



## Strategy for Accelerating the Mastery of Defense Technology in the Procurement of Dassault Rafale Combat Aircraft

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### **Abstract**

The selection of the Rafale was based on the defense relationship between Indonesia and France which had existed for a very long time, besides that, it was also based on the foreign policy adopted by Indonesia, namely the free and active policy shown by several defense equipments owned by Indonesia, not only from a certain country. In this case, it is hoped that Indonesia will not depend on the procurement of defense equipment from abroad and the implementation of Transfer of Technology, Local Content, and Offsets on Rafale fighter jets can run as expected, therefore a strategy is needed in accelerating defense acquisition, where there are three strategies, namely First is the reform of the defense acquisition system and procedures through a single executor directly under the Minister of Defence; The second is the integration of defense R&D institutions in the Ministry of Defense and all R&D forces into the R&D Agency and the Defense Technology Quality Assurance Agency; The third is improving the quality of the Defense Acquisition Agency's human resources through a transparent and accountable recruitment process. The contract agreement for the procurement of Dassault Rafale fighter aircraft should also carry out defense acquisitions by sending (human resources) (HR) to study and apprentice in the developer industry. In addition to HR offsets, an offset scheme for the production of aircraft components in Indonesia is also needed by the national defense industry.

**Keywords:** *Rafale Fighter Aircraft; Technology; Defense Independence*

### **1. Introduction**

Seeing the Indonesian Air Force wants to replace its fighter jets, world fighter jet manufacturers are competing to offer their products, including the Saab JAS 39 Gripen made in Sweden, Dassault Rafale made in France, the Eurofighter Typhoon made by a consortium of four Western European countries (Spain, England, Germany, Italy), the US-made F-16 Viper and the Russian-made Su-35 Super Flanker (Pratomo, 2016).

The main defense equipment needed by Indonesia at this time is fighter aircraft to protect the sovereignty of the Republic of Indonesia. In the end, Indonesia chose the Dassault Rafale fighter as a fulfillment of domestic needs (alutsista). Indonesia's first purchase of fighter jets from France comes amid efforts to overhaul its aging air defense system including Hawk 109/209 and F-5.

French Defense Minister, Florence Parly during her visit to Indonesia on February 10, 2022, argued that the strategic partnership would improve defense relations between the two countries. France is proud to contribute to modernizing the armed forces of its partner (Indonesia), which plays a key role in ASEAN and the Indo-Pacific region. On the other hand, with the cancellation of the defense agreement, there will be consequences and risks in the form of possible stretching of defense relations. Parly also said Indonesia was the second country in the Pacific region after India to buy jets from Dassault Aviation (BBC News Indonesia, 2022).

According to Marsdya TNI Donny Ermawan Taufanto in the Webinar of the Pusat Studi Air Power Indonesia, related to the source of procuring defense equipment for Indonesia's foreign policy which is free and active, requires Indonesia not to bind itself a priori to any world powers. This free and active policy is reflected in the current defense equipment procurement policy which does not come from one country or one block only. Geopolitical and geostrategic considerations are also factors to be considered in the procurement of defense equipment in addition to technical factors (Irawan, 2022).

Defense industry development policies are directed at realizing a strong, independent, and competitive defense industry that can support national defense and security, as well as support the development of national economic growth. Development (Kementerian Petahanan RI, 2015). The defense industry has a strategic role in the implementation of defense so when talking about independence for Indonesian defense, it must also include the independence of the defense industry. Independence in the defense industry means that the domestic defense industry must be able to produce, maintain, operate and be free from embargoes and dictates from other countries. At the defense industry policy committee meeting in 2014, President Joko Widodo said four priority policies in the defense sector. One of the policies is to ensure the fulfillment of defense needs, both related to the welfare of soldiers and the provision of defense equipment (Armenia, 2014).

The frequent occurrence of problems in the defense technology acquisition program in Indonesia caused delays and failure to master the defense equipment technology from foreign procurement. Mastery and improvement of national defense capabilities through the purchase of defense equipment in Indonesia with a Transfer of Technology (ToT) based program has not been able to increase knowledge, improve skills, and expand capabilities for organizing and managing Indonesia's human resources effectively. The main problem with this condition is the absence of specific technology transfer scheme regulations, while the demand for mastery of technology is very high. In addition, the low capability of defense R&D has had a significant impact on the failure to transfer knowledge, abilities, and methods in mastering technology and the defense industry in Indonesia, so a strategy is needed that can be taken into consideration by relevant officials and stakeholders to set regulations and make decisions. policies in mastering technology from optimal, effective, and efficient Dassault Rafale fighter aircraft.

## **2. Research Method**

This study uses a descriptive qualitative approach by exploring or explaining more broadly the issue of Dassault Rafale Purchase. The study focuses on transfer of technology plans, local content and offsets Dassault Rafale for Indonesia. Data collection is carried out through literature reviews from reputable national and international journals, ebooks, and online media.

### **3. Result and Discussion**

Results should be clear and concise. Discussion should explore the significance of the results of the work, not repeat them. Avoid extensive citations and discussion of published literature.

#### **3.1 Considerations of The Indonesian Government in Choosing the Rafale**

The government's considerations in choosing the Rafale to strengthen the TNI and cooperation in the defense sector with France, among others (Hariyanto, et al, 2022).

##### **3.1.1 Advantages of Rafale Fighter Jets**

Rafale is manufactured by the French company Dassault Aviation. The Rafale has twin engines designed as versatile aircraft that can carry out multiple missions or an omnirole. Rafale is equipped with a variety of weapon systems, including:

- MICA and METEOR air-to-air missiles
- HAMMER air-to-ground missiles
- AM39 EXOCET anti-ship missiles
- Laser-guided bombs
- Internal cannon 30 mm with a capability of 2500 revolutions/minute.

This fighter jet is also capable of accommodating up to nine tons of weapons. The maximum speed reaches 1,384 kilometers/hour. The ability to carry many types of weapons and sophisticated mission systems, the Rafale is said to be able to carry out air-to-ground attacks, as well as air-to-air attacks and interceptions of enemy aircraft in one mission (Herindra, 2022).

##### **3.1.2 Long-Term Investment in Indonesia Defense Equipment**

The arrival of the Rafale brings new challenges to the TNI because the systems on the Rafale aircraft are not the same as those made in Russia or America, which have already been used by the TNI. Indonesia has to start from scratch in terms of its maintenance. Pilots and technicians must be educated from scratch, as well as a maintenance laboratory to calibrate super-sophisticated electronic equipment (Basri, 2022). So it should be followed by infrastructure development which is a big consequence for Indonesia when it decides to buy a French-made fighter jet for the first time.

Defense observer and defense equipment observer, Marsekal TNI (Purn.) Chappy Hakim stated that fighter jets are only one part of the air defense system. Although sophisticated, its capabilities will still depend on the air defense system - radar, base, command and control, etc. The air defense design must be an ecosystem that correctly integrates the degree of air defense power, including air base infrastructure, radar systems, etc. The inclusion of technology transfer in the purchase of the Rafale is under the mandate of UU No. 16 of 2012 concerning the Defense Industry. Transfer of technology is one way to realize the President vision of turning defense sector spending into a long-term investment.

##### **3.1.3 Development of Defense Industry Cooperation**

Ministry of Defense of Republic of Indonesia and France have also devised a strategy that combines three core instruments at the level of strength: software, hardware, and human resources, as part of cooperation. The strategic design that has been formulated by the Ministry of Defense includes the signing of several memorandums of understanding (MoU) between Badan Usaha Milik Negara (BUMN) in the defense sector and their French partners (Yuniar, 2021).

The purchase of fighter aircraft from France as a producer will have an impact on the implementation and operational scheme of ground support equipment, calibration laboratories, as well as tactics, and strategies specific to each aircraft. The development of human resources in supporting ecosystems is the basic capital because it is needed to deal with control, maintenance, and basic support systems in general. This means that defense cooperation with France will have a major impact on the education and training scheme of TNI personnel who handle the maintenance of Rafale jets. This scheme can be said to be part of the offset mechanism agreed with France. The target of this offset mechanism is to produce a greater number of technicians and instructors who understand fighter jet platforms such as the Rafale. The Ministry of Defense hopes that strategic cooperation in the defense sector with France will open new opportunities for Indonesia in the development of anti-air missile and radar systems.

#### **3.1.4 Budget Efficiency**

The aspect of budget efficiency can be judged that the purchase of defense equipment is considered appropriate due to rational price quotations. In addition, defense diplomacy has been carried out from the Ministry of Defense team led directly by Defense Minister Prabowo.

#### **3.1.5 Aspects of Defense Strategy and Politics**

Indonesia's free and active foreign policy requires Indonesia not to bind itself a priori to any world powers (Sidebang, 2022). However, amid the limited defense equipment and budget of the Indonesian state defense sector, the purchase of fighter aircraft is currently considered appropriate because it is carried out when Indonesia is trying to strengthen its defense posture to increase its bargaining position in the Asia Pacific region. The procurement of this fighter aircraft is an air defense subsystem, a subsystem of the state defense system.

