbakah, 2019](#)).

This phenomenon threatens Indonesia's national security and sovereignty. Singapore's control allows air navigation violations from other countries. Foreign aircraft can enter the Indonesian FIR through the Singapore FIR. Flight permit reports are only made to Singapore Air Traffic Control while when entering Indonesian territory the aircraft does not conduct licensing and enters illegally. The violation has been coordinated with Singapore but there has been no definite effort to resolve this issue. This shows the obstruction of air navigation coordination in the Indonesian territory with the delegation of the FIR to Singapore ([Prabandari, 2019](#)).

Following the 2022 FIR realignment agreement, Indonesia operationally gains FIR management which allows for better control over air traffic, and directly impacts national security. By managing the FIR, Indonesia can ensure that diplomatic clearances and security clearances of foreign aircraft go through the Indonesian government, which increases security and control over its airspace. Indonesia can regulate and monitor military flights without having to obtain permission from other countries, which is crucial in maintaining its territorial sovereignty. The agreement on FIR adjustment is also important for air defense to improve effectiveness in coordinating civil and military aviation activities. Air defense needs will be met quickly and effectively in responding to threats without the need for permission from other countries ([Mintojati, 2022](#)).

b. Economy

The FIR boundary realignment agreement between Indonesia and Singapore supports the growth and development of the national aviation industry. With greater control over the FIR, Indonesia can optimize the use of its airspace for civil aviation purposes, which can improve efficiency and

reduce operating costs for national airlines. This also opens up opportunities for the development of new flight routes and improved connectivity between regions in Indonesia, which in turn can drive economic growth ([Kania et al., 2020](#)).

This agreement also makes Singapore obliged to deposit the cost of flight services provided to aircraft flying to and from Singapore to Indonesia. This is certainly beneficial for Indonesia and is a step forward in the utilization of its airspace ([Sekretariat Kabinet Republik Indonesia, 2022](#)).

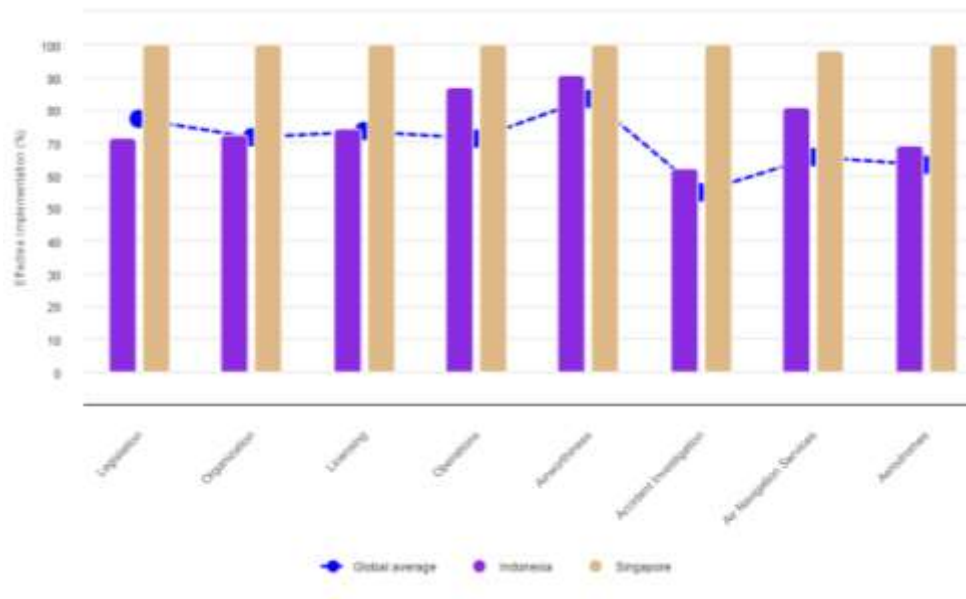
Effect of FIR Adjustment Agreement on Indonesia's navigation sovereignty

