

Negative Impact of the Development of Science and Technology on the Aspects of National Defense and Security

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Abstract

The development paradigm of the Republic of Indonesia is in the process of shifting civilization from a natural resource-based paradigm to a resource-based development of a knowledge-based society. This shift has implications for various fields, including the development of science and technology in the field of defense and security. Based on this research, it can be understood that science and technology is the same as a knife that can take humans in two different directions, the first can take humans to a good path with all the sophistication that is owned making humans get convenience in all fields (positive impact) while the second can bring humans into misery caused by the misuse of the progress of science and technology itself (negative impact). Various efforts carried out by the nation and state in dealing with the negative impact of the development of science and technology must be packaged within the framework of structuring democratic civil-military relations, which involves civilians in thinking and formulating and determining policies in the field of defense. Thus, harmonious civil-military relations must be built within the framework of democracy and mutual trust and cooperation to build a new Indonesia. This will add to the overall components of the nation involved, both civilian and military, which must coexist and respect each other in their respective professions. Therefore, the form of synergy between civilian - military in Indonesia is a tangible form of Total Defense to face threats to defense and security aspects due to the rapid development of science and technology in the world.

Keywords: *science and technology, civil-military, defense and security.*

INTRODUCTION

The development of the strategic environment at the global, regional and national levels is increasingly dynamic and complex, giving rise to various dynamics of threats and opportunities for Indonesia's national interests. In the current era of globalization, the development of science will also be followed by the development of technology as a result of increasingly advanced and modern human thinking. The development of Science and Technology (IPTEK) also facilitates human life in various aspects of life, ranging from

economics, education, transportation, and so on. Science and technology is an important form of civilization progress for humans, so national science and technology capabilities must continue to be developed. The goal is to increase competitiveness, national independence, accelerate the achievement of national goals, and achieve the welfare of the people.

The development of science and technology is also an effort to help the process of solving problems and anticipating problems. Some examples of science and technology are

smartphone technology, advanced medical equipment, cars, motorcycles, and even the development of modern defense equipment in a country. The advancement of science and technology has influenced the life of the Indonesian people, both positive and negative influences, especially in the field of national defense and security.

Clara, I. (2018) explains that in this modern era, the progress of science and technology has developed very rapidly accompanied by the development of a country's security defense system. National defense is organized to realize national interests. Indonesia's strategic defense interests are part of the national interest in ensuring the establishment of the Republic of Indonesia. State defense has a role and function to maintain the existence of the Indonesian nation from any threats and disturbances, both from outside and those arising within the country. The advancement of science and technology originally aimed to facilitate human work, but in reality technology has created new anxieties and fears for human life. The fear felt by humans due to the development of technology is due to concerns about its misuse by irresponsible people.

Furthermore, Aulil (2021) mentions several negative impacts of the development of science and technology in the aspect of Hankam, namely the misuse of satellites by terrorists such as tracking the conditions where they will commit crimes, terrorists can communicate with fellow terrorists and to find followers through the internet media, the emergence of information warfare by utilizing the development of information technology, related to weapons of mass destruction (WMD) technology such as nuclear weapons and biological weapons, it is feared that it will become the biggest threat to a country if used by irresponsible parties.

Ratnaya, I.G (2011) further explains that the development of science, technology and information cannot be separated from the

virtual world or the internet. The internet which is part of life is inevitable and predicted to be globalized and will continue to grow, it is difficult to be part of the world in the future if you do not participate in utilizing it. Computers as another instrument supporting the internet are already everywhere, increasingly portable and mobile. The high availability of the internet network means that access to information can be done anywhere and anytime. The internet will contain an abundance of information, so that humans can work, enjoy entertainment, socialize and travel virtually around the world without having to move from their seats. Humans can do things with very minimum physical effort. Two key things are: cyberspace or virtual world that allows anytime anywhere access and minimization of physical activities. Based on this, the development of science and technology, in addition to providing convenience, but provides a gap in the negative utilization of modernization given the development of science and technology, especially in the field of national defense and security.

The Indonesian Ministry of Defense (2015) in the Indonesian Defense White Book explicitly explains that advances in science and technology affect the forms and patterns of war in the future. Although asymmetrical patterns and forms of warfare still occur in some areas, conventional war weapons technology continues to develop rapidly. Future wars will increasingly consider reducing the impact of damage and casualties among civilians, by applying high-accuracy weapons technology and applying robot technology to various weapons systems to reduce the use and deployment of personnel and war equipment.

The development of information and communication technology also creates network-based warfare that relies on information superiority, as well as being able to carry out wars in the digital realm or cyberspace. The resulting impact can make the

world security situation worrying, including cyber-crime that knows no boundaries, including the use of genetic engineering biotechnology, and nano technology that is difficult to detect. In addition, technological engineering is also developing in the world of aviation, the manufacture of nuclear weapons and rocket launchers, missiles and unmanned flying vehicles and satellite technology are also used for national defense purposes. From the defense aspect, cyberspace has become the fifth domain that can be used as a battlefield, in addition to land, sea, air and space battlefields. The use of internet-based systems, equipment and platforms tends to be increasingly widespread, which has the potential to become a vulnerability. (Ministry of Defense of the Republic of Indonesia, 2015).

Threats that can occur from cyberspace, whether cyber attacks, or espionage and other threats from advances in weapons technology of certain parties that can lead to open conflict, have been mentioned in the form of real and unreal threats in the Indonesian Defense White Paper. Therefore, the Law of the Republic of Indonesia No. 3 of 2002 concerning National Defense mandates that the national defense system is a universal defense system that involves all citizens, territories, and other national resources, as well as being prepared early by the government and organized in a total, integrated, directed, and continuous manner to uphold state sovereignty, territorial integrity, and the safety of the entire nation from all threats. This means that in dealing with existing threats, the role of civilians and the military is crucial as a form of universal defense.

Based on the explanation above, it can be understood that the development of science and technology in the world provides its own threats to the life of the nation and state. Therefore, this paper will provide an overview of how the negative impact of the development of science and the solution to the negative

impact on the aspects of national defense and security.

Literature Review

Based on the explanation described in the previous chapter, of course, the development of science and technology has a certain negative impact on the life of the nation and state, especially in the field of defense and security. Hakim, C. (2020) argues that advances in weapons technology have created fear in humanity in the face of existing threats. On the other hand, the use of force on land, sea and air has made all countries turn their country's security defense system into a structured building that is "total" in nature. Every point on the earth's surface will be easily reached using weapon systems that come from the air and or space medium. Thus, since the end of the world war, almost all countries have rearranged the order of the posture of their country's security defense system which is fully oriented towards the advancement of high technology and total defense. This indicates that technological advances, especially in weapons systems, force Indonesia to adjust to existing developments so that an orientation towards total defense needs to be designed and realized.

Faced with threats and limited capabilities of defense equipment and other supporting resources, the Total Defense and Security System (Sishankamrata) adopted by Indonesia is expected to be able to overcome various existing problems. However, the development of science and technology makes its own challenges for the defense and security aspects of the state so that various layers of society and other elements of the state are needed in maintaining the existence of the nation.

Clara, I. (2018) further explains that non-military threats and even military threats from the development of science and technology are threats that are often seen as not physically real but are very effective in destroying a country through changes in values including freedom,

democracy, human rights and the environment. The advancement of science and technology in the field of defense can cause military threats and non-military threats to become more widespread. For this reason, advances in science and technology must be utilized to support the realization of a strong national defense or in order to provide a deterrent effect on opponents.

Based on this explanation, this paper will examine the negative impact of the development of science and technology on the aspects of national defense and security. Specifically, the discussion will begin with a philosophical study of defense science followed by how the negative impact of the development of science and technology on the aspects of national defense and security as well as how forms of prevention and solutions that can be given to these problems.

a. Science and Technology

Irsyad, M. (2019) explained that knowledge is something that occurs in humans, which is obtained from the results of human search itself. Meanwhile, science is something that is studied so that humans gain knowledge to know and prove a truth. By knowing the truth, humans can utilize something to be more useful and beneficial. Irsyad, M. (2019) also explains where the process of searching for truth with certain scientific methods makes knowledge into science. Knowledge in general is something that we know about an object, so knowledge is very likely to become science if it has been tested and studied for its truth.

The characteristic of science is the study of objects that have been explained and described systematically with certain methods. Science applies to the public and has been sorted systematically so that it can explain in detail various things that are not yet known. Science that has been researched and approved by many parties, will be difficult to refute because research has been carried out. Therefore, the

object of knowledge cannot be organized systematically like science. Knowledge is part of science, but knowledge must be tested and studied first so that it can be proven and approved so that it can become a science. (Kurniawan, A., 2020).

Science and Technology means Science and Technology. Science and Technology is the study of the development of technology based on science. In global development, science and technology go hand in hand to form progress. So if discussing science and technology, this relates to the use of technology as a collection of techniques and processes used in achieving certain goals that refer to methods, systems, and devices that are the result of scientific knowledge (Astuti, N.F., 2021).

In this case, the relationship between science and technology is that technology assists the use of science in solving problems, and science uses technology in order to make new discoveries. The goal of science is to answer questions and increase knowledge while the goal of technology is to find solutions to practical problems. Despite having different goals, science and technology go hand in hand, and each helps the other to progress.

Thus, it can be understood that the development of science along with technology is a form of modernization of global development that can be used to facilitate human life. However, in this case, the development of science and technology can be observed from the negative impacts given. Some of them are the threat of cyber-attacks, espionage and the threat of modern defense equipment from other countries.

b. National Defense Policy

The dynamic development of the environment and strategic context always brings changes to the complex spectrum of threats and has implications for national defense. The complexity of threats is classified into multidimensional patterns and types of threats

in the form of military threats, non-military threats and hybrid threats that can be categorized in the form of real and unreal threats. Thus, future national defense requires the integration of military defense and non-military defense through efforts to build strong and respected national defense forces and capabilities and have high deterrence. (Ministry of Defense of the Republic of Indonesia, 2015)

The Indonesian Ministry of Defense (2015) in the Indonesian Defense White Book explains that national defense is structured in a universal defense system to achieve national goals. Universal defense is essentially a defense that involves all citizens according to their roles and functions. The involvement of every citizen in national defense, as mandated by the 1945 Constitution of the Republic of Indonesia, is implemented in the form of a state defense program based on love for the country. The state defense program is planned for the next 10 years to reach 100 million militant citizens and this program will continue to be developed in line with the needs of national defense.

The universal national defense system is characterized by populism, universality and territoriality. Popularity means that the orientation of defense is enshrined with the people and for the benefit of all the people. Universality means that all national resources and infrastructure are utilized for defense efforts. Territoriality means that the title of defense forces is carried out thoroughly in the territory of the Republic of Indonesia in accordance with the geographical conditions of Indonesia as an archipelagic country as well as a maritime country. The Ministry of Defense of the Republic of Indonesia (2015) also describes that the form of defense developed involves all citizens, regions, all national resources and infrastructure, which are prepared early by the Government, and held in a total, integrated, directed and sustainable manner. The universal defense system integrates military defense and non-military defense, through efforts to build

strong and respected national defense forces and capabilities and have high deterrence.

The following is a description of the threats facing the Indonesian nation today and in the future:

Figure 1. Threats for the Next 5 Years



Source: Indonesian Ministry of Defense (2015)

In Figure 1, it is depicted that cyber-attacks and espionage as well as threats in the form of open conflict and even terrorism, are of concern to the Indonesian government. It is possible that the development of science and technology can make these threats severe and disrupt the safety and existence of the nation.

Result and Discussion

a. Philosophical Overview of Defense Science

Driyarkara (2006: 999-1001) argues that philosophy can be expressed from the desire for understanding, for truth, sciences arise, and finally philosophy emerges. Philosophy arises from everyone, provided that the person can live, realize and use his mind. Furthermore, philosophy can also be a teaching of life. People expect from philosophy the scientific basics needed to live life. Philosophy is expected to provide instructions on how people should live to become perfect, good, moral, and happy human beings. So, it is not only a theoretical science, but also a practical one, meaning that it tries to formulate rules that must be followed so that human life gets content and value. This is in accordance with the meaning

of philosophy as a search for wisdom that includes both knowledge (insight) and a true attitude to life, which is in accordance with that knowledge.

The Indonesian state in fulfilling its goals of society, nation and state requires a form of defense and security as an absolute necessity that must be realized. Defense and security are preventive efforts in order to maintain and defend the sovereignty of the nation and state of Indonesia from various threats, pressures, and disturbances that come from within and outside the Unitary State of the Republic of Indonesia. According to the declaration of the Indonesian Nation contained in the Preamble of the 1945 Constitution, that the state is obliged to protect the entire nation and the entire homeland of Indonesia.

It can be understood that defense means a nation's ability to build and use national power to face or ward off disturbances, threats and pressures from outside. Meanwhile, security means the nation's ability to build and use national power to face and ward off threats, disturbances, and challenges coming from within the country. The defense and security of Indonesia is the unity of the efforts of all Indonesian people in defending and securing the Indonesian state in defending and securing the state for the survival of the nation and the Unitary State of the Republic of Indonesia. The defense and security of the Republic of Indonesia is carried out by compiling, mobilizing, and mobilizing all national potential in an integrated and coordinated manner.

The implementation of national defense and security is one of the main functions of the government and the Republic of Indonesia with the TNI and Polri as its core. The goal is to create national and state security in order to realize Indonesia's National Resilience. The form of resilience, defense and security is reflected in the condition of the nation's deterrence based on the awareness of state

defense of all the people. This condition contains the nation's ability to maintain the stability of national defense and security, secure development and its results, and maintain the sovereignty of the nation and state and ward off all forms of threats. This is a universal people's struggle, in which all the potential and power of ideology, politics, economy, socio-culture, military and police are organized and deployed in a guided, integrated and coordinated manner to ensure the implementation of the national security system, and ensure the continuity of national development and the survival of the Indonesian nation and state, which is constitutionally based on the 1945 Constitution and the basic philosophy of Pancasila. It is based on value principles that are the basis of belief and truth for the life of society, nation and state.

In the philosophy of defense science, understanding the philosophy of defense and security itself is very important. Eppler (2009) states that defense is the face of knowing a country. It is understood that defense is a reality that determines the sovereignty and safety of a nation and state. Defense itself has become a truly primary national need since the state's sovereignty gained recognition. The same goes for security. Thus, it can be concluded that in the philosophy of defense science ontologically will discuss the object of defense science itself, namely the reflection of state behavior to maintain and develop the sustainability of a country. In this case, the sustainability of the state is faced with basic problems that become threats, namely the development of science and technology that can have a negative impact on the nation and state, some of which are the threat of cyber-attacks, espionage, terrorism and radicalism as well as the threat of modern defense equipment from other countries that can ignite open conflict.

The object is essentially state behavior which is defined as maintaining the existence of the state from all types of threats by both individuals and

the state with defense and security mechanisms. This indicates that civilian and military relations need to be calibrated in order to optimize Total Defense in Indonesia in facing the threats posed by the negative effects of advances in science and technology.

Epistemologically, defense science is obtained by qualitative or quantitative methods through a system thinking approach in order to solve problems faced by the Indonesian state and nation. The existing approach is approached from a multidisciplinary, interdisciplinary and transdisciplinary perspective. This means that various efforts and methods are needed in dealing with existing threats, especially in academic and scientific studies in supporting national defense and security in order to face the threat of negative developments in science.

While axiologically, defense science has certainly provided benefits and contributions to the existing state, both in terms of the contribution of a state defense and security policy related to the existence of the state in building harmonious, dynamic and peaceful inter-state relations. For Indonesia, a strong form of defense and security can be a sign that Indonesia is a country that runs systematically and should be taken into account. This also shows that by studying defense science, the solution to existing problems will come from various disciplines of science.

b. Analysis of Negative Impacts of Science and Technology Development on Defense and Security Aspects.

Amarini, I. (2018) explained that the emergence of cyberspace has changed the world order. Social humanitarian, economic, political, health, science and technology issues are woven into a network and are not sectoral, every aspect of life interacts, correlates and influences each other in a web of life called an Omega Point: Digital Universal Consciousness. Thus, information globalization touches all important aspects of life, namely the political, social, cultural, legal fields, and also includes national defense and security.

The influence of information globalization from the use of the internet is extraordinary in all fields. The influence or impact of the new zone in human life or the "technology hangover zone" can be positive and negative like a "knife-edged world". In addition, the internet is also a source of various kinds of crimes in the cyber world "cybercrime" such as pornography, violence, fraud, carding (transactions using credit cards), gambling and so on. Based on this description, it can be analyzed why the development of science and technology can cause problems.

The following table explains the negative impact on the development of science and technology in the defense and security aspects that can occur in Indonesia:

Table 1. Negative Impact of Science and Technology Development on the Security Aspect

No	Negative Impact	Description
1	Crime on the Internet	Through the internet, terrorists can communicate with fellow terrorists and find followers. In addition, crimes committed on the internet are illegal or unethical, use equipment related to computers and the internet, and the losses caused are much greater than ordinary crimes. Usually, the perpetrators are people who have a good understanding of the internet, computers and their various applications. Types of internet crimes: Unauthorized Access, Cyber Sabotage and Extortion, Cyber Espionage, Data Forgery, Illegal Contents, Infringements of Privacy, Phishing, Spamming, Offense Against Intellectual Property, and

		Carding.
2	The spread of Computer Viruses	A computer virus is a program that is relatively small and parasitic in nature that is able to live and duplicate itself like a file or folder and is very disturbing to infected computer users. Computer viruses spread through various media including the internet and file storage such as CD-ROM, Diskette, Flash Disk, Hard Disk, and Memory Card. This virus can attack vital installations of the state so that it can bring the state into chaos
3	Satellite Misuse	Satellites hijacked by terrorists, for example, can easily pose a threat to various countries. For example, the leakage of important state data, the dysfunction of the security system of vital state objects, or even igniting a nuclear war of developed countries that have modern defense equipment technology.
4	The development technology of <i>Weapon of Mass Destruction (WMD)</i>	WMD, such as nuclear weapons and biological weapons, are feared to be the biggest threat to a country when used by irresponsible parties. This can become a reality if the country's defense system and the human resources that manages it are not aware of this threat. Therefore, modernization of Indonesia's defense equipment is needed to ward off unwanted things.

Source: processed by researchers from various sources

c. Prevention and Solutions to Overcome the Negative Impact of the Development of Science and Technology in Defense and Security Aspects.

The development of science and technology allows everyone everywhere to connect with other people from various places and media. These developments require laws to regulate human behavior, solve problems that arise and become guidelines for behavior. The law itself is required to be able to keep up with the times. However, the problem arises that the speed of the law is not comparable to the speed of information technology itself. The next impression that arises is that the law is always left behind in regulating human behavior activities. This means that law enforcement becomes the main basis for preventive measures and solutions to overcome the negative impacts of the development of science and technology.

Amarini, I. (2018) further adds that legal backwardness is not an indication that the law is marginalized but there are several things that

cause it. First, differences in interests and political will of law-making bodies are obstacles that are not easy to find common ground. Second, the law-making process (from the procedural aspect) takes a lot of time while technological developments are developing very quickly so that with such a long process, the laws formed become obsolete in terms of technology. Third, the law requires certainty and accuracy (from the aspect of the substance or material to be regulated) so that making laws that have such characteristics is not an easy job.

The advancement of science and technology cannot be rejected but must be utilized so as not to be excluded from the social system of the world community. One way that science and technology can be utilized properly is by empowering the community because the more helpless the community is, the negative impacts will appear and damage life. Ratnaya, I.G (2011) explains that community empowerment can be done by: 1) Introducing information technology as well as its benefits for social life, 2) Eliminating technological stuttering and inferiority in responding to information

technology, 3) Introducing and reminding the community of the possible negative impacts that can arise in the use of information technology, 4) Increasing the community's reasoning power and selection power of various flooded information, so that the community is more critical and mature in responding to it.

Batoebara, M.U. (2016) further added that the most recent thing is the development of what is called "cyber teaching" or virtual teaching, namely the teaching process carried out using the internet. Another term that is increasingly popular today is e-learning, which is a learning model using communication and information technology media, especially the internet. This means that this distance learning model is a preventive effort as well as a solution to overcome the negative impact of science and technology on the defense and security of the country. A nation as a national resource in the field of defense is invited to equip itself with positive activities while honing personal abilities in order to face threats in the cyber world, both in terms of ethics in cyberspace and the ability to reduce the negative impacts caused.

The Ministry of Research and Technology of the Republic of Indonesia (2006) also provides a view that science and technology, which is a major part of a knowledge-based society, is a very important element of the progress of human civilization. Through the advancement of science and technology, humans can utilize natural resources to support their welfare and improve their quality of life. Advances in science and technology in overcoming the dimensions of distance and time also encourage the globalization of life. The country's defense and security capabilities require technological support according to the level of development of available defense and security technology. In order to achieve self-sufficiency in defense and security technology, mastery of technology and research and development activities supported by human resources of adequate quality and

quantity are needed, taking into account the priority scale.

By considering and anticipating changes in the strategic environment both globally, regionally and nationally, as well as considering several scenarios in the future, what needs to be considered is the basic capital to improve the quality and quantity of Defense and Security Technology research and development, namely: The potential of human resources and natural resources; The need and use of domestic products; and The ability of the business world.

Empowerment of research and development can be done with 3 methods of technology mastery, namely Technology Transfer, Forward Engineering, and Reverse Engineering. This can be achieved in a conducive climate that includes: fulfillment of domestic defense equipment and equipment needs; policy support, legal instruments and/or regulations that spur the growth of the defense and security industry; defense and security technology innovation activities supported by consistent programs, competent human resources, and adequate funding; defense and security industry development programs. (Kemenristek RI, 2006).

The most important breakthrough proposed by the author is how to strengthen civil-military relations in counteracting negative issues over the development of science and technology in Indonesia, especially in the aspect of Defense and Security. Setiawan, D. et.al (2013) argued that the wave of reformation also participated in opening up greater space for discussions on the discourse of civil-military relations associated with the democratic process. Efforts to build a new format of civil-military relations in a democratic society require a more fundamental foundation. An important prerequisite is the establishment of a democratic government that includes the rule of law, public accountability in relation to the delicate balance of military autonomy in

personnel policy, determination of force levels, education issues, and military doctrine.

In order to find and formulate a new harmonious civil-military relationship, there must be a will from all components of the nation based on moral values and mental attitudes of mutual respect and cooperation to realize a New Indonesia based on principles established according to the decision-making authority. Therefore, the combination of civil-military in Indonesia, at the level of ability, expertise, integrity and discipline, can be a real form of Total Defense in facing the negative development of science and technology in the aspect of national defense and security.

Based on the explanation that has been elaborated before, it can be understood that the threats that come from the development of science and technology to the Indonesian nation can endanger the safety and existence of the nation and state. The negative development of science and technology present in the era of globalization provides a form of military and non-military threats to the nation's national interests. Therefore, various kinds of efforts made by the Indonesian government related to law enforcement, rule of law, improving the ability of defense and security human resources, policy and budget support, community empowerment must be integrated within the framework of the civil-military cooperation model in Indonesia. This means that the optimization of civil-military cooperation in the reform era provides hope that defense and security are not only a military matter, but the sovereignty of the state which is threatened by various elements of danger is also the responsibility and obligation of civilians to defend it.

The following is an illustration that can be presented on the results of the discussion previously described:

Figure 3. The effort by National Resources in overcoming the negative impact of the development of science and technology in the field of defense security.



Source: processed by the authors

CONCLUSION AND RECOMMENDATION

a. Conclusion

The State Defense and Security System is a system based on state policy to organize defense and security through a system of defense and security rules established to make integrated and continuous national efforts, involving all elements and potential, fostered into a state defense and security force in order to maintain the territorial integrity of the Unitary State of the Republic of Indonesia. The development paradigm of the Republic of Indonesia is in the process of shifting civilization from a natural resource-based paradigm to a resource-based development of a knowledge-based society. This shift has implications for various fields, including the development of science and technology in the field of defense and security.

In life in this modern era, humans will not be able to escape the influence of the development of science and technology. The development of science and technology has brought many benefits to humans in education, business, other communications, and entertainment. In addition to these positive benefits, the

development of science and technology has a negative impact, especially on the aspect of Defense and Security. These negative impacts should be minimized wisely so as not to eliminate the positive impacts.

Thus, it can be understood that science and technology is the same as a knife that can take humans in two different directions, the first can take humans to a good path with all the sophistication that is owned making humans get convenience in all fields (positive impact) while the second can bring humans into misery caused by the misuse of the progress of science and technology itself (negative impact).

Various efforts carried out by the nation and state in dealing with the negative impact of the development of science and technology must be packaged within the framework of structuring democratic civil-military relations, which involves civilians in thinking and formulating and determining policies in the field of defense. Thus, harmonious civil-military relations must be built within the framework of democracy and mutual trust and cooperation to build a new Indonesia. This will add to the overall components of the nation involved, both civilian and military, which must coexist and respect each other in their respective professions. Therefore, the form of synergy between civilian - military in Indonesia is a tangible form of Total Defense to face threats to defense and security aspects due to the rapid development of science and technology in the world.

b. Recommendation

The following recommendations can be put forward in this paper:

1. