

## The Implementation of the Defense Industrial Base (DIB) a Comparative Study of Indonesia and Brazil

Budhi Achmadi<sup>1\*</sup>, Soesilo Zauhar<sup>2</sup>, Bambang SH<sup>3</sup>, Andy Fefta W<sup>4</sup>

<sup>1</sup>Doktoral Student, Administrative Sciences Faculty, Brawijaya University, Indonesia.

<sup>234</sup>Administrative Sciences Faculty, Brawijaya University, Indonesia.

### Abstract

Policy implementation holds an important position in the public policy cycle, as it determines the success or failure of policies formulated. The defense industrial base is one of the important public policies in many countries because it can play a multi-faceted role function, among which are as a *politico*-diplomatic status, an economic driver, and a centrifugal force for growth. However, as a public policy, the outputs and outcomes of DIB policy implementation are determined by, among others, key policy issues, policy formation processes, and policy directions or objectives. These variables are influenced by the leadership style and then determine the impact of policies.

**Keyword:** policy implementation, public policy, the defense industrial base

### INTRODUCTION<sup>1</sup>

The policy of the Defense Industrial Base (DIB) is part of public policy because its products are public goods, which must be managed by public administrators (government). Douglas, as quoted asserts that, "Public administration is the producer of good and service designed to serve the need of citizens". In addition, the defense sector deals with public problems and will be too risky to be left to other sectors. The availability of public goods must be guaranteed and the defense sector is the ultimate public good that is too important to be left entirely to the business community. The management of the defense monopoly by public administrators is mandatory for two reasons. *First*, the defense sector represents the best example of "Pareto Optimal", which is a condition where the public must be able to enjoy a fair profit without worrying about some beneficiaries. *Second*, policies must direct public control in the defense sector because only with public control can the defense sector be a fair priority for all parties [1].

Another reason to legitimize DIB as a public policy, in addition to the status of the products as public goods, is due to the broad impact of the DIB policy on public life. [2] states that a problem will become a public problem if it has a broad impact and includes consequences for those who are not directly involved, where there are people who move towards action to overcome the problem. Actions to overcome these public problems can only be optimal through the public policy process.

In this case, the DIB policy has a big impact because it not only affects the defense sector, but also extends to other public fields. This was also stated by the Office of Technology Assessment (an agency in the United States Defense Ministry that handles defense technology studies) that the role of the DIB policy was initially aimed at being able to build, produce, and support the needs of national defense equipment in times of peace and war, and now it has changed into multi-faceted roles that extend beyond the field of defense (OTA-ISC-500, 1991:3). [1] adds that the current development of DIB has a major impact as a *politico*-diplomatic status, an economic driver, and a centrifugal force for growth. This statement is supported by Haglund (1989: 133-135), which emphasizes the existence of several things that encourage a country to develop DIB, namely (1) the commitment not to depend on other countries to be self-sufficient even though they are not intends to implement a military autarchy system; (2) realizing the production capability of defense and security tools and equipment integrated with the domestic market economy system; (3) having a weapons industry means creating opportunities to have a voice and influence in the development of international cooperation and other partnership programs; (4) production, development, and defense technology research at high technology level will be a stimulant for the commercial industry; and (5) that DIB capability is needed for human resources and material maintenance and production facilities for the national defense logistics system.

Based on these descriptions, the authors are interested in examining DIB in Indonesia and Brazil, especially on aspects of public policy

Correspondence address:

**Budhi Achmadi**

Email : hakimend61@gmail.com

Address : Doktoral Student, Administrative Sciences Faculty,  
Brawijaya University, Indonesia

implementation. Another reason to choose the focus of the study is because of its very strategic position, that the strategic position of public policy implementation is due to intersection of the theory of public administration, organization, public management, and political science. Another reason is the opinion that the combination of various theories is very potential for the study of public policy implementation, which in terms of phenomenological seeks answers to several questions, namely (a) "Why does a public policy fail to be implemented in an area?"; (b) "Why do the same public policies have different success rates?"; (c) "Why is a policy easier to implement than others?"; and (d) "Why does the difference in policy target groups affect the success of policy implementation?". On this basis, the researchers believe that efforts to understand the phenomenon of DIB policy implementation will be revealed and explained in terms of formulation and implementation aspects of DIB policies in Indonesia and Brazil.

## **THEORETICAL REVIEW**

### **The Definition of the Defense Industrial Base (DIB)**

DIB means Defense Industrial Base or Defense Industrial and Technological Base (DITB). US Homeland Security states that DIB is a group of institutions and industries that are directly and indirectly involved in the production of military goods, while the defense industry is used to refer to institutions that directly produce military goods. The US 'think-tank' Defense Department of the defense technology, i.e. the US Office of Technology Assessment (OTA), defines DIB as "a combination of people, institutions, know-how technology and facilities used to design, build, manufacture and maintain weapons, and other defense support equipment needed to meet national security needs" (OTA-ISC-530, 1992). [3] states that DIB is a national capability in the industrial sector to build and maintain defense needs in times of peace and war.

