Ratio Legis Journal
ISSN 2830-4624
published by
Master of Law, Faculty of Law
Universitas Islam Sultan Agung

The Effectiveness of The Law for Implementing The Batam Aero Technic (BAT) Special Economic Zone (KEK) in Improving The Competitiveness of The National Aviation Industry

Indah Arosta

Faculty of Law, Universitas Islam Sultan Agung (UNISSULA) Semarang, Indonesia, E-mail: indaharosta.std@unissula.ac.id

Abstract. *This research is motivated by the important role of the Batam Aero Technic Special Economic Zone (SEZ) as the first strategic area in Indonesia that focuses on the aircraft maintenance, repair, and assembly industry, in order to strengthen the position of the national aviation industry at the regional and global levels. Various laws and regulations have been issued to provide convenience, facilities, and legal certainty for business actors in this area, but their implementation in the field still faces various challenges that have the potential to hinder increased competitiveness. Based on the theory of legal effectiveness, the theory of justice, and the theory of the legal system, this study aims to describe and analyze how the legal regulations for the implementation of the SEZ work, the extent of their impact on industrial development, and their conformity with the principles of justice and the integration of the national legal system. The research uses a sociological juridical approach with analytical descriptive specifications, which combines the study of written legal norms with direct observation of their implementation. The data used includes primary legal data in the form of laws, government regulations, presidential regulations, and other implementing regulations, as well as secondary legal data such as books, journals, research results, and expert opinions. Data collection was carried out through literature studies to examine the legal and theoretical basis, as well as interviews with area managers, business actors, and related agencies to obtain a concrete picture of the implementation of the rules. All data were then processed and analyzed qualitatively to understand the relationship, meaning, and dynamics that occur between legal regulations and social reality in the field. The results of the study indicate that in general the legal framework for the implementation of the BAT SEZ has provided an adequate foundation and encouraged industrial growth, but its effectiveness has not been fully optimal due to overlapping regulations, coordination* *constraints between institutions, and differences in understanding of the implementation of facilities in the field. Based on a review of the theory of legal effectiveness, justice, and the legal system, it was found that the success of this area is highly dependent on a unified regulatory system, legal certainty, and equitable distribution of benefits for all stakeholders. This study concludes that regulatory improvements, increased coordination, and policy adjustments are essential for the BAT SEZ to truly become the main driver of increasing the competitiveness of the national aviation industry that is strong, independent, and highly competitive on the international stage.*

Keywords: *Aviation Industry Competitiveness; Batam Aero Technic; Legal Effectiveness; Special Economic Zone.*

1. Introduction

The aviation industry is a strategic sector that plays a vital role in driving national economic growth, improving regional connectivity, and creating jobs and added economic value. Globally, this sector continues to grow rapidly, particularly in the Asia-Pacific region, which is projected to become a major global aviation market with a growing aircraft fleet and significant business value.

Indonesia, with its strategic geographic location in the heart of the Asia Pacific region, has great potential to become a regional aviation hub. However, the national aviation industry still faces various challenges, including a high dependence on foreign maintenance, repair, and overhaul (MRO) services, which has resulted in a significant outflow of foreign exchange. Furthermore, the need for increased capacity, technology, and competitiveness to compete in the global market. Indonesia is a vast country with thousands of islands. The distance between the westernmost island and the easternmost point is very long. Therefore, Indonesian mobility requires alternatives, one of which is air transportation. Many airlines have emerged, offering air transportation services to Indonesians, despite the inherently capital-intensive nature of this business. Among the many private airlines, several well-known names have emerged, such as Lion Air, Batavia Air, Wings Air, Adam Air, and others. The abundance of airlines provides Indonesians with alternatives in choosing their mode of transportation.

Air travel is a popular means of transportation and offers advantages over other modes. It offers extensive coverage, fast arrival times, and relatively affordable ticket prices. However, these low fares can lead to a decline in aircraft maintenance, which can compromise flight safety and negatively impact safety, comfort, and consumer protection.[1]

The aviation industry is a strategic sector that plays a vital role in advancing the national economy, strengthening interregional connectivity, and enhancing Indonesia's position internationally. One key component of this industry is aircraft Maintenance, Repair, and Overhaul (MRO) activities, which serve to ensure flight safety and the continuity of airline operations. The need for MRO services in Indonesia continues to increase in line with the growing national aircraft fleet, which currently exceeds 700 units. However, the majority of this demand is still met by foreign service providers, resulting in a significant outflow of foreign exchange from the country annually, amounting to approximately IDR 26 trillion. Approximately 70% of Indonesia's aircraft maintenance, repair, and overhaul needs are still outsourced, particularly for engines and major components. This results in high airline operational costs, long maintenance queues, and a significant outflow of foreign exchange, amounting to approximately IDR 26 trillion annually. Furthermore, this also impacts the rise in airline ticket prices and the limited availability of operational aircraft. Currently, of Indonesia's 570 aircraft, only around 360 are operational, with the remainder awaiting repairs at home or abroad. To address this dependency, efforts are needed to strengthen the capacity and capabilities of the domestic MRO industry. Developing adequate aircraft maintenance facilities and capabilities not only saves foreign exchange but also creates jobs, improves the skills of the local workforce, and stimulates the growth of related industrial sectors.

By the end of 2025, of the 568 aircraft registered in Indonesia, only about 368, or 65%, were ready for operation, while the remaining 200 units were undergoing maintenance or repair. This number of aircraft undergoing maintenance represents a 244% increase compared to the previous year, indicating the worsening difficulty in maintaining aircraft airworthiness. This situation limits the number of flights that can be operated, thus limiting available routes and increasing passenger waiting times. Approximately 70% of aircraft maintenance, repair, and overhaul (MRO) needs in Indonesia still have to be outsourced, particularly for high-tech work such as engine and major component maintenance. This is due to limited domestic facilities, equipment, and qualified and internationally certified workforce. Furthermore, most aircraft spare parts still have to be imported, which is not only expensive but also takes a long time to deliver, extending aircraft maintenance periods. As a result, the country's foreign exchange outflow is estimated to reach around IDR 26 trillion annually.

The designation of Batam Aero Technic (BAT) as a Special Economic Zone (SEZ) is based on Government Regulation Number 67 of 2021 concerning the Batam

[1] E. Saefullah Wiradipradja, Responsibilities of Airline Companies to Passengers According to Indonesian Air Law, Vol. 25 (Jakarta: Jurnal Hukum Bisnis, 2006) pp. 5-6

Aero Technic Special Economic Zone. This regulation was drafted and implemented based on Law Number 39 of 2009 concerning Special Economic Zones, which has been amended several times, most recently by Law Number 6 of 2023 concerning the Stipulation of Government Regulation Number 2 of 2022 concerning Job Creation into Law. Furthermore, its implementation also refers to Government Regulation Number 40 of 2021 and Presidential Regulation Number 8 of 2022, which regulate the general provisions, facilities, and conveniences provided within the Special Economic Zone (SEZ). The designation of Batam Aero Technic (BAT) as a Special Economic Zone (SEZ) aims to create a conducive business environment, provide certain facilities and conveniences, and encourage the development of the aviation industry, particularly the MRO sector. With a clear legal framework, it is hoped that it will attract investment, improve service efficiency, and strengthen the position of the national aviation industry at the regional and international levels.

The Potential and Expectations of the Batam Aero Technic (BAT) Special Economic Zone (SEZ) are Investment Value and Labor Absorption where As a Special Economic Zone (SEZ), Batam Aero Technic (BAT) has an investment plan of IDR 7.29 trillion and is expected to absorb around 9,976 workers by 2030. This investment will be used for facility development, technology improvement, and improving the quality of MRO services. Since its operation, Batam Aero Technic (BAT) has successfully obtained various certifications from domestic and foreign aviation authorities, such as certification from the Vietnam Civil Aviation Authority in 2025. This proves that the capabilities and quality of Batam Aero Technic (BAT) services have met international standards, so that it can attract customers from various countries and increase the competitiveness of the national aviation industry in the global market. With the facilities and conveniences provided through the legal framework of the Special Economic Zone (SEZ), it is hoped that Batam Aero Technic (BAT) can become a leading MRO center in the Southeast Asia region. This will not only reduce dependence on foreign services, but also increase the added value of the national aviation industry, encourage innovation and technological development, and strengthen Indonesia's position as a country with independent capabilities in the aviation sector.

This legal review is important to assess the extent to which the existing regulatory framework is able to support the effectiveness of the implementation of the Batam Aero Technic (BAT) Special Economic Zone (SEZ) in achieving its strategic objectives, namely strengthening the national aviation industry, improving human resource competency, and accelerating economic growth based on a highly competitive aviation industry. This thesis needs to identify legal issues that may arise in the implementation of the Batam Aero Technic (BAT) Special Economic Zone (SEZ), such as bureaucratic obstacles, regulatory ambiguity, or potential conflicts of interest.

"The Legal Effectiveness of the Implementation of the Batam Aero Technic (BAT) Special Economic Zone (KEK) in Increasing the Competitiveness of the National Aviation Industry" is very relevant and important to be carried out, in order to provide input for improving policies and developing the aviation sector in Indonesia in the future.

2. Research Methods

The approach used in this research is sociological juridical. Sociological juridical is an approach based on binding norms or regulations. It is hoped that this approach will reveal how law, which is empirically a societal phenomenon, can be studied as a causal variable that produces consequences in various aspects of social life. This type of sociological juridical research uses primary, secondary, and tertiary data, obtained directly from the source.

3. Results and Discussion

3.1. Implementation of laws and regulations for the implementation of the Batam Aero Technic (BAT) Special Economic Zone (KEK)

The implementation of laws and regulations in the Batam Aero Technic Special Economic Zone is based on a tiered regulatory system, starting from the main foundation, namely Law Number 39 of 2009 concerning Special Economic Zones (as amended by Law No. 6 of 2023), which serves as the national legal umbrella for the implementation of special zones, followed by special implementing regulations, namely Government Regulation Number 67 of 2021 concerning the Batam Aero Technic Special Economic Zone as the basis for determining and technically regulating this zone. This regulation expressly regulates the boundaries of the area, permitted business activities, the rights and obligations of managers, as well as a special facility package that differs from the legal regime of the Batam Free Trade Zone and Free Port that previously applied in the same location.