France is a country that has independence in the production of defense equipment. France is willing to cooperate in the offset scheme (reciprocal trade in the manufacture of aircraft spare parts or other cooperation). Of course, this has a positive impact on the development of Indonesian defense equipment. Moreover, even though France is a member of NATO, France's foreign policy is neutral on sensitive issues such as rejecting the US invasion of Iraq (Alam, 2022).

#### **3.1.6 Guarantee Free from CAATSA Sanctions**

There is speculation that the purchase of the Rafale from France is considered safe from the potential imposition of sanctions from the United States (US) which has also colored the discussion about the Rafale jet. However, even though the US has implemented the Countering America's Adversaries Through Sanctions (CAATSA) Act or a law that imposes sanctions on countries that act 'against' the US since 2018, Indonesia and two other Asian countries are guaranteed freedom from sanctions even if they buy military equipment from Russia. The US considers the three Asian countries, namely India, Vietnam, and Indonesia, to be strategic allies of the United States in Asia.

#### **3.1.7 Indonesian Defense Policy in the Procurement Defense Equipment**

Foreign policy is a set of formulas for values, attitudes, directions, and targets to maintain, secure, and advance national interests in the international arena. Foreign policy is a strategy in dealing with other international political units made by decision makers in order to achieve specific national goals in terms of national interests.

The policy for the procurement of defense equipment for the TNI is carried out by the Ministry of Defense as the political authority in defense policy. This policy requires the procurement of TNI defense

equipment to follow the established mechanism. The Ministry of Defense will appoint a consortium company or the authorized party to further procure armaments. The policy for the one-stop defense system for the defense equipment system is important so that the government clearly knows from whom and for whom the defense equipment system is being held. The Ministry of Defense will get a request from the TNI regarding what defense equipment needs to be modernized.

Komite Kebijakan Industri Pertahanan (KKIP) meeting at the Bogor Palace on April 13, 2021 discussed the follow-up to President Joko Widodo directive regarding the independence of the domestic defense industry. The paradigm of spending in the defense sector must be transformed into a defense investment so that it can help increase the national economy. Therefore, in every procurement of defense equipment from abroad, it must include trade balances, local content, offsets and transfer of technology. There must also be continuity in the procurement of defense equipment. The strategy carried out is that approximately 40 percent of procurement must be spent domestically, and all procurement/acquisition of defense equipment from abroad must be built in Indonesia to lead to independence in the defense industry. Long-term Strategic Plan is needed, so that can be used as a reference to build the independence of the defense industry.

### **3.2 The Effect of Selling Companies on the Procurement of Defense Equipment**

It can be seen in the literature study that Indonesia is looking for advanced technology in the procurement of fighter aircraft. It can also be seen based on sociological studies that "the introduction of new technologies is never just a question of the best technology being the winner over inferior products, but is always complicated by economic, political and organizational interests" (Moelker, 2006). As also according to Theo Farrell and Terry Terriff, "the design of a particular weapon system is not all about which design is technologically advanced and militarily efficient where inferior designs are ruled out but design selection is a function of the social network that surrounds a particular design" (Farrell & Terriff, 2002). The result is a social process in which the choice is made on the dominant design, not the design efficiency that shapes technological development.

In this way, the trend of procuring armaments can be constructed in certain ways depending on the actors who promote them. Social networks that promote certain designs, new technologies, and even certain ways of procuring weapons include a wide range of actors; including defense companies (both national and foreign), military and political elites, scientists-entrepreneurs, and even foreign governments seeking political influence over the buying country and ways of increasing export sales.

Defense companies try to sell their products or product ideas by changing the procurement agency or Ministry of Defense's understanding of what is needed. As a result, states sometimes decide on weapons systems that are not following military doctrine or defense policy. In such cases, military doctrines are created according to newly acquired capabilities or new weapons systems cannot be used properly until the necessary military doctrines are created, both internally and externally. In the end, foreign governments try to change the perception of the buying country mostly through alliance organizations. The shift in the buyer's state's perception of what is needed lies in the formation of military doctrine. The influence of military doctrine lies in what will be done and what is expected of the weapon system which determines the specific characteristics of the weapon system to be purchased. The influence of military doctrine in determining suppliers is higher for countries entrenched in military alliances, such as NATO, than for countries standing outside these arrangements (Kurc, 2012).

In addition, military and security alliances use means such as co-procurement agencies and co-procurement programs to determine suppliers of weapons systems by placing the state on the system and limiting its options. As a result, there has been a significant change in the military doctrine of the alliance, such as Network Centric Warfare, which automatically determines the type of need for weapons that have

the same system, which can only be supplied by certain countries and with certain systems. In this case, Indonesia, which is developing the weapons industry, can independently formulate military doctrine and what is needed to achieve the goals of the doctrine. But big challenges have to be faced as Kjell Inga Bjerga and Torunn Laugen Haaland say:

"The first is that small states have limited freedom to develop separate ways of thinking about the use of their military force. Their dependence on international allies and institutions gets in the way, such efforts. Secondly, small states also have limited institutional capacity to develop their capabilities. Their thinking and research capacity of military doctrine is limited, and their military academies are relatively small with only basic competencies in many areas...doctrinal states-small countries will be greatly influenced by the thinking that goes on in big countries; only to a certain extent will they address certain national security issues" (Bjerga & Haaland, 2010).

In this regard, some conclusions can be drawn about how Indonesia buys by developing its approach to arms procurement. The first conclusion is, that Indonesia as a developing country is trying to emulate other militaries; generally, militaries that are considered allies or have higher prestige. As Farrell and Terriff put it "military emulation has a broader and deeper impact on military practice in developing countries"[13]. As a result, Indonesia is seeking to buy military-used weapons systems that they want to emulate. In this case, the Rafale fighter aircraft procurement program is intended to provide high-reliability fighter jets specifically designed to meet Indonesia's needs and expected technology transfer.

Second, through military assistance, France created a policy in Indonesia, which in turn created a kind of product loyalty, in this case, Indonesia's loyalty to synchronize the weapons systems of France and its allies. The above process can occur depending on the foreign policy adopted by Indonesia. At the most basic level, foreign policy determines which countries can become suppliers and which cannot, because the procurement of weapons is not only a way to buy defense equipment, but also a way to strengthen relations between the two countries.

If Indonesia has to buy from a certain group of supplying countries, it must comply with what is requested by the supplying country in other words to avoid embargo sanctions. This could become a vicious cycle, as Indonesian users become increasingly dependent on supplying countries and their allies, in return for technology transfers, in addition to providing increased dependence and limiting options. On the other hand, if Indonesia does not limit it to a certain group of supplying countries, then the political influence on Indonesia will be low.

The decision of supplier country companies to develop and support a national defense industrial base also affects the number of available supply countries as well as procurement decisions for Indonesia. In addition, increasing the integration of the national defense industry into the supply chains of international companies could increase the likelihood that Indonesia will choose certain companies in procurement decisions. As an advantage to companies operating internationally, they can lower production costs, using their partnerships with the national defense industry to sell systems in other countries through the use of relationships between Indonesia and other buying countries. Furthermore, such a relationship between companies increases the possibility of future sales, but also increases the political influence of the supplying country over Indonesia, as long as the national defense industry continues to rely on foreign companies for technology transfer and trade relations. As a result, these arrangements can harm procurement decisions that unite interests with certain supplying countries, so the independence of the national defense industry cannot be achieved.

### 3.3 Strategy for Accelerating Mastery of Dassault Rafale Combat Aircraft Technology

In determining the strategy to accelerate the mastery of Dassault Rafale fighter aircraft technology by strengthening the defense acquisition system and increasing defense R & D capabilities. According to Yogaswara, (2017), suggests three strategies to catch up with Indonesia in mastering technology and the defense industry.

The first strategy is to reform the defense acquisition system and procedures through the sole executor of defense material procurement directly under the Minister of Defence. The sole executor in the form of the Defense Acquisition Agency (LAP) can optimally, effectively, and efficiently synergize all resources in the defense equipment procurement process to support the strategic plans of the Ministry of Defense and the TNI. The big idea of this strategy is to position the TNI as a professional army by reducing TNI's involvement in the defense equipment procurement process so that it can focus on training and developing its operational capabilities. Through the new systems and procedures, TNI's involvement in the acquisition process is at the stage of proposing the needs of each force through each Chief of Staff. Furthermore, the Minister of Defence, the Commander of the Indonesian National Armed Forces and the Chief of Staff of the Forces evaluate and decide on the need for defense equipment by referring to the needs analysis and strategic defense plan. In this case, the suggested requirement is a modern, sophisticated fighter, namely the Dassault Rafale. The procurement process was then carried out by LAP through the purchasing and R&D program of Dassault Rafale fighter aircraft. The purchasing program is carried out based on domestic and import industries with a technology transfer scheme, in which both play a role in absorbing new technology. The R&D program was carried out by LAP to produce a prototype following the technical requirements that had been formulated in the acquisition plan. Mass production can be carried out by industries involved in R&D programs or through open tenders. Furthermore, the defense material that has passed the test and evaluation by the LAP will be handed over to the TNI unit that proposed it.

