THE DEVELOPMENT OF INDONESIAN DEFENSE INDUSTRY
POST-COLD WAR ERA

Muhammad Arsy Ash Shiddiqy
arsyshiddiq@soc.uir.ac.id

International Relation Study Program, Faculty of Social and Political Sciences,
Islamic University of Riau, Jl. Kaharuddin Nasution No. 13 Perhentian Marpoyan, Pekanbaru,
Indonesia 90221

Abstract

This study aims to analyze the development of Indonesian domestic defense industry after the end of cold war. The focus of the discussion is how to improve Indonesian military strength and capabilities through the development of the domestic defense industry, currently Indonesia has three potential domestic defense industries (PT. Pindad, PT. Dirgantara Indonesia, PT. PAL). In the era of cold war, the security of the Southeast Asian region countries are very dependent on the two super power countries USA and USSR, but after the end of the cold war, every country in Southeast Asia has an obligation to fight for their own security, including Indonesia. Therefore, the defense industry needs to be built through the revitalization of the defense industry. According to GFP (Global Fire Power) and other military institutions Indonesia is the strongest in Southeast Asia region. To increase its military strength Indonesia intensively developing the capabilities of the domestic defense industry and doing a lot of defense cooperation with developed countries in the world. This military theme is very interesting to discuss because a country's military strength will reflect the strength of the country itself.

Keywords: Indonesian Military Strength, Defense Industry (PT. Pindad, PT. DI, PT. PAL), Cold War
A. INTRODUCTION
The Indonesian defense industry has actually been established since PT. Pindad in Bandung which produces rifles, munitions and military vehicles. PT. IPTN (Aerospace Industry) in Bandung produces airplanes and helicopters. And PT. PAL (Marine Industry) produces ships in Surabaya. These three industries are part of the 10 strategic industries set by the government through presidential decree number 59 of 1983 which is incorporated in BahanaPakaryaIndustriStrategis (BPIS). Since the economic crisis occurred, the three defense industries have experienced funding difficulties, so they began to be ignored. (Kirbiantoro, 2010).

The security conditions in the Southeast Asia region are relatively in peace, there has never been a direct confrontation or head to head war between countries in the region, even if it has ever happened, its a confrontation between Indonesia and Malaysia, but that did not happen. In the cold war era, security in this region was guaranteed by the two super power countries the United States and the Soviet Union, after the end of the cold war and the absence of security guarantees from the two countries, practically Southeast Asian countries must build their military strength to ensure their own security. Although countries in this region are quite friendly and are more likely to collaborate, but the potential for conflict in this region is also very large, especially concerning border issues, Southeast Asian countries still face a lot of border conflicts between each other. The kind of bias happen in this region, when the cold war ended, European countries were committed to reducing the military budget, and precisely the opposite happened in this region. After the end of the cold war and the absence of security guarantees from the two countries, Southeast Asian countries began to aggressively increase their military budgets and increase their military strength so that there was Security Dilemma in this region.

However it is undeniably geopolitical and geostrategic, Indonesia located in a strategic and decisive position in world and regional social order. With potential threats that are not light and diverse social, economic and cultural conditions, Indonesian nation need the strong national defense capabilities to ensure the continued upholding of the sovereignty of Indonesia. However, after the outbreak of the crisis, the development of defense capabilities was relatively neglected resulting in a decline in the country’s overall defense capability. Therefore, with the increase in the defense budget each year, it is hoped that the Indonesian military revival can truly take place so that Indonesia is able to face various threats both actual and potential.

History records at least twice in the history of the Republic of Indonesia, TNI was considered as an armed force that could not be mocked in defense and its real impact on the bargaining position of our foreign policy. First, the period 1960-19621, when President Soekarno encouraged the Armed Forces of the Republic of Indonesia (APRI) to prepare to seize West Irian by military force. Although the national economic situation was not very good, Bung Karno allowed the purchase of weapons on a large scale. In less than two years, APRI transformed into the largest war power in the southern part of the earth, including the Navy force having 12 submarines capable of patrolling to western coast of Australia without being able to be detected by the country. (Kirbiantoro, 2010).
Meanwhile, Indonesian Air Force has two TU-16 long-range bomber squadrons, which easily reach all of Southeast Asia and Australia, drop bombs, and safely return to base.

Second, era of 1980-1988. In the leadership of General M. Jusuf (1978-1983) and General L.B. Moerdani (1983-1988), the Indonesian Armed Forces were built into a modern and professional military institution and not political. General Jusuf began his program with a simple method, reviving the self-esteem of soldiers by increasing welfare, repairing the dormitories, and retraining the old troops experiencing a "smoothing" process because they rarely practiced, outdated weapons, and neglected their welfare. In the next era, General Moerdani was able cleverly to see the opportunity to buy a non-new weapon system main tool (such as the six Van Speijk frigates from the Netherlands), repair and modernize it until it could be fully operational again. In his era, ABRI also bought 10 F-16 Fighting Falcon fighters. Now with Indonesia again trying to strengthen its defense, it is expected that Indonesian bargaining position in all fields, both political, economic and cultural can also be increased.

Having a strong defense is a basic need for every nation. Defense capability is not only important in maintaining the peace of nation, but also a symbol of strength and a means to reach aims, goals, or national interests. The effectiveness of national defense is also determined by the ability of the defense industry to meet the needs of the procurement and maintenance of primary weapons systems (defense equipment) independently. Therefore, the defense industry needs to be built through the revitalization of the defense industry.

The ability of the Indonesian domestic defense industry is now at the intermediate technology level. That is, the Indonesian defense industry has been able to make and has been used by the TNI. For example, land use equipment made by PT. Pindad ranging from pistols and assault weapons to mortars and tire wheel fighters (Anoa armored vehicles) have supported the needs of the Indonesian Army. In fact, the products of PT.Pindad is now standardized by the United Nations, as well as its tactical reconnaissance vehicles. At present an update on the chain wheel combat vehicles (AMX-13 tanks) is the beginning of building light tanks. After that we are expected to be able to make light to heavy tanks ourselves.

For air force defense equipment, PT. Dirgantara Indonesia is currently developing a production partnership with Airbus Military to build a CN 2952 medium transport aircraft. Indonesia is very interested in increasing the ability to produce light transport aircraft, such as C-212, CN 235 and CN 295, which have 50 parachutes. The same was done in the manufacture of Bell-412 serbu helicopters and Cougar 725 helicopters. PT. Dirgantara Indonesia is expected to meet some of the needs of the TNI and is suitable for humanitarian operations. (Kirbiantoro, 2010).

On the marine defense equipment, Indonesia even has several reliable domestic defense industries. PT. PAL is relied upon for the manufacture of large-scale warships, such as corvette and submarine classes. PT. PAL is also encouraged to make warships for tankers. Indonesia also has other state-owned enterprises, namely PT. Dock and PerkapalanKodjaBahari. This BUMN is given a portion to build Landing Ship Tanks or light and medium tank transport vessels. The private defense industry has also contributed greatly to fast patrol boats measuring 60 meters down, such as Palindo, Lundin, Anugrah.
If qualified, the same opportunities are also given to several other private shipyards in the country. The budget allocation to the defense industry is quite large in the 2010–2014 strategic plan, a minimum of Rp. 50,4 trillion and certainly has increased to date.

B. Research Method

The study was conducted in Indonesia focused on three defense industries, which are PT. Pindat, PT. PAL, PT. DI. The reason for choosing defense industries to be focused in this research is to measure how strong Indonesian military strength. This research uses a qualitative method with an intrinsic case study approach. Characteristics of informants are considered capable of providing information on Indonesian domestic defense industries. The data collected through unstructured observation techniques, interviews conducted with the key informant that is the institution defense industry. Study documentation obtained through Indonesian domestic defense industry archives. Data processing is done through interactive analysis approach from Miles and Huberman through stages: data collection, data reduction, data processing and data verification. (Miles & Huberman, 1992).

C. Result and Discussion

Since the United States wore an arms embargo on Indonesia, it opened the eyes of many people to see the need for Indonesia to develop its own defense industry so as not to depend on outsiders. Indonesia needs to cultivate defense equipment capabilities based on its own capabilities through the development of planned research progress. The TNI Leadership Policy and the Ministry of Defense in the procurement of weapons have undergone a dynamic change, they trying to minimize dependence on foreign-made weapons. The Indonesian government is working hard to empower the domestic defense industry to release dependence on weapons from other countries. One of them is to redevelop the domestic arms industry which has been running well. (Connie Rahakundini, 2007).

Specifically, the things needed as a strategic component in managing the domestic defense industry to create defense independence, at least must be able to prepare and produce for the needs of three military forces, there are:

For basic needs of the Indonesian Land Army, includes:

1. Make individual assault weapons, along with munitions, equipment, and maintenance.
2. Make team level aid weapons, along with munitions, equipment, and maintenance.
3. Make platoon level aid weapons, along with munitions, equipment, and maintenance.
4. Make company-level aid weapons, including 60 mortars, medium machines, ground machine guns.
5. Make battalion level weapons including 81 mortars, 12.7 heavy machine guns plus munitions.
6. Make aid weapons for the brigade level and divisions: 120 mm mortars, 105 mm roll cannons, air defense cannon (anti-aircraft rockets), the power of armored vehicles and tanks.

For the basic strength of the Indonesian Navy, includes:
1. Making standard 76 m, 105 m, 155 m cannon bullets for warships.
2. Making sea rockets to land, sea to air, sea to sea.
3. Manufacture of 36 m, 100 m corvette ships and so on small types.
4. Making rockets with licenses from countries that are willing to cooperate
5. Making radar.

For the basic needs of the Air Force, includes:
1. Making rockets for helicopters and aerial gunfire, air-to-ground rockets, air to air, air to sea.
2. Making TNI fighter aircraft for air defense assistance such as the Brazilian-made Ovitel class.
3. Making light helicopters is bigger than puma, platoon level.
4. Making multi-purpose aircraft, fighter class F1, F16, Shukoi, Mig 29, by looking for licenses from friendly countries such as Japan, Taiwan, Italy, etc.

Overall, if we have a domestic defense industry plan, we will have a reliable defense independence.

C.1. PT. PINDAD

Pindadis short word from Pusat Industri Angkatan Darat based in Bandung. So far, it has produced weapons and military equipment to meet the needs of the TNI and Polri and the general public, including the international market. This Persero actually has long been established through a long evolutionary process since 1908 when it was still in the colonization of Dutch colonialism. Then after being taken over by the Indonesian government, Pindad produced a variety of military equipment using foreign licenses, such as assembling Belgian FNCs, and so on.

Pindad production is not inferior to Singapore and Malaysia, which are also in demand by other countries that are cooperating with Indonesia. Pindad production that is widely used by TNI is light rifle weapons and personnel transported tactical vehicles or also called APC (armored personnel carriers). This vehicle is suitable for use and has been tested on the battlefield in Aceh. The replacement of the standard M-16 weapon that has been used by TNI and Polri has now been replaced with a 4.5 kg (SS-2) serbu rifle made by Pindad whose license was purchased from Belgium. Previously known as serbu rifle 1 (SS-1) with a weight of 5 kg, then developed into SS-2 as a new generation, except for the total length and weight. If in an open condition, the SS-1 is 997 mm, while the SS-2 is 930 mm. total SS-1 weight of 5 kilograms, SS-2 is around 4.5 kilograms, excluding the aiming device accessories. Type of 5.56x45 mm caliber bullet. SS-2 is designed to be lighter, more reliable, high accuracy, approximately 70 inches, folding diaper makes the user more flexible, can be equipped with various accessories such as dampers, bayonets, and various types of throwing guns, adapted to TNI soldiers' posture. The quality of weapons made by Pindad has been well tested, it can be proven when in the shooting competition at the Brunei International Skill at Arm Meet in Brunei Darussalam on 21-29 September 2005, TNI using SS2-V4 weapons managed to become first champions over nine other countries such as the royal Britain army is famous for its sophisticated. In addition, Pindad also developed a duck attack rifle (SPR 1 version 1) of 7.62 mm caliber with an accuracy distance of up to 900 meters; 76 mm Artillery cannon which will continue to be 90 mm, 105 mm, 120 m,
and so on; then Automatic Canon weapons of caliber 20 mm, 30 mm and 40 mm, and so on. (Connie Rahakundini, 2007).

Beginning in 2010, Pindad has tested 12 unguided missiles and one guided missile. Currently Pindad Malang has only produced 70 D230 missiles without warheads for experiments with a range of around 10 to 15 km. If the trial meets the standard criteria, it will be mass produced. In addition, RX1210 type rockets are produced with a weight of 45 kg, a length of 2 meters, and a thrust of 1,000 kg, as well as a range of 11 km, other rockets are double stage type weighing 87 kg, 4 meters long, thrust 1500/1000 kg, range 18 km, type RKN (RoketKendali Nasional) weighing 130 grams with a length of 2.7 m, a thrust of 500/200 kilograms with a range of 6 km.

In the framework of the Progressive Manufacturing Plan, Pindad management has carried out HR development by sending study engineers abroad such as Germany, Belgium, Japan and so on. In addition to developing the company’s capital and finance, Pindad produces and accepts work orders from other private companies such as assembling Siemens production, Frits Wemer (Germany), Yom 7 & Yam (Taiwan), Manhurin (France), FN (Blgia), and others. Pindad production for civilian uses such as lathes, mills, railroads for PJKA, generators (Siemens licenses for PLN and Pertamina), car components for (PT Astra), large-size pumps (for PT. Tambang Timah), all kinds of castings, and so on. About 40 percent of the components used are produced locally. Partnering with subcontractors in various fields such as vendor items, metal parts, paints, electrode welds, castings, and so on. In production it has been equipped with a digital control system whose quality is more measurable.

By looking at the capabilities possessed by PT. Pindad and in order to support the domestic defense industry revitalization program, it is the duty and obligation of all parties including the TNI / Polri to use weapons and ammunition made by PT. Pindad to fulfill their individual needs. This is in line with the instructions from the President of the Republic of Indonesia which requires the use of the domestic defense industry, except for things that cannot yet be produced.

**C.2. PT. PAL**

PT. PAL Indonesia is a State-Owned Enterprise engaged in the shipbuilding industry. The head office and shipyard industry are located in Surabaya, East Java. PT. PAL Indonesia (Persero), originated from a shipyard named MARINA and was founded by the Dutch government in 1939. During the Japanese occupation, the Company changed its name to Kaigun SE 2124. After independence, the Indonesian Government nationalized this Company and changed its name to the PenataranAngkatanLaut (PAL). On April 15, 1980, Government changed the status of the Company from a Public Company to a Limited Liability Company in accordance with deed No. 12, made by Notary HadiMoentoro, SH.

In order to release the dependence of naval warships on foreign parties, PT. PAL is encouraged to produce Indonesian Navy warships. produced ships such as the 80 meter long Corvet, fast patrol boats (28 and 57 meters), 2,500 Frigate ships, 2,100ton mine sweepers, ammunition production, where around 25 domestic companies took part in supporting the supply of raw materials and the reserve rate, is now operating well.Lated at Surabaya with the consideration that Surabaya is the world of Indonesian shipping, the
second largest port city in Indonesia after Jakarta, has developed a tradition of old ship industry since 1892, there are main naval bases in the east, many experts are available from graduates of the ITS leading university. Location of PT. PAL occupies the former sea base (formerly the Marine Establishment), inherits the installation and has available the dock and its workers.

Infrastructure of PT. PAL is the most complete in Indonesia. Since 1988, he has built a dock to make 30,000 DWT ships. Operates on a land area of 150 hectares which is then expanded to 400 hectares. There is one dock with a capacity of 20,000 tons, three shipyards capable of accommodating 1000 tons, 1,500 tons, and 5000 tons of deadweight. two caisson type docks (2,000 DWT), a large shiplift with a capacity of 2,000 tons, capable of supplying 6 patrol vessels at a time of 400 tons or 2 Frigate vessels. Equipped with a variety of modern workshops, wards, and adequate storage of goods. Present day the Department of Defense and PT. PAL is designing the construction of a larger physical form of the ship, especially its working mechanism, bridge control equipment, and water deposition, more perfect than the Banjarmasin KRI-592. Greater than Sigma type Corvettes which are expected to be completed in July 2010. (Connie Rahakundini, 2007).

According to the latest report, PT. PAL received a strong assessment on civil shipping which was able to build FPB 57, a fast patrol vessel with a length of 57 meters. Commercially there have also been many customers, such as orders from shipping companies in Hong Kong, Germany, Turkey and others. Indeed, future plans, after the success of building a Landing Platform dock (LPD), PT. PAL is expected to be able to build Landing Ship Tank (LST) vessels for the Navy, because it is considered to have the potential to realize the tactical plan. Since the launch of Landing Platform dock (LPD), PT. PAL is considered to have high capability in making sophisticated ships that can meet the needs of the Navy. technology controlled by PT. PAL has been tested to make aircraft carriers Helicopters, such as the Banjarmasin KRI-592 which has a carrying capacity of five helicopters, carrying 562 personnel, very low boat vibrations that make the crew comfortable, 15.4 knots, a stealth design that can reduce radar cross section, so it is not easily captured by enemy radar. That hope is now reflected in the Indonesian Navy, so that PT. PAL can do a lot to overcome the Indonesian Navy's defense equipment. Cooperation with the Indonesian Navy includes many things, including in the development of fast patrol vessels, now the Indonesian Navy has ordered 10 fast lifeboats and 12 catamaran vessels. Through this cooperation, it is expected to be able to fulfill the needs of Indonesian Navy ships in the future in order to facilitate military duties at sea. (Ikrar Nusa Bhakti, 2001).

PT.PAL's product on marine defense includes:

- Fast Patrol Ship 14 Meter
- Fast Patrol Ship 28 Meter
- Fast Patrol Ship 38 Meter
- Fast Patrol Ship 57 Meter NAV
- Missile Fast Ship 60 meter
- PAL Landing Platform Dock 125m
- PAL Motor Yacht 28 meter

With experience in the design and building various types of warships,
PT. PAL INDONESIA is currently regionally the main builder of the ship. Naturally, warships prioritize speed, reliability, sophisticated equipment and means of communication, engineers of PT. PAL is very dedicated to building warships as needed. To help warship missions, each warship is equipped with a computer navigation system, a sophisticated communication control system and standard war equipment with specifications installed depending on demand.

C.3. PT. Dirgantara Indonesia

PT. Dirgantara Indonesia (DI) is the first and only air craft industry in Indonesia and in the Southeast Asia region. This company is owned by the Government of Indonesia. PT. DI was established on April 26, 1976 under the name of PT. Industri Pesawat Terbang Nurtanio and BJ Habibie as President Directors. Industri Pesawat Terbang Nurtanio later changed its name to Industri Pesawat Terbang Nusantara (IPTN) on 11 October 1985. After restructuring, IPTN later changed its name to Dirgantara Indonesia on 24 August 2000.

The tradition of mastering airplanes for Indonesian people is actually not new. On October 5, 1945 since the inception of the Indonesian National Army, in October two of our aircraft engine experts in Cibeureum, West Java, successes in repairing the Japanese Nishikoren hunter aircraft and flown by Adisoetjipto pilot over the city of Tasikmalaya. Then the Air Force established the Bureau of Planning and Construction in Magetan (East Java). Two Air Force officers, WiwekoSoepono (later serving as Garuda Managing Director) and NurtanioPringgodisuryo designed six zogling type gliders which they called NWG (Nurtanio-Wiweko-Glider). During the independence war small aircrafts and 1 helicopter were built with simple equipment.

In addition to producing airplanes in general for civilian purposes, in the activities of PT. DI, there is a special division that develops the defense industry, namely producing military equipment, for example military version helicopters NC-212 and CN-235, training aircraft, SUT type torpedoes (Surface Underwater Torpedo), using telefunken (Madura) AEG licenses. Rocket Sura is licensed fromOerlikon (Switzerland) factory in Tasikmalaya with a production capacity of around 300 pieces per month, a 2.75-inch rocket type FFAR (Fin Folding aircraft Rocket) licensed by FX (Belgium). It is also planned to produce F-16 hunting aircraft, British Rapier missiles (British Aerospace).

PT. DI is very proud of the Indonesian people, for example the Armament Division, who have succeeded making NDL40 and ADL40 rocket launchers, and also deserve praise for the success of producing airplanes, training aircraft, helicopters and so on, and have even been exported overseas. One of them is a Bolkow-105 or NBO-105 helicopter that is not noisy, capable of carrying five passengers, can be fitted with rifles and missiles, produced by PT. DI which is suitable for military operations on the battlefield. Finally, it is busy to fulfill the target of making tailbone (ekor) and fuselage for the manufacture of the latest helicopters owned by leading manufacturer Eurocopter. The cooperation produces 125 airframe, tailbone and fuselage components for the EC-725 / EC-225 helicopter, now making PT. DI as the main supplier of airframe components and other components of airplanes in the world as they are currently running with this European flight consortium. The EC-725 and EC-225 aircraft, which are the latest products of Eurocopter which is also a development of the type NAS-332, also known as Super Puma,
will replace Super Puma helicopters, as soon as possible in Indonesia. The last three Super Puma were made by PT. DI will be used for the TNI. (Connie Rahakundini, 2007).

D. Conclusion

After seeing the condition of the Indonesian military as alarming and since the United States imposed an arms embargo on Indonesia, it opened the eyes of many people to see the need for Indonesia to develop its own defense industry so as not to depend on outsiders. Indonesia needs to cultivate defense equipment capabilities based on its own capabilities through the development of planned research progress. Enhancing the capacity of the domestic defense industry is the best way to increase Indonesia's military strength. And to improve the capability of the defense industry, of course, there must be a lot of defense cooperation with developed countries. That's what Indonesia is doing now.

Indonesia's military strength in the Southeast Asian region after the cold war has practically decreased. Indonesia, which in the old order era was dubbed the Asian tiger no longer able to roar, national defense equipment began to run out of age, the welfare of soldiers was very alarming, and the allocation fund for defense was very little so that all of these Asian tigers could no longer roar loudly on the continent biggest in this hemisphere. But it was all in the past, now it is and has been passed through a rich, fertile and prosperous country, he said, namely our beloved country Indonesia. Indonesian military strength began to improve and increase at this time. After the cold war until the beginning of the reformation the condition of the Indonesian military was very alarming. The decline in Indonesian military power was caused by many factors, the economic crisis that ensnared Indonesia, the chaotic domestic politics, and the full military embargo by the United States. At present Indonesia is in the process of rebuilding military power that has long been deteriorated, increasing the capacity of the domestic defense industry is the most effective way to increase Indonesian military strength and that process is being carried out by Indonesia today. Indonesia has begun to pursue defense cooperation with developed countries in order to be able to work together in producing military equipment. There are three state-owned enterprises engaged in the defense industry that are highly relied on, there are PT. Pindad, PT. PAL, and PT. DI the three BUMNs are very reliable. PT. Pindad which is engaged in land defense equipment has been able to produce rifles, cannons, and combat armored vehicles, while PT. PAL has been able to produce corvette and frigate warships, and is now in the process of making submarines as a result of cooperation with South Korea, while PT. DI engaged in aerospace are able to make airplanes and combat helicopters. It is desirable that all of these BUMNs can complete all TNI Alutsista needs.

We must believe and recognize that Indonesia is the strongest in Southeast Asia. We realize that many are pessimistic and trivial towards Indonesian military power, apart from the frequent occurrence of military defense equipment accidents due to aging, as well as the insufficient allocation of funds and the development of the defense industry which tends to decline, but we are all phases, skip
and in the process towards improvement and we must realize we have felt the good impact of the process. Indonesia firmly raises its military budget every year and develops a rapidly developing defense industry, Indonesia has PT. PINDAD is great at making weapons and tanks, Indonesia also has PT. PAL is engaged in the manufacture of ships, and also PT. DIGANTARA INDONESIA which is ready to create high-tech fighter planes and great TNI transport aircraft. Indonesia also has a lot of international cooperation in the military, Indonesia has collaborated with developed countries to increase military strength, one of which is cooperation with South Korea in the manufacture of warplanes and submarines.

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