The FIR boundary realignment is an important step in asserting Indonesia's sovereignty over its airspace. It demonstrates Indonesia's commitment to strengthening its air navigation sovereignty and managing its national resources independently. This agreement also reflects Indonesia's diplomacy in negotiating with neighboring countries to reach mutually beneficial solutions, as well as improving bilateral relations with Singapore ([Kania et al., 2020](#)). In a legal context, the FIR boundary adjustment reaffirms the principle of air sovereignty recognized by international law, including the 1944 Chicago Convention on International Civil Aviation

Air sovereignty in the 1944 Chicago Convention, stipulates that each state has full sovereignty over the airspace above its territory. Article 1 of the convention states that the signatory states recognize that each state has complete and exclusive sovereignty over the airspace, land and waters above its territory (["Convention on International Civil Aviation Chicago," 1944](#)). In line with Law Number 1 of 2009 concerning aviation also provides rules related to air sovereignty. It is explained that Indonesia has full sovereignty over its airspace. This means that the Indonesian government has the authority and responsibility to manage airspace for national interests including aviation, defense, and the economy ([Undang-Undang Republik Indonesia Nomor 1 Tahun 2009 Tentang Penerbangan, 2009](#)).

In an effort to manage airspace and take over the FIR from Singapore, Indonesia must comply with international standards and practices set by the International Civil Aviation Organization (ICAO) in the management of the FIR. Indonesia needs to prepare various aspects to convince ICAO and Singapore to return control of the airspace back to Indonesia. ICAO has procedures and standards used to evaluate a country's ability to manage its own FIR. This ICAO evaluation is conducted through the Universal Safety Oversight Audit Program (USOAP).

Figure 3 Comparison of the International Aviation Safety Assessment (IASA) audits in Indonesia and Singapore



Source : International Civil Aviation Organization (ICAO, 2022)

Based on the results of the IASA audit, Singapore has an overall score that is superior to Indonesia. However, Indonesia is above the global average score. This shows that Indonesia has made significant progress in the world of logging. Therefore based on the results of this evaluation Indonesia has proven that it is capable and viable in managing its own airspace.

Although the results of these evaluations and audits have led ICAO to grant airspace management back to Indonesia and ensure that Indonesia complies with international standards and practices set by ICAO, unfortunately, air navigation sovereignty has not been fully obtained by Indonesia in this agreement. It can be seen in the division of airspace management boundaries in the agreement. Where at an altitude of 0-37,000 feet in the Riau Islands and Natuna airspace, FIR management is delegated to the Singapore aviation authority, and above 37,000 feet is the Indonesian aviation authority. This delegation is intended to coordinate aircraft traffic going to or from Singapore. Whereas Indonesia has been declared capable of managing its own airspace. In addition, 37,000 feet is not a high traffic zone and only a few aircraft are flying. This suggests that Singapore's oversight will remain within Indonesia's FIR and the benefits of flight traffic fees remain with Singapore (Lestari, 2018).

Table 1 International Aviation Safety Assessment (IASA) Audit Result 2017

Critical Elements	Global Average	Indonesia
Legislation	73.45	71.43
Organisation	70.08	69.23
Licensing	73.51	75.82
Operations	70.03	87.31
Airworthiness	78.92	90.86
Accident Investigation	56.80	65.00
Air Navigation Services	65.72	84.88
Aerodromes	61.23	73.38

Source : International Civil Aviation Organization (ICAO, 2022)

In table 1 in detail it is found that Indonesia's score which is below the global average score is legislation of 71.43 and organization of 69.23. but the rest of Indonesia's score is above the global average score. This shows that Indonesia's air navigation capability is already in the good enough category.

Table 2 Indonesian Air Navigation Facilities (CNS-A)

System and Technology	Unit
Communication	1.250
Navigation	513
Surveillance	107
Automation	22

Source: (AirNav Indonesia, 2018)

Indonesia, in an effort to take over the FIR from Singapore, continues to improve capabilities and improve important factors in air navigation that are necessary to support independent FIR management. Indonesia prepares human resources capable of operating the FIR, as well as adequate technology to support flight safety in the Riau Islands and surrounding areas according to ICAO standards. Indonesia has facilities that support the management of the FIR as shown in Table 2. With these facilities, ICAO and Singapore, which were previously authorized to control the area, now believe that Indonesia is ready to manage the FIR.