The second strategy is the integration of defense R&D agencies. The separation of the defense R&D institution in the Ministry of Defense and each TNI dimension has resulted in a weak process of absorbing new technology, and uncoordinated research and development programs, resulting in a waste of budget and resources. The integration of all defense R&D institutions into the Defense Technology Research and Development Agency (Balitbang Tekhan) under LAP, is a solution for optimizing technology absorption and producing quality and synergistic R&D products. Balitbang Tekhan is the executor of LAP in the R&D program, technology transfer, to technical assistance, so its role in the purchase of Dassault Rafale fighter aircraft is very central where it is the Core Technology Research & Development Center and the Test and Evaluation Center. In addition to Balitbang, it is also necessary to distribute resources from the old R&D institutions to the Defense Technology Quality Assurance Agency (BPM Tekhan) for the functions of technology planning. It needs analysis based on systems engineering, quality management, defense material certification, and cross-institutional R&D coordination. Organizationally, the echelon structure can be applied by the duties, functions, and authorities of each position in the institution.

The third strategy relates to improving the quality of human resources that manned the LAP, particularly the functions of researchers, engineers, analysts, and quality assurance. To obtain personnel who are by the functions of their respective fields, clear regulations are needed in recruitment through the requirements of appropriate qualifications and expertise. Meanwhile, to increase productivity, regulations need to be made whereby LAP personnel can focus on carrying out the functions of researchers, engineers, analysts, quality assurance, and other technical functions, without the burden of excessive administrative responsibility. On the other hand, to increase accountability and anticipate abuse of authority, each LAP personnel is required to fill out and sign an integrity pact. In addition, an ombudsman-based reporting system can be implemented for tighter procedural oversight.

The tactical solution for manning a quality LAP is to carry out research and development program collaboration with several government agencies outside the Ministry of Defense and the TNI that are related to defense technology and transfer the status of personnel from these institutions to the LAP. The manning of civilian and military personnel in the LAP can be adjusted to the needs based on the program, qualifications, and skills required. Furthermore, education and training related to their main functions and duties are carried out in stages and continuously. The contract agreement for the procurement of Dassault Rafale fighter aircraft should also carry out defense acquisitions by sending (human resources) (HR) to study and apprentice in the developer industry. In addition to HR offsets, an offset scheme for the production of aircraft components in Indonesia is also needed by the national defense industry.

## **Conclusion**

The government's considerations for choosing the Rafale to strengthen the TNI and cooperation in the defense sector with France include: Advantages of the Rafale Fighter Jet, Long-Term Investment in Indonesian Defense Equipment, Development of Defense Industry Cooperation, Budget Efficiency, Aspects of Defense and Political Strategy, and Free Guarantee from CAATSA Sanctions. In this case, it is hoped that Indonesia will not depend on the procurement of defense equipment from abroad and the implementation of Transfer of Technology, Local Content, and Offsets on Rafale fighter jets can run as expected, therefore a strategy is needed in accelerating defense acquisition, where there are three strategies, namely: The first is the reform of the defense acquisition system and procedures through a single executor directly under the Minister of Defence. Organizational reform was formalized in the Defense Acquisition Agency which oversees the Defense Technology Research and Development Agency and the Defense Technology Quality Assurance Agency. Integration of defense R&D institutions in the Ministry of Defense and all R&D forces into the R&D Agency and the Defense Technology Quality Assurance Agency is the second strategy aimed at optimizing technology absorption and producing quality and synergistic R&D products. The final strategy is to improve the quality of the Defense Acquisition Institute's human resources through a transparent and accountable recruitment process; Placement of personnel according to the required qualifications and expertise; Productive and conducive working system and environment; Continuing education and training; Guarantee of integrity pact for every personnel involved; As well as ombudsman-based supervision. R&D collaboration with defense R&D institutions outside the Ministry of Defense and the TNI as well as universities or transferring the status of personnel from these institutions to the Defense Acquisition Institute can be a tactical solution to improving the quality of human resources. The contract agreement for the procurement of Dassault Rafale fighter aircraft should also carry out defense acquisitions by sending (human resources) (HR) to study and apprentice in the developer industry. In addition to HR offsets, an offset scheme for the production of aircraft components in Indonesia is also needed by the national defense industry.

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