In detail, its implementation is also supported by derivative regulations in the form of: Presidential Regulation Number 8 of 2022 concerning Facilities and Conveniences in Special Economic Zones (SEZs); Regulation of the Minister of Finance concerning tax/import duty exemptions and reliefs; Regulation of the Minister of Transportation concerning aviation safety and operations standards; and Regulation of the National Council of Special Economic Zones (SEZs) concerning procedures for integrated licensing services. According to Bagir Manan, this legal framework is designed as a special regime: regulations are simplified, overlapping regulations are eliminated, and norms are fully adapted to the characteristics of the aviation industry, so that the law functions to facilitate rather than hinder investment. In Soerjono Soekanto's view, the implementation of this regulation is a concrete form of legal engineering, where the legal substance is made specific, institutional structures are reorganized to be more efficient, and legal culture is directed to support ease of doing business, all with the aim of ensuring that regulations do not only exist on paper, but are implemented in practice and have an economic impact.

Based on Article 29 to Article 36 of Law Number 39 of 2009, business actors in the Batam Aero Technic Special Economic Zone are entitled to receive facilities in the form of:

1) Exemption or suspension of payment of import duties, value added tax, and luxury goods sales tax for capital goods, supplies, and raw materials imported for business purposes within the area.

2) Exemption from export duties for goods produced within the area and exported outside Indonesian customs.

3) Other tax facilities include reductions or exemptions from Corporate Income Tax (PPh) for a certain period of time in accordance with applicable laws and regulations.

4) This regulation aims legally to provide certainty that production and operational costs in Special Economic Zones (SEZs) are more efficient and competitive compared to other locations.

In accordance with Article 3 of Government Regulation Number 67 of 2021, the types of business activities permitted in the Batam Aero Technic (BAT) Special Economic Zone (SEZ) include: aircraft component production and processing, aircraft maintenance and repair, logistics, research and development, education and training, and other supporting activities supporting the aviation industry. In practice, these provisions are strictly enforced through a business permit assessment mechanism conducted by the managing agency. Every prospective business actor is required to demonstrate that their intended activities fall within the permitted categories and support the goal of establishing the zone as an international-level aircraft maintenance service center. This is done to prevent misuse of the Special Economic Zone (SEZ) status for irrelevant activities and to ensure that the facilities provided are truly utilized to develop the targeted strategic sector. To date, all businesses operating or under construction in the zone have met these criteria, with a primary focus on aircraft Maintenance, Repair, and Overhaul (MRO) services, which are the core activities that form the basis for the zone's designation.

Based on Article 2 of Government Regulation Number 67 of 2021, the Batam Aero Technic (BAT) Special Economic Zone (KEK) covers an area of 30 hectares, located in Nongsa District, Batam City, Riau Islands Province, with clearly defined boundaries depicted on an official map that forms an integral part of the regulation. Implementation of these boundary provisions has been carried out through physical marking in the field and mapping recorded in the administrative systems of the managing agency and related agencies. This affirmation of the boundaries has important legal significance, namely determining the limits of the application of special regulations and the provision of facilities that differ from the surrounding general area. The results of the study indicate that there are no significant boundary disputes, and land management within the area is running in accordance with the approved spatial plan.

In accordance with the provisions of Law Number 39 of 2009 and Government Regulation Number 67 of 2021, the management of the Batam Aero Technic (BAT) Special Economic Zone (SEZ) is carried out by two levels of institutions: the National Council for Special Economic Zones at the national level and the Zone Management Agency at the operational level. During a specifically regulated transition period, management duties and authorities are carried out by the Batam Free Trade Zone and Free Port Authority (BP Batam). In practice, the establishment of the management agency has proceeded according to the established schedule, which is no later than 30 days after the regulation was promulgated. This agency plays a central role as the sole service point for business actors, authorized to process permits, manage facilities, and oversee compliance with applicable regulations. Research results indicate that the existence of the management agency has had a positive impact in the form of bureaucratic simplification and accelerated service processes, which is one of the main objectives of the establishment of the Special Economic Zone (SEZ). However, in practice, obstacles remain related to the division of authority between the management agency and vertical agencies of the central and regional governments. There are still several types of technical permits whose authority has not been fully transferred to the management agency, so the process still requires coordination with agencies outside the area.

Supervision of the Batam Aero Technic (BAT) Special Economic Zone (SEZ) is carried out in stages, starting from internal supervision by the management agency to external supervision by the National Council and other relevant agencies. Legal provisions stipulate that supervision is carried out on aspects of business activity suitability, facility utilization, physical development, and compliance with laws and regulations. In practice, this supervisory mechanism has been implemented through periodic inspections, routine reporting, and handling of violations that occur. The results of the supervision indicate that in general, the implementation of activities in the zone has been carried out in accordance with applicable regulations, and the level of compliance of business actors is quite high. This is driven by the awareness of business actors that compliance with legal regulations is an absolute requirement for maintaining operational feasibility and business sustainability, especially in the aviation industry which has very strict safety standards.

One of the most important aspects of the legal framework for Special Economic

Zones (SEZs) is the provision of fiscal facilities aimed at increasing investment attractiveness and lowering business costs. Under applicable regulations, these facilities include exemptions or deferrals from import duties, VAT, Sales Tax on Luxury Goods (PPnBM), and ease of Income Tax. In practice, these facilities have been implemented in accordance with established procedures, involving collaboration between the managing institution and customs and taxation agencies. Research shows that these facilities have been effectively utilized by businesses and have proven effective in reducing operational costs, particularly in the import of sophisticated equipment and raw materials required for aircraft maintenance. However, challenges remain in harmonizing technical regulations between agencies. There are sometimes differences in interpretation regarding which goods are eligible for these facilities, which can lead to longer-than-expected processing times. Furthermore, periodic changes in national fiscal policy also impact long-term legal certainty for businesses.

In addition to fiscal facilities, regulations also provide various non-fiscal facilities, such as simplified licensing, easier employment, and freedom in financial transactions. In practice, these facilities have been implemented quite well, particularly in terms of integrated licensing services. Specifically in the employment sector, the ease of hiring foreign workers with specialized skills is greatly beneficial for businesses in the Batam Aero Technic (BAT) Special Economic Zone (KEK). Given that its core activity is aircraft maintenance services that require high-level technical expertise and international standards, this facility allows companies to obtain the necessary expertise, while also providing opportunities for local workers to learn and improve their skills.

In general, the legal regulations governing the operation of the Batam Aero Technic (BAT) Special Economic Zone (SEZ) are readily available, comprehensive, and have a clear hierarchy. From the parent law to the specific regulations establishing the zone, all necessary aspects have been detailed. This clarity of legal norms provides a strong foundation for implementation and provides legal certainty for the parties involved. However, there are still shortcomings in the completeness of the implementing technical regulations specifically tailored to the characteristics of the aviation industry, which sometimes leads to confusion in their application. The implementation of the legal regulations has been quite successful in terms of the establishment of institutions, the provision of facilities, and general supervision. The management institutions have played their roles according to their authority and are able to provide more efficient services than systems outside the zone. Law enforcement has also been quite effective, with a high level of business compliance. The main obstacles lie in inter-agency coordination and the ongoing overlapping of authority, which sometimes slows down the service process and policy implementation. In terms of its alignment with the objectives of the Special Economic Zone (SEZ), the implementation of laws and regulations has had a positive impact. The existence of specific regulations has attracted significant investment, built facilities to international standards, and created a thriving aviation industry ecosystem. This demonstrates that the legal regulations in place have served as a vehicle for encouraging change and development in line with the desired goals.

Operationally, the law is implemented through a one-stop integrated service mechanism managed jointly by the National Special Economic Zone Council (KEK), the BAT KEK Area Council, the Area Administrator (implemented by BP Batam during the transition period), and PT Batam Aero Technic as the business entity developing and managing the area. Based on Article 7 of Government Regulation No. 67/2021, a transitional period for the transfer of status from a Free Zone to a KEK is implemented, during which existing rights, obligations, and facilities remain recognized, but are gradually adjusted to new, more beneficial and comprehensive provisions.

Implementation authority is clearly divided: the central government establishes macroeconomic policies and fiscal facilities; local governments and administrators handle permits, spatial planning, and supervision; and area managers are responsible for providing physical facilities, daily services, and operational compliance. According to the National Special Economic Zone Council, this mechanism differs from conventional areas in that service authority is delegated and consolidated, eliminating the need for businesses to deal with multiple agencies. All permits and approvals are processed on-site, in accordance with the principle of legal efficiency.

Lawrence Friedman believes that successful implementation depends heavily on the alignment of these institutional structures. In the BAT Special Economic Zone (KEK BAT), the structure has been simplified to reduce bureaucracy, but obstacles often arise in practice due to a lack of uniform understanding among agencies regarding the boundaries of authority and procedures for implementing new regulations, potentially reducing the effectiveness of the law.

The most important part of implementing regulations is the granting of legally guaranteed privileges, which are carried out as follows:

1. Fiscal & Customs Sector: Exemptions or reductions are granted from Import Duty, Value Added Tax, Luxury Goods Sales Tax, and Income Tax in accordance with the provisions of Articles 12–18 of Government Regulation No. 67/2021. This applies to the import of equipment, spare parts, raw materials, and supplies used directly for aircraft maintenance activities, where these goods are not subject to levies or are subject to a zero percent tariff, unlike provisions outside the region. However, in its implementation, there are still obstacles in the classification of goods (HS codes) that are not specific to certain aircraft components, so sometimes the facilities cannot be fully enjoyed as expected.

2. Licensing: An integrated licensing system has been implemented, accelerating

the processing time for business permits, location permits, and technical flight operations permits. Unlike the usual, time-consuming procedures, in the BAT Special Economic Zone (KEK BAT), the entire process is coordinated through a single portal, based on Presidential Decree No. 8/2022. According to the area's management, this implementation has reduced permitting time by more than 50%, but data synchronization between central and regional agency systems remains problematic.

3. Employment & Immigration: Facilitation of the transportation of needed foreign skilled workers and technicians, as well as flexibility in employment agreements, are specifically regulated to support the availability of high-quality human resources. This provides the legal basis for BAT to bring in experts for technology transfer, while protecting the local workforce through mandatory training stipulated in implementing regulations.

According to Soerjono Soekanto, these obstacles are factors that determine the effectiveness of the law. Even if the substance of the regulation is sound, if law enforcers do not understand it or if supporting facilities are inadequate, implementation will be weak and the goal of increasing competitiveness will not be fully achieved. Overall, the implementation of the law in the SEZ BAT has been running according to the established basic framework, providing significant convenience compared to regular areas. However, it still requires refinement, harmonization, and more consistent enforcement so that the full potential of this special law can function optimally to promote the national aviation industry.

3.2. Effectiveness of the implementation of the laws and regulations of the Batam Aero Technic (BAT) Special Economic Zone (KEK) in supporting the competitiveness of the current national aviation industry

Based on Soerjono Soekanto's theory of legal effectiveness, the implementation of regulations in the BAT SEZ is currently categorized as quite effective but not yet optimal. This means that the regulations are in place, are being complied with, and have a real positive impact, but have not achieved all of the stated objectives due to implementation gaps, technical obstacles, and imperfect harmonization of regulations. The main legal framework, Law No. 39/2009, Government Regulation No. 67/2021, and Presidential Regulation No. 8/2022, has become a legitimate foundation and serves to differentiate the legal regime of this region from other regions, thus providing basic certainty for business actors. Normatively, the main objective of making BAT an international-standard MRO center and reducing foreign dependence has begun to be achieved, but operationally, there are still obstacles that reduce competitiveness compared to competing countries such as Singapore, Malaysia, or Thailand.

Around 70-95% of major maintenance and aircraft component needs are still outsourced to other countries such as Singapore, Malaysia, or Europe. This results in very high airline operating costs, contributing up to 20-30% of total operating costs, and delays in returning aircraft to service. In addition to maintenance costs, other factors such as fuel prices, taxes, and customs fees remain a significant burden, often making airfares in Indonesia more expensive than in neighboring countries, simultaneously squeezing companies' profit margins. Adequate and internationally certified maintenance facilities remain limited, making it difficult to meet the needs of the national fleet, which currently numbers around 368 aircraft, far below its pre-pandemic capacity of 740 aircraft in 2018. The need for technical personnel with specialized skills and international certification remains unmet, often requiring a reliance on foreign labor. The Indonesian aviation industry holds significant potential due to its strategic geographic location at the crossroads of global flight routes, its large population, and its high need for interregional connectivity. With this position, Indonesia has the potential to become a hub for aviation services and aircraft maintenance in Southeast Asia if supported by appropriate policies and facilities.

The Batam Aero Technic (BAT) Special Economic Zone (SEZ), established through Government Regulation No. 67 of 2021, is specifically designed to address the aforementioned challenges by providing different and more favorable legal treatment compared to general areas. The implementation of this regulation covers the following key aspects:

1) In accordance with the provisions of Law Number 39 of 2009 and its implementing regulations, business actors in the Batam Aero Technic (BAT) Special Economic Zone (KEK) are entitled to facilities in the form of exemptions or suspensions of import duties, Value Added Tax (VAT), and Luxury Goods Sales Tax (PPnBM) for capital goods, equipment, and raw materials imported for business purposes within the zone. In addition, there are facilities regarding Corporate Income Tax according to the scale of investment and type of activity. In practice, these facilities have been implemented effectively and proven to be able to reduce the procurement costs of equipment and raw materials used in aircraft maintenance activities. For example, the exemption from import duties for certain aircraft engine components stipulated in Minister of Finance Regulation Number 81 of 2024 has reduced procurement costs by tens of percent compared to if imported into the general area. This is in line with the regulation's objective of equalizing business costs in Indonesia with competing countries.

2) In addition to fiscal facilities, regulations also facilitate licensing, employment, and regional management. In the Batam Aero Technic (BAT) Special Economic Zone (KEK), the entire licensing process is managed in an integrated and centralized manner by the Zone Management Agency, significantly shortening the processing time compared to conventional procedures. In the employment sector, there are opportunities to employ foreign workers with specialized skills

not yet available domestically, which are essential for high-tech aircraft maintenance.

The effectiveness of implementing regulations in the Batam Aero Technic (BAT) Special Economic Zone (SEZ) in supporting the competitiveness of the national aviation industry is analyzed based on the resulting impact on aspects of costs, service quality, independence, and position in the international market. One of the main indicators of competitiveness is the level of costs borne by business actors. The implementation of fiscal facility regulations in the Batam Aero Technic (BAT) Special Economic Zone (SEZ) has had a real impact in reducing the cost of aircraft maintenance services. Based on the data obtained, maintenance costs in the Batam Aero Technic (BAT) Special Economic Zone (SEZ) are on average 15-20% lower than the costs incurred if carried out abroad. This decrease occurs because:

1) Exemption from import duties on equipment and components;

2) Simplification of customs processes that reduce administrative costs and waiting times;

3) Operational efficiency due to integrated management.

These cost reductions subsequently resulted in lower operating costs for national airlines, ultimately lowering ticket prices and increasing market attractiveness. This aligns with the regulatory objective of making domestic maintenance services more competitive and profitable. The implementation of favorable regulations has successfully attracted significant investment for the construction and expansion of facilities in the Batam Aero Technic (BAT) Special Economic Zone (SEZ). Currently, the area boasts seven hangars with state-of-the-art facilities capable of servicing various aircraft types, from small to wide-body aircraft, and holds international certification from aviation authorities in countries such as the United States, the United Kingdom, and Europe.

The availability of these comprehensive, high-quality facilities has significantly increased national service capacity. Previously capable of serving only around 20% of the national fleet's maintenance needs, the Batam Aero Technic (BAT) Special Economic Zone (SEZ) alone is now capable of handling over 40% of that demand. This reduces reliance on foreign facilities and allows national airline aircraft to receive maintenance more quickly, thereby reducing downtime and increasing flight efficiency.

The ease of employment regulated by the regulations has enabled the Batam Aero Technic (BAT) Special Economic Zone (SEZ) to employ foreign experts to transfer knowledge and skills to the local workforce. Currently, the zone employs approximately 2,100 workers, most of whom are Indonesian citizens who have been trained and certified according to international standards. Furthermore, the Batam Aero Technic (BAT) Special Economic Zone (SEZ) also collaborates with various educational institutions to develop curricula and train prospective new workers, thus creating a sustainable supply of experts for the national aviation industry. The implementation of regulations that guarantee legal certainty and ease of doing business has made the Batam Aero Technic (BAT) Special Economic Zone (SEZ) increasingly recognized and trusted internationally. Currently, in addition to serving national airlines, the facilities in this zone are also used by a number of foreign airlines from various countries. This shows that maintenance services in Indonesia have been able to compete with other countries in the region. This success is in line with the regulatory objective of making the Batam Aero Technic (BAT) Special Economic Zone (KEK) a hub for aviation services in Southeast Asia, which will ultimately enhance the image and position of the Indonesian aviation industry in the eyes of the world.

3.3. Obstacles in the implementation of the Batam Aero Technic (BAT) Special Economic Zone (KEK) in increasing the competitiveness of the national aviation industry and how to solve them for the future.

Based on Soerjono Soekanto's theory of legal effectiveness and evaluation of current implementation, the obstacles that hinder the role of KEK BAT can be grouped into regulatory, institutional, technical, human resources, and industrial ecosystem aspects, all of which have a direct impact on national competitiveness.

1. Regulatory Imperfections and Incongruities

There are still incomplete derivative regulations and overlapping legal norms. Although Government Regulation Number 67 of 2021 has become the primary legal basis, many technical provisions have not been elaborated in detail, leading to multiple interpretations. Sectoral regulations from the Ministries of Finance, Transportation, and Industry remain unaligned with the special SEZ regime, such as the differential tax treatment between MRO businesses and airlines, and import restriction regulations (Lartas) that still apply to certain goods that should be exempt.

Another fundamental problem is the lack of specific goods classification codes (HS Codes), which still equate certain aircraft components with general industrial goods, thus still being subject to import duties even in areas with free access. For example, ATR aircraft engines are still subject to import duties because they are classified the same as power turbines, even though they should be categorized as strategic aviation goods. This incurs an additional 10–15% cost, making BAT's service prices less competitive than those of Singapore or Malaysia.

Furthermore, there is unfair customs treatment: components imported are duty-free, but when installed on Indonesian-owned aircraft, they are still subject to levies, while foreign aircraft are completely exempt. This actually burdens the domestic industry itself and creates legal uncertainty, contradicting Hans Kelsen's principle of legal certainty.

2. Weaknesses in Coordination and Institutional Structure

According to Lawrence Friedman, legal structure is a crucial pillar of effectiveness. In the BAT Special Economic Zone (SEZ), there remains a lack of synchronization between the National Council of the Special Economic Zone (KEK), the Regional Council, the Batam Free Trade Zone Authority (BP Batam), and central technical agencies. The division of authority is often unclear, the licensing and technical approval processes still require repeated coordination, and differences in decisions between central and regional officials frequently arise. This slows down service delivery and diminishes the essence of the promised one-stop shop. The lack of an integrated information system across agencies is also a major obstacle to operational efficiency.

3. Limitations and Inequality of Human Resources

Although BAT has employed over 2,100 workers, the number of internationally certified technicians and high-level mechanical/component experts remains extremely limited. Domestic educational institutions have not been able to quickly produce the required number and qualifications of workers, thus relying on expensive foreign experts. The lack of synergy between the industry and aviation educational institutions has created a competency gap. According to the National Council for Special Economic Zones (KEK), this limits the ability to perform heavy maintenance and major overhauls, which are the most valuable segments of the economy and a key determinant of competitiveness.

4. The Supporting Industrial Ecosystem Has Not Been Established

Currently, the industrial supply chain in BAT is incomplete; nearly 80–90% of spare parts, raw materials, and technical equipment still have to be imported. There are insufficient regulations to encourage the growth of local supporting industries. As a result, logistics costs are high, waiting times are long, and economic value added is not retained domestically. This contradicts the primary objective of establishing a Special Economic Zone (SEZ) to strengthen industrial independence and create upstream-downstream linkages, as mandated by Law No. 39/2009, Article 3.

5. Infrastructure and Technical Support Constraints

Although the main facilities are complete, supporting infrastructure, such as an integrated logistics system, quality control facilities, and ease of processing export and import documents, remains suboptimal. Obstacles remain in land development and the provision of adequate public facilities to support 24-hour operations. This reduces operational efficiency and speed of service, which are crucial in the aviation business.

Based on Satjipto Rahardjo's theory that law must function as a tool for development and social engineering, the solution must be comprehensive, targeting the substance, structure and culture of law, and tailored to the specific needs of the aviation industry.

1. Improvement and Harmonization of Regulations

Drafting of Complete Technical Regulations: Immediately issue all implementing regulations for Government Regulation No. 67/2021, particularly the regulations of the Ministers of Finance and Transportation that regulate the details of facilities, classification of goods, and procedures for exemption, to eliminate any room for double interpretation.

Establishment of Special HS Codes: Proposing and establishing specific goods classification codes for all aviation components, engines, and equipment, ensuring clear, consistent, and completely tax-free import duty and tax treatment, in accordance with the SEZ objectives. This will directly reduce operational costs by approximately 12–20%.

Policy Alignment: Eliminate the disparity in treatment between MRO operators and airlines, and align customs regulations for goods installed on domestic and foreign aircraft. Policies must ensure that SEZ facilities are truly applied uniformly without additional barriers.

Simplification of Lartas Rules: Easing or eliminating import restrictions for goods directly needed in the production and maintenance process, considering the characteristics of the aviation industry which is highly dependent on international supplies.

2. Institutional Strengthening and Coordination

Establishment of a Single Management Body: Strengthens the position of the Area Administrator, ensuring full and integrated authority, allowing all permits, approvals, and supervision to be handled in one location without the need for repeated coordination with central agencies. This aligns with the principle of legal effectiveness, ensuring a streamlined and efficient structure.

Integrated Information System: Establishing a digital service system that connects all relevant agencies, enabling online, fast, and transparent licensing, reporting, and oversight. This will significantly improve compliance and legal certainty.

Clear Division of Authority: Prepare a detailed authority map to eliminate overlapping or gaps in supervision, and establish a fast and binding dispute resolution mechanism.

3. Sustainable Human Resource Development

Industry-Education Partnerships: Require and support collaboration between BAT and aviation universities and polytechnics to develop curricula tailored to industry needs and provide internships and internationally certified training. The government provides special incentives for educational institutions that produce FAA/EASA-certified workers.

Technology Transfer Program: Legally mandating the transfer of knowledge from foreign experts to local workers, and facilitating foreign work permits with strict training requirements. This will build long-term technical independence.

Certification Assistance: The government plays a role in facilitating and funding part of the costs of international certification for potential workers, so that the number of skilled workers will increase drastically in the next 3–5 years.

4. Conclusion

The implementation of the Batam Aero Technic (BAT) Special Economic Zone (SEZ) has been based on a strong and clear legal basis, starting from Law Number 39 of 2009 concerning Special Economic Zones, Government Regulation Number 2 of 2011 and its amendments, to Government Regulation Number 67 of 2021 concerning the Establishment of the Batam Aero Technic (BAT) Special Economic Zone (SEZ). These regulations have comprehensively regulated aspects of zoning, types of business activities, management institutions, and the rights and obligations of the parties. The clarity of these legal norms provides a legitimate and binding basis, and guarantees legal certainty for all business actors operating within the zone. The implementation of laws and regulations in the Batam Aero Technic (BAT) Special Economic Zone (SEZ) has proven quite effective in achieving its objectives, especially in terms of increasing the competitiveness of the national aviation industry. This effectiveness is reflected in: Reducing operational costs for aircraft maintenance services ranging from 15–20% compared to costs abroad, thanks to the provision of fiscal facilities and customs ease; Increased national service capacity that is now able to accommodate more than 40% of the maintenance needs of the national airline fleet, thereby reducing dependence on foreign facilities which currently reaches 70–95%; Improved service quality that has been internationally recognized through the acquisition of various aviation safety certifications; Opening up opportunities for international cooperation and increasing global confidence in the capabilities of the Indonesian aviation industry. Although generally effective, the implementation of laws and regulations in the Batam Aero Technic (BAT) Special Economic Zone (KEK) is not yet fully optimal because it is still faced with a number of obstacles, including: Weaknesses in the substance of regulations, especially in terms of the classification of goods that are not specific to aircraft components, resulting in several facilities not being fully enjoyed; Overlapping authority between the Zone Management Agency and other government agencies which slows down the decision-making and service processes; There is no policy alignment between regulations in the zone and general policies at the national level, especially in the fiscal sector; Existing regulations still focus on maintenance activities only and are not sufficient to encourage the development of supporting industries or the manufacture of domestic components. The law governing the Batam Aero Technic (BAT) Special Economic Zone (SEZ) has effectively served its purpose of regulating, protecting, and encouraging development. Through legal instruments, the government has successfully created a conducive business environment, attracted significant investment, and directed the development of the national aviation industry toward greater progress and independence.

5. References

Journals:

Adam Podgorecki dan lC.J. lWhelan, led, Pendekatan losiologis lerhadap hukum, (Jakarta: lbina laksara, 1997), hlm 257

Anwar, S., & Putri, R. (2023). Kebijakan Kawasan Ekonomi Khusus sebagai Sarana Peningkatan Investasi dan Daya Saing Industri. Jurnal Hukum dan Pembangunan, 53(1), 45–62.

APeter dan Koesriani Siswosebroto, Hukum dan Perkembangan Hukum, Dalam Pendekatan Sosiologis Terhadap Hukum, Adam Podgorecci dan Christoper J. Whelan, eds (Jakarta: Sinar harapan, 1988), h. 78

Barda Nawawi Arief, 2013, Kapita Selekta Hukum Pidana, Citra Aditya Bandung, h.67.

Books:

Darus, H. A. (2020). Kawasan Ekonomi Khusus: Konsep, Pengaturan, dan Implementasi di Indonesia. Jakarta: Rajawali Pers.

E. Saefullah Wiradipradja, Tanggung Jawab Perusahaan Penerbangan Terhadap Penumpang Menurut Hukum Udara Indonesia, Vol.25 (Jakarta: Jurnal Hukum Bisnis, 2006) hal.5-6

Firmansyah, A., & Wibowo, H. (2022). Peran Industri Pemeliharaan Pesawat dalam Pengembangan Sektor Penerbangan Nasional. Jurnal Transportasi dan Logistik, 12(2), 112–125.

Hartono, B., & Sari, D. (2021). Analisis Efektivitas Pengaturan Hukum Kawasan Ekonomi Khusus di Indonesia. Jurnal Hukum Ekonomi, 9(1), 78–94.

Indrati, Maria Farida. (2018). Ilmu Perundang-Undangan: Jenis, Fungsi, dan Materi Muatan. Yogyakarta: Kanisius.

Kamus Besar Bahasa Indonesia. 2002, Balai Pustaka, Jakarta, h. 284.

Kusuma, A. B. (2022). Daya Saing Industri Nasional: Perspektif Hukum dan Ekonomi. Jakarta: Pustaka Ilmu.

LawrencM.Riedman,LegalSystemASocialSciencePerspective,(NewYork:lrussellageFoundation,1975), hlm11-20

M. Agus Santoso, Hukum,Moral & Keadilan Sebuah Kajian Filsafat Hukum, Ctk.Kedua, Kencana, Jakarta, 2014, hlm. 85.Atmosudirdjo, Prajudi. (2018). Hukum Administrasi Negara. Jakarta: Ghalia Indonesia.

Mahmudi. (2019). Efektivitas Pelaksanaan Peraturan Perundang-Undangan. Jakarta: Sinar Grafika.

Mardani. (2021). Hukum Investasi di Indonesia. Jakarta: Kencana.

Marzuki, 2005, Penelitian Hukum", Kencana Prenada Media group, Jakarta

Micel A Porter, Competitive Advantage, Edisi Bahasa Indonesia, (Jakarta: PT. Indeks Kelompok Gramedia, 2001), Edisi 4, h. 12.

Mudrajad Kuncoro, Ekonomika Industri Indonesia Menuju Negara Industri Baru 2030, (Yogyakarta: Penerbit Andi, 2007), h. 82.

Mukti Fajar dan Yulianto Achmad, Dualisme Penelitian Hukum Normatif dan Empiris, Yogyakarta, Pustaka Pelajar, 2010,

Pratama, R., & Utami, S. (2023). Tantangan dan Peluang Pengembangan Pusat Layanan Pemeliharaan Pesawat di Kawasan Ekonomi Khusus Batam. Jurnal Kebijakan Publik dan Hukum, 14(2), 201–218.

Romli Atmasasmita. Reformasi Hukum, Hak Asasi Manusia & Penegakan Hukum. (Bandung. Mandar Maju. 2001) h. 55.

Sabian Usman, 2009, Dasar-Dasar Sosiologi, Pustaka Belajar, Yogyakarta, h. 12.

Setiawan, T., & Lestari, M. (2020). Dampak Kawasan Ekonomi Khusus terhadap Pertumbuhan Ekonomi Daerah: Studi Kasus Beberapa Kawasan di Indonesia. Jurnal Ekonomi Regional, 18(1), 33–48.

Soerjono Soekanto, 1976, Beberapa Permasalahan Hukum Dalam Kerangka Pembangunan di Indonesia, Universitas Indonesia, Jakarta, h. 40.

Soerjono Soekanto. Efektivitas Hukum dan Penerapan Sanksi. (Bandung. CV. Ramadja Karya. 1988) h. 80

ISSN : 2830-4624

Soerjono Soekanto. Faktor-Faktor yang Mempengaruhi Penegakan Hukum. (Jakarta. PT Raja Grafindo Persada. 2008) h. 8.

Regulation:

Decree of the Coordinating Minister for Economic Affairs Number 242 of 2021 concerning the Establishment of the Batam Aero Technic Special Economic Zone in the Riau Islands Province.

Government Regulation Number 2 of 2011 concerning Procedures for the Establishment, Management, and Supervision of Special Economic Zones. State Gazette of the Republic of Indonesia 2011 Number 5, Supplement to the State Gazette of the Republic of Indonesia Number 5185.

Government Regulation Number 52 of 2019 concerning Amendments to Government Regulation Number 2 of 2011 concerning Procedures for Determination, Management, and Supervision of Special Economic Zones.

Law Number 1 of 2009 concerning Aviation. State Gazette of the Republic of Indonesia 2009 Number 1, Supplement to the State Gazette of the Republic of Indonesia Number 4956.

Law Number 39 of 2009 concerning Special Economic Zones. State Gazette of the Republic of Indonesia 2009 Number 147, Supplement to the State Gazette of the Republic of Indonesia Number 5066.