In this FIR boundary realignment agreement, the division of responsibilities and control within the FIR is regulated through a bilateral agreement to be carried out by Indonesia and Singapore. This covers aspects such as air traffic control, provision of navigation services, and coordination in emergency situations. In addition, the division of this agreement makes progress for Indonesia. Indonesia has the right to provide aviation services and collect fees from those services, as well as receive service fee deposits from Singapore for the delegated FIR area ([Kania et al., 2020](#)).

With various dynamics in the FIR boundary adjustment agreement between Indonesia and Singapore, basically this agreement is a progress for Indonesia. Indonesia gained progress with an additional FIR area of 249,575 km². Indonesia also received international recognition that the FIR over the Riau Islands and Natuna will become the Jakarta FIR area, which has the independence to regulate commercial and state aircraft traffic activities. Indonesia has the authority to review the performance of air navigation services provided by Singapore, ensuring that such services are in accordance with the standards set by ICAO. In addition, Singapore, through its aviation authority, is responsible for preventing and notifying Indonesian authorities of the risk of airspace violations by foreign aircraft ([Direktoral Jenderal Perhubungan Udara, 2022](#)).

For this reason, the FIR boundary realignment agreement is very important for air navigation sovereignty. The effect of this agreement has improved Indonesia's air navigation sovereignty. Although in some ways full sovereignty has not been realized. In accordance with the concept of air sovereignty, the state has full authority and control over the airspace above its territory. Indonesia as a sovereign state has the right to manage its own airspace and has demonstrated a commitment to strengthen its capacity to manage the delegated FIR, including through improved infrastructure and human resources. As such, Indonesia seeks to ensure that the management of this FIR is carried out to strengthen air navigation sovereignty, improve flight safety, and capitalize on the economic potential of managing the airspace.

CONCLUSION

The FIR boundary adjustment agreement between Indonesia and Singapore shows that Indonesia has made significant progress by obtaining an additional FIR area of 249,575 km² covering the Riau Islands and Natuna to be internationally recognized as part of Jakarta's FIR. This step is an important part of Indonesia's efforts to maintain its air sovereignty, given the importance of airspace management which is a strategic asset and has high economic value. However, in accordance with the concept of air sovereignty that states have full authority and control over the airspace above their territory, this agreement has not fully granted air navigation sovereignty to Indonesia. This is because Singapore still holds control over the airspace at an altitude of 0-37,000 feet above the territory. Independent management of the FIR by Indonesia will ensure that there is no foreign intervention in the regulation of its airspace, which is in line with the principle of state sovereignty. However, based on international aviation safety assessments and the quality of Indonesia's CNS-A facilities, doubts remain about achieving full air navigation sovereignty through this agreement.

Through the policy analysis method, this study identifies that the main issue of the agreement is Indonesia's challenge in taking over the management of the FIR that was previously managed by Singapore, as well as meeting international standards in the management of the FIR. The purpose of this research is not only to explain how the agreement can improve Indonesia's air traffic management, national security and economic growth, but also to identify the obstacles faced. These include sovereignty issues, compliance with international air traffic management standards, and challenges in interstate diplomacy. The proposed solutions involve enhancing Indonesia's FIR management capacity, including investment in infrastructure, human resource training, and

ongoing negotiations with Singapore to ensure a smooth transition and safeguard Indonesia's national interests. The implications of the results of this study are significant. Improving air traffic efficiency and strengthening Indonesia's sovereignty over its airspace can provide economic and strategic benefits. In addition, the results of this study provide important insights for policymakers in formulating foreign policy and international cooperation, particularly in the context of territorial sovereignty and national resource management.

A limitation of this study is the lack of empirical data on the implementation of these agreements in day-to-day operations on the efficiency of air traffic. In addition, this study has not fully explored Singapore's ability to manage air navigation. Suggestions for future researchers to conduct research that explores the complete impact of the fulfillment of air navigation facilities on Indonesia's sovereignty, examining in depth the roles, implications, and challenges that may arise in the process of achieving full sovereignty after the fulfillment of air navigation facilities research over a period of time to observe changes or developments in the impact of this agreement on Indonesia's FIR operations after the FIR boundary adjustment agreement.

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