Based on the definition of DIB, it is not surprising that in many countries the term is also still widely exchanged with the term defense industrial institutions, as found in the Republic of Indonesia Law Number 16 of 2012, which does not use DIB nomenclature, but uses the term Defense Industrial Ecosystem as used by the Ministry of Defense of Singapore and other countries. On July 19, 2005, the Brazilian Ministry of Defense issued an explanatory rule (*Portaria*) Number 899/MD; the Article 2 states that *Base Industrial de Defesa* (BID) or DIB is "o conjunto das empresas estatais e privadas, bem como organizações civis e militares,

*que participem de uma ou mais das etapas de pesquisa, desenvolvimento, produção, distribuição e manutenção de produtos estratégicos de defesa",* or a combination of the state and private company, both civil and military organizations, participating in one or more stages of research, development, production, distribution, and maintenance of strategic defense products (*produtos estratégicos de defesa*, PED). The 2013 Brazil Defense White Paper also stated that "The Defense's Industrial Base (BID) is a set of industries and companies organized under Brazilian law that participate in one or more of the phases of research, development, production, distribution and maintenance of defense products. A competitive and consolidated defense industry generates high-level jobs and encourages technological development with productive links to other sectors of industry."

### **The Model of the Policy Implementation**

The first model as a reference is the Interrelation Model of the formulation and implementation of public policies or the 'failure analysis' of public policy. This model is still popularly used today, especially in the field of defense. This approach is arguably a special phenomenon or model of military decision-making, namely deciding and acting [4]. In this approach, the policy implementation is believed to be a further action of policy formulation, at least there is no boundary between the two [4]. The cause of implementation failure is the accumulation of various variables that occur over a long period of time in the past. This model is still relevant for examining variables that have an impact on the implementation of DIB policies in Indonesia and Brazil going on for a long time.

The formulation and implementation inter-relations model used is the one by [5], which consists of six influential variables (influences), as follows:

#### **(1) The key policy milestones.**

Only very few policies are truly new because, in general, a policy is a renewal of existing policies and regulations combined with new knowledge, perspectives, and priorities. Policy implementation also tends to mobilize pre-existing agencies. Therefore, it is very important to understand the history of previous policies where the approach to social life has been appropriate. A key policy milestone is the accumulation of past policies that are important for defining the current policy process; it consists of (a) past policies, (b) legislation, (c) catalytic events, and (d) significant projects. DIB policy milestone has

been explored from the history and development of DIB. To determine the key milestones in this research, a non-narrative historical research approach is used; it does not aim at compiling historical stories, but is problem-centered research, in this case the problem of social practice is a frame related to policy.

(2) **The political and governance context.**

The policy process works in the context of the bureaucratic style and capabilities of government institutions, and broader political and social arrangements, and the changing trends in both. Research must be able to reveal the system and political behavior of government during the DIB policy process. The development of the paradigm of public administration and public policy also contributes to research on this variable.

(3) **Key policy issues.**

Research must identify key policy issues that have emerged in relation to the policy formulation debate. This is a major challenge to the situation and demands a policy response. Research must be able to identify key policy issues in the form of problems that form the background of the formulation of DIB policies, as well as trends or policy directions that are currently becoming the focus of attention.

(4) **The policy development process.**

To understand this process, we must identify and understand what actually happens, i.e. the interaction and response of the actors around the formulation of policies and the outcomes of the actions related to macro policies formulated. This step requires several things, as follows:

- a) understanding of the formal organizational structure related to policy implementation;
- b) identification of the main actors in the policy formation process at all levels, their powers and roles in the policy process and how they will be trained;
- c) strategies used by actors to represent their cases in the policy process and to resolve or divert their intentions in implementation;
- d) the impact on the main actors in the formal process and on the level and pattern of implementation; and
- e) the level of collective action by the community and local groups and their relationship with the government.

(5) **Outputs, outcomes and impacts of the policy development process.**

In this regard, the policy implementation process is divided into three parts, (a) actions for policy output, (b) policy outcomes, and (c) environmental impacts. The actions of policy implementation agencies to produce output must lead to the achievement of outcomes, which will have a positive impact on the policy environment. Research on the implementation process will cause one to investigate whether the final impact can meet all policy objectives. Research on outcomes and impacts requires local evidence and use of environmental models.

(6) **The future – a longer term view.**

Research on the goals (future) to be achieved and how to achieve them must be carried out realistically. This is to help identify threats and opportunities in the formation of policies and their implementation, and to help formulate the next policy. The pressure that is expected to occur in the future must consider two things, namely issues on policy and broader issues on development and government that produce a positive influence on the future prospects of the policy.

The advantages of the Blaikie model is it is able to explain how a policy process is implemented through a long formulation process, able to understand the goals and motives behind the policy and its relationship with implementation, able to understand the ways in which policies affect the environment and how policies are truly able to meet the objectives, and able to understand potential areas for intervening policy processes to have an impact on policy development and policy implementation. The shortcoming of the Blaikie model is that it provides minimal research variables in the implementation process.

The second model is the Theoretical Perspective of Policy Implementation Process Model by Van Meter and Van Horn (1975). Van Horn and Van Meter [2] explain it as “those actions by public or private individuals (or groups) that are directed at the achievement of prior policy decisions.” Van Horn and Van Meter state these actions include efforts to convert decisions into operational actions in a certain period of time or in order to continue efforts to achieve large and small changes determined by the policy. In other words, policy implementation is a draft policy that changes into an operational action. The determinant variables of the Van Meter and Van Horn model policy implementation can be explained as follows:

- (1) **Standards and objectives.**  
Policy standards and targets must be clear and measurable so they can be realized. If policy standards and targets are blurred, multi-interpretation will occur and it will easily lead to conflict between implementation agents.
- (2) **Resources.**  
Policy implementation needs supporting resources, both human resources and non-human resources.
- (3) **Relationship between related organizations and implementation activities.**  
In many programs, the implementation of a program needs support and coordination with other agencies. For this reason, coordination and cooperation between institutions is needed for the success of a program.
- (4) **Characteristics of implementing agents.**  
These refers to bureaucracy, norms, and patterns of relations that occur in the bureaucracy; all of which will affect the implementation of a program.
- (5) **Social, political, and economic conditions.**  
This includes economic environmental resources that can support the success of policy implementation; the extent to which interest groups provide support for policy implementation; the characteristics of the participants, whether they support or reject; the nature of public opinion in the environment; and the political elite, whether they support policy implementation or not.
- (6) **Implementing disposition.**  
This includes three important things of (a) the actors' response to the policy, which will affect their willingness to implement the policy; (b) the actors' cognition or understanding of policy; and (c) the intensity of the actors' disposition or the preferred value of the actors.

The third model is the Tension Model of Policy Implementation [6] stating that policy content will cause a reaction in the implementation phase, but in the implementation process itself there is tension between the implementing organization, the target groups, and environmental factors, which are then followed by bargaining or transactions. From the transaction, feedback is obtained that policy makers can use as input in further policy formulation. In this case, policies cannot be implemented optimally because policies have been problematic from the content, followed by tensions between actors, and continued with transactional behavior. Quade illustrates four variables that must be examined in reviewing the implementation of public policy, namely (1) contents of the policy, (2) implementing

organization; (3) target groups; (4) policies; and (5) environment.

The Quade policy implementation model shows that policy produces a situation of conflict in the implementation phase. Implementing organizations can work well if they as the executor have sufficient authority and an adequate number of human resources. In addition to organizational factors, it seems that the target groups of the policy needs to be clearly defined, because the target groups will feel the impact of the policy, and, therefore, need to be involved in order to provide support or participation. Other factors that influence the policy implementation are the environment, political, social, and cultural. Interaction with this environment often results in negative impacts because it is not in accordance with the interests that give rise to a good climate or high tension. In addition, policies must be ideal, so bargaining is needed to obtain an agreement leading to low pressure or good atmosphere, so that optimal results can be achieved.

The fourth model is the perfect implementation model of Hogwood and Gunn (1978). According to Hogwood and Gunn, to be able to implement the policy perfectly, certain conditions are needed, as follows:

- (1) External conditions faced by implementing agencies will not cause serious disturbances. Some constraints at the time of policy implementation are often beyond the control of administrators, because those obstacles are indeed beyond the reach of the policy authority of the implementing agency. Among these obstacles may be physical or political;
- (2) Adequate time and resources are available for the implementation of the program. This second condition partially overlaps with the first condition, in the sense that it often arises between external constraints. Policies that have a certain level of physical and political feasibility may not succeed in achieving the desired goals because they involve short time constraints with expectations that are too high;
- (3) The combination of the necessary resources is truly adequate. This requirement follows the number two requirement, meaning that on the one hand it must be guaranteed that there are no obstacles to all the necessary resources, and on the other hand, every stage of the implementation process must provide integration of these sources. In practice, the implementation of a program that requires a combination of funds, human resources, and necessary equipment must be

- prepared simultaneously, but it turns out sometimes that one component has experienced a delay in its provision, resulting in the program being delayed;
- (4) The policy that will be implemented is based on a reliable causality relationship. Policies sometimes cannot be implemented effectively not because they have been implemented carelessly, but the policy itself is indeed bad. The reason is because the policy is based on a level of insufficient understanding of the problems addressed, the causes of problems, and how they are resolved, or the opportunities available to overcome the problem, the nature of the problem and what is needed to take advantage of these opportunities;
  - (5) Causality relationships are direct and have only a few link chains. In most government programs, the actual theory underlying a policy is far more complex than just the relationship between two variables that have a causality relationship. Policies that have a causal relationship depend on a very long chain, so it is easy to experience cracks, because the longer the chain of causality, the greater the reciprocal relationship between the link chains and the more complex the implementation will be;
  - (6) Interdependent relationships must be small. Perfect implementation requires that there is only a single implementing body in carrying out the mission, not dependent on other agencies. If there is dependence on other organizations, it must be at a minimal level, both in terms of the amount and level of importance;
  - (7) There must be deep understanding and agreement on objectives. This requires a thorough understanding on the agreement of the objectives to be achieved and maintained during the implementation process. The goal must be clearly defined, specific, and easy to understand, quantified, and agreed upon by all parties involved in the organization. However, various studies have revealed that in practice the objectives to be achieved from a program are difficult to identify. The possibility of causing sharp conflict or confusion occurs, especially by professional groups or other groups involved in the program, as they are more concerned with their own goals. Official goals are often not well understood, perhaps because communication from top to bottom or vice versa does not work well;
  - (8) Tasks are specified and placed in the right order. This implies that it is still possible to specify and compile in the correct order all the tasks that must be carried out by each part involved in carrying out the program towards achieving agreed objectives. Difficulties in achieving perfect implementation conditions still occur and cannot be avoided;
  - (9) Perfect communication and coordination must exist. This requires perfect communication and coordination among the various elements or agencies involved in the program. In this relationship states that in order to achieve a perfect implementation, a single administrative unit system is needed so good coordination is created. In most organizations that have characteristics of departmentalization, professionalization, and various group activities that protect group values and interests, there is almost no perfect coordination. Communication and coordination have a very important role in the implementation process because data, suggestions and commands can be understood in accordance with what is desired; and
  - (10) Parties with power authority can sue and get perfect compliance. This means that there must be full submission and there is absolutely no rejection of orders in the administrative system. This emphasizes that those who have authority and power are able to guarantee compliance as a whole from other parties both within the organization and outside the organization.

#### **MATERIAL AND METHOD**

This study uses a qualitative approach, through observation, in-depth interviews, and documentation of secondary data. The collected data were tested for validity and reliability using credibility tests (internal validity), transferability (external validity), dependability (reliability), and confirmability (objectivity). Then the data was analyzed using the interactive model method, with a data analysis component consisting of data collection, data condensation, data display, and conclusions. After that, based on the conclusions, comparison between the two countries was carried out, which was presented in a narrative manner.

## **RESULTS AND DISCUSSION**

### **DIB Policy Implementation Process in Indonesia and Brazil**

This research on the process of implementing DIB policies in Indonesia and Brazil uses an interrelated model on the formulation and implementation of public policy or a failure analysis of public policy from [5], which consists of six aspects, namely (1) key policy milestones; (2) political and government context; (3) policy issues; (4) policy formation process; (5) policy implementation process; and (6) policy objectives. However, of the six aspects, only four aspects are presented in this article, with reasons to limit the scope of this study.

#### **(1) Comparison on Key Policy Issues**

Comparison of the key policy issues of DIB in Indonesia and Brazil is in relation to the debate on policy formulation of the situation that has occurred and demands a DIB policy responses, different opinions among actors regarding the direction of actions that have been or will be taken, and/or opposition to the character of the problem itself. The comparison is as follows:

- (1) Key Policy Issues during Colonialism. The key issue of DIB's development policies in Indonesia and Brazil showed similarities, i.e. the occurrence of major wars in Europe and wars over the colonial territories leading to the two countries supporting DIB's development policies.
- (2) Key Policy Issues in the Post-Colonialism Era. The key issues of policy are related to instability of local and international politics. Brazil experienced a period of rebellion and rejection of the leadership of the King in the Kingdom era (1822-1889), a weak democratic system (1889-1930), dictatorial leadership (1930-1945 and 1964-1985), and revengeful leftist government policies (1985-1990). As a country that once held the status of the world's 5<sup>th</sup> ranked exporter, the turbulence of the world arms market had hit Brazil's DIB until it almost collapsed after the end of the Cold War and the Iraq-Iran war (1988-1995). Indonesia experienced the Old Order and New Order governments where all policies were monopolized by the President (1945-1966 and 1966-1998) giving birth to various prestigious projects but did not use the mature DIB policy strategy. The state-owned Indonesian Defense Industry, which has not yet become a major player in the international market, even collapsed in the beginning of the Reformation Era precisely because of the mistake of the DIB development strategy (1998-2005).

- (3) Key Issues of Current DIB Policy. After the military junta (1964-1985), Brazil's democratic government was very unstable and was always completed with corruption issues. The political instability and corruption that caused the President, Dilma Rousseff, to leave his position in 2016 and the arrest of dozens of Brazilian politicians resulted in a decline in the performance of the Brazilian economy and a drop in the defense budget and defense research budget.

Key policy issues, according to [5], are factors that influence policy implementation, because policy implementers are focused more on resolving key issues that are of public concern, rather than operationalizing development policies that have been previously formulated. These key policy issues, among others, are present in the form of local and international political instability, issues related to corruption in the procurement of defense equipment; and various other key policy issues.

Research conducted, regarding Industrial Defense Policy Approach and Instrument (Royal Military College of Canada and Queens University), shows that the implementation of Canadian DIB policy is also influenced by key policy issues in the country. This shows that the situation, which requires a policy response, causes different opinions among the actors regarding the direction of the action that has been or will be taken, and causes a conflict regarding the character of the problem, has influenced the implementation of the policy and the policy content in the next policy formulation process.

The link between policy content and the implementation and subsequent policy formulation process is explained by [6], in the Model of Tension in Policy Implementation. Quade states that policy content will cause a reaction in the implementation phase, but in the implementation process itself there is tension between the implementing organization, the target groups, and environmental factors, which are then followed by bargaining or transactions. From the transaction, feedback is obtained that policy makers can use as input in further policy formulation. In this case, policies cannot be implemented optimally because policies have been problematic from the content, followed by tensions between actors, and continued with transactional behavior.

#### **(2) Comparison on the Policy Formation Process**

Comparison of policy development processes in Indonesia and Brazil is a comparison of the formal organizational structures related to policy implementation, the main actors in the policy

formation process at all levels as well as their power and roles in the policy process and how these will be trained, strategies used by actors to represent their cases in the policy process and to resolve or divert their intentions in implementation, impact on the main actors in the formal process and at all levels and patterns of implementation, the level of collective action by the community and local groups and their relationship with government. These all are explained as follows:

(1) Comparison of formal government organizational structures related to DIB policy implementation, as follows:

(a) The structure of the Portuguese colonialist political government applied the colonial military zone government (*Kaptensi*) responsible to the King of Portugal, which lasted from 1534-1549. During 1549-1759, the next Portuguese King appointed one Governor General to oversee the *Kaptensi*. The system of government in Brazil under one Governor General lasted until 1621, where Brazil was further divided into two countries, namely the State of Brazil with the capital of Salvador and Maranhao with the capital of Sao Luis. In 1640, the Brazilian Governor-General won the title of *Vice-Rei* or Deputy King [8]. Political change occurred when Dom Joao VI fled to Brazil in 1808 and immediately ruled as King of Portugal and Brazil from Brazil. After the independence, the Kingdom of Brazil was born, lasted during 1822-1889 where political decisions were held by the King. This period was the time of various political conflicts, rebellions, and democratization movements. Brazil started the system of the Federation Republic without a party from 1889 until 1930, where political power was divided in the hands of the President and the Senate, which turned out to still produce unstable political conditions because the country's political policies remained belonging to rich people in Sao Paulo (coffee entrepreneurs) and Minas Gerais (cow and dairy farmers). As a result of the failure of the Brazilian democratic system, leaders of civil dictator, Getulio Vargas (1930-1945) and military junta (1964-1985) emerged. Since 1985 until now, the Brazilian political system has not changed structurally, but has

shifted from left-wing politics or socialist who is not military and not pro-DIB development towards the center (social democrats) who are pro-DIB development. The money politics system is still rampant in the political process resulting in many officials being caught in corruption.

(b) Indonesia went through the colonialism by Portugal (1512-1596), the Netherlands (1596-1811), England (1811-1816), the Netherlands (1816-1942), and Japan (1942-1945). After independence, it immediately used the Unitary State of the Republic of Indonesia and survived to this day. Indonesia's political system is much younger than Brazil; however, compared to Brazil, its development is not much different—from experiencing a period of military dictatorial era, as well as a political clash between left and right forces. As with Brazil, Indonesia's political system since independence until now has always been pro-development of DIB.

(2) The main actors in the policy formation process at all levels, their powers and roles in the policy process are as follows:

(a) The main actor in the process of forming the DIB policy of Brazil in the era of Portuguese colonialism was the Queen of Portugal Dona Maria I who ordered the founding of the Royal Artillery, Fortress, and Design Academy (*Real Academia de Artilharia, Fortifica e Desenho*) in Rio de Janeiro in 1792. King of Portugal Dom Joao VI and Brigadier General Carlos Antonio Napion (1808-1822) founded the first weapons industry in Brazil, namely the Royal Factory of Gunpowder Field (*Lagoa Rodrigo de Freitas (Fabrica Real de Polvora Lagoa Rodrigo de Freitas)*) on May 13, 1808, in Jardim Botânico, Rio de Janeiro. The President Venceslau Brás was the one who started the idea of defense industrialization because of the inability of Brazilian weapons in dealing with World War I. This was continued by President Vargas (1930-1945), as the person who transformed Brazil from a country with an agriculture-based economy to an industrial country. The era of Vargas was also known as the era of industrialization in Brazil. Vargas

- vigorously protected the domestic industry and invested heavily through the development of state-owned enterprises in the strategic sector and major infrastructure sectors, including the establishment of state-owned oil companies (*Petrobras*), mining (*Vale do Rio Doce*, 1942), steel industry (*Companhia Siderúrgica Nacional* or CSN, 1940) Volta Redonda (commenced operations in 1946 and became the largest steel industry in South America), the alkali industry (*Fábrica Nacional de Álcalis* or FNA, 1943) and the automobile industry (*Fábrica Nacional de Motores* or FNM, 1943). In the following era, the military junta (1964-1985) played a major role in boosting the performance of the defense industry including export performance.
- (b) The first main actor in the formation of the DIB policy during the colonialism of the Dutch East Indies was the Governor, Herman Willem Daendels, who founded the *Constructie Winkel* (CW) on January 16, 1808. The next main actor was Nurtanio Pringgoadisurjo who began research on aircraft since the beginning of independence by establishing the AU Construction Bureau and the Air Engineering Maintenance Depot Command. Soekarno, the President, was an Indonesian leader who became the pioneer of Indonesia's DIB development. B. J. Habibie claimed that his decision to build an aerospace industry to manufacture national scale aircraft in the New Order was inspired by Soekarno, which from the beginning wanted Indonesia to have advanced technologies. Soekarno's great attention and contribution to the development of Indonesian defense technology was the delivery of Indonesia's best youth (including Habibie) to study abroad since 1950 to learn aircraft or ships manufacturing to transport goods. The next actor was President Soeharto and B. J. Habibie. President Soeharto gave an order to B. J. Habibie in 1974 to build a high technology defense manufacturing industry to socio-politically elevate Indonesia in the international world [7]. President Soeharto ordered B. J. Habibie to do three things, namely: (1) engineering and making airplanes; (2) building a Research Center for Science and Technology in Serpong; and (3) establishing the Agency for the Assessment and Application of Technology.
- (3) Indonesia and Brazil then establish the DIB development policy process through educational programs, improved legislation, and organizational development.
- (4) The strategies used in DIB development policies in Indonesia and Brazil are as follows:
- (a) Utilizing Transfer of Technology (TOT) from other countries, namely technology transfer from the colonial government, direct import programs, and followed by cooperation in technology transfer and training, local assembly programs, basic local assembly, licensed production, as well as local production and design.
  - (b) Indonesia and Brazil both try to protect domestic DIB products that various domestic consumers must use them. In this case, the protection strategy done by Brazil is far better and stronger than Indonesia.
  - (c) Improvement of legislation. Indonesia and Brazil have repeatedly improved DIB policy legislation.
  - (d) Privatization. This far, the privatization policy has been implemented by Brazil and has given very good results, one of which is EMBRAER, which is the third largest commercial aircraft industry in the world today.
  - (e) Special status of the defense industry. Indonesia and Brazil both apply the status of strategic defense industry.
  - (f) Establishment of institutions for fostering and managing DIB. Indonesia and Brazil both have the institutions to manage and foster DIB performance.
- (5) The followings are the impact of DIB policies on key actors in the formal process and at the level and pattern of implementation:
- (a) The impact on Brazilian main actors included the appointment of Carlos Antonio Nacion as the Father of the Brazilian AD Industry because he had pioneered the birth of the Brazilian military industry, while Getulio Vargas was the Father of Brazilian Industrialization.
  - (b) The impact on Indonesia main actors was the dominant role B. J. Habibie played in the Indonesian DIB policy in the

modern era (1974-1998) and the performance of the majority of today's state-owned Indonesian Defense Industry is closely related to the pilot project.

- (6) The level of collective action by the community and local groups and their relationship with the government is as follows:

- (a) The extensive DIB development policy in Brazil has led to the much earlier birth of private-owned defense industry than Indonesia; it was in 1889 in Brazil. This is inversely to the slow involvement of private-owned defense industry in Indonesia that this first appeared in the Era of Reformation.
- (b) The policies imposed by the Brazilian government that require defense and security institutions to use domestic production is far more effective than in Indonesia. Indonesian defense and security institutions still have greater opportunities to avoid the obligation to buy DIB products domestically due to weak legislation.

The findings of this study related to the policy development process indicate that the study of policy implementation (DIB) must be able to identify and explain comprehensively what actually happened on the interaction and response of actors around the formulation of policies and outcomes of actions—actions related to macro policies that have been formulated. The findings of this study are relevant to the steps shown in the Blaikie Model [5]:

- (a) understanding on the formal organizational structure related to policy implementation;
- (b) identification of the main actors in the policy formation process at all levels, their powers and roles in the policy process and how they are trained;
- (c) strategies used by actors to represent their cases in the policy process and to resolve or divert their intentions in implementation;
- (d) impact on the main actors in the formal process and at the level and pattern of implementation; and
- (e) the level of collective action by the community and local groups and their relationship with the government.

**(3) Comparison on Outputs, Outcomes, and Impact of the Policy**

The comparison covers the outputs, outcomes, and impacts of the policy development process of DIB in the two countries, as follows:

- (1) Outputs, outcomes, and impact of colonialism era policies. The policy output in the era of colonialism in Indonesia and Brazil were still limited to the order of the establishment of the defense industry to support the colonial government. The policy outcome in Brazil during the era of Portuguese colonialism was more significant compared to the Dutch colonial era in Indonesia, where the Kingdom of Portugal had established a gunpowder industry as a basic requirement of the weapons system at that time, while the Dutch only set up weapons repair workshops. The impact was that the Brazilian industry had known the manufacture of gunpowder much earlier than Indonesia.
- (2) Outputs, outcomes, and impact of post-independence policies. The output of the policy of the Brazilian government was a decision to continue the development of gunpowder, which was very essential for the modern weapons system, while the Indonesian government's policy output was to receive DIB grants from the Netherlands and continued its limited performance in weapons repair and maintenance. As a result of this policy, Brazil is increasingly advancing in the technology of making gunpowder while Indonesia has difficulties in developing DIB because the basic capital and capabilities left behind by the Dutch are indeed very lacking.
- (3) Outputs, outcomes, and impacts of current policies. The policy output in Brazil since 1930 has been defense industrialization as part of national industrialization, DIB policy incentives involving various sectors such as bank loans, policies for involving the private and state sectors in DIB development, and product protection to be prioritized for use by domestic defense and security organizations. The DIB policy output in Indonesia since the era of Soekarno tended to be a prestigious project without having a long-term strategy, so many projects were unsustainable. The impact is that Brazil currently has an industry able to compete with in the export market while Indonesia is trying to rise from bankruptcy and does not yet have technological independence.

The process of implementing policies certainly produces certain outputs, outcomes, and impacts on policy targets. Actions from policy implementation agencies to produce output must lead to the achievement of outcomes, to further have a positive impact on the target groups. The results of this study indicate that each era or

period of leadership produces certain policy outcomes, both supporting and not supporting to DIB. Thus, the outputs, outcomes, and impacts of the colonialism and post-independence policies and the present era vary. In this context, [5] argue that the actions by policy implementation agencies to produce output must lead to the achievement of outcomes, and subsequently have a positive impact on the policy environment.

What was presented by Blaikie is also in accordance with the Theoretical Perspective of Policy Implementation Process Model from Van Meter and Van Horn [2], which mentions the process of implementing the policy as actions carried out both by individuals or officials or government or private groups directed at achieving the objectives outlined in the policy decision. Furthermore, Van Horn and Van Meter assert that these actions include efforts to convert decisions into operational actions within a certain period of time in order to continue efforts to achieve large and small changes determined by the policy. This means that each policy will produce certain outputs and outcomes according to the objectives of the policy. In other words, policy implementation is a draft policy that changes into an operational action.

Some of the factors that determine the success of the policy implementation process in a way that it produces certain outputs, outcomes, and impacts are implementing organizations, adequate human resources, technology, and target groups. This is in accordance with the [6] policy implementation model, which explains that a policy produces a situation of conflict in the implementation phase. Implementing organizations can work well if they as the executor have sufficient authority and an adequate number of human resources. The technology or tools owned by the organization must meet the requirements, so the implementing organization can carry out the task properly. In addition to organizational factors, it seems that the target group of the policy needs to be clearly defined, because this target group will feel the impact or effect of the policy. Therefore, the target group needs to be involved in order to provide support or participation.

#### (4) **Comparison on Policy Objectives**

Comparison of the future, a longer term view, of Indonesia and Brazil is a comparison of the goals

- (7) it must be at a minimal level, both in terms of the amount and level of importance;
- (8) there must be deep understanding and agreement on objectives; the goal must be clearly defined, specific, easy to understand,

(future) to be achieved and how to achieve them, elaborated as follows:

- (1) The DIB policy objectives in Brazil and Indonesia in the era of colonialism were to have a DIB that was able to support the continuation of colonial rule in the colonies.
- (2) The DIB policy objectives of the post-independence in Brazil and Indonesia were the independence of the domestic DIB.
- (3) The DIB current policy objectives in Brazil and Indonesia are to realize the independence of DIB in the country and to make DIB provide economic contributions to the country.

The comparative description above shows that the achievement of policy targets in the two countries has been different in the three periods. In this context, Hogwood and Gunn (1978) explain ten (10) factors that influence the policy implementation process in achieving policy goals, which are referred to as the Perfect Implementation Model. The ten (10) factors are:

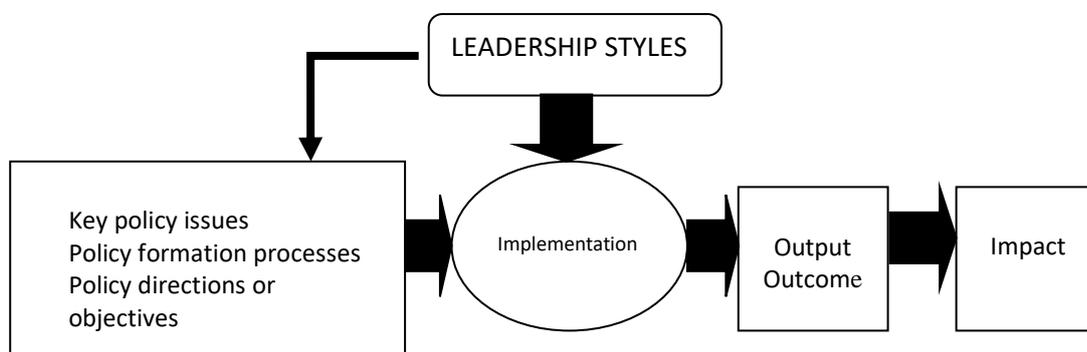
- (1) external conditions faced by implementing agencies will not cause serious disturbances;
- (2) adequate time and resources are available for the implementation of the program;
- (3) the combination of the necessary resources is truly adequate, meaning that funds, human resources, and necessary equipment must be prepared simultaneously;
- (4) the policy that will be implemented is based on a reliable causality relationship; the policy must be based on sufficient understanding of the problems addressed, the causes of problems, and how they are resolved, or the opportunities available to overcome the problem, the nature of the problem and what is needed to take advantage of these opportunities;
- (5) causality relationships are direct and have only a few link chains because the longer the chain of causality, the greater the reciprocal relationship between the link chains and the more complex the implementation will be; in other words, the more relationships in the chain, the greater the risk of the policy not being implemented properly;
- (6) interdependent relationships must be small, meaning that there is only a single implementing body in carrying out the mission, not dependent on other agencies; if there is dependence on other organizations, quantified, and agreed upon by all parties involved in the policy implementation;
- (9) tasks are specified and placed in the right order, meaning that it is still possible to specify and compile in the correct order all

- the tasks that must be carried out by each party involved in carrying out the program towards achieving agreed objectives;
- (10) perfect communication and coordination must exist. Meaning that a single administrative unit system is needed so that good coordination is created; and
  - (11) parties with power authority can sue and get perfect compliance. Meaning that there must be full submission and no refusal of orders in the administrative system; this requirement emphasizes that those who have authority

must also have power and are able to guarantee compliance as a whole from other parties both within the organization and outside the organization.

Based on the discussion, the following propositions can be formulated. Output and outcome of policy implementation are determined by key policy issues, policy formation processes, and policy directions or objectives. These variables are influenced by the leadership style and then determine the impact of policy.

To simplify, it can be illustrated as follows:



**Figure: Factors Determining the Output and Outcome of Policy Implementation**

#### CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the analysis and discussion above, the following conclusions can be drawn:

- (a) Key policy issues are factors that influence policy implementation, because policy implementers focus more on resolving key issues that are of public concern, rather than operationalising development policies that have been previously formulated. These key policy issues, among others, are present in the form of local and international political instability, issues related to corruption in the procurement of defense equipment; and various other key policy issues;
- (b) The policy development process show the existence of these following steps: understanding of formal organizational structures related to policy implementation; identification of the main actors in the policy formation process at all levels, power and roles in the policy process and how they are trained; strategies used by actors to represent their cases in the policy process and to resolve or divert their

intentions in implementation; impact on the main actors in the formal process and at the level and pattern of implementation; and the level of collective action by the community and local groups and their relationship with the government;

Each era or period of leadership produces certain policy outcomes, both supporting and not supporting the DIB. Thus, the outputs, outcomes, and impacts of the colonialism and post-independence policies and the present era vary. This is because every action from a policy implementation agency to produce output must lead to the achievement of outcomes, so it has a positive impact on the policy environment; and

- (c) The DIB policy objectives of Brazil and Indonesia at this time are to realize the independence of the DIB in the country and realize the DIB that provides economic contributions to the country. However, the achievement of policy targets for each period varies in the two countries studied.

Based on the conclusions, recommendations are presented. Indonesia needs to learn from Brazil in terms of DIB, in which Brazil started its DIB with the powder industry (explosives), because the ability to make gunpowder (explosives) is a basic capability that should be mastered from the beginning. It is unfortunate that none of the state-owned and private-owned enterprises of the Indonesian defense industry has mastered the technology of making explosives independently and, thus, the government must pay attention to this problem in the near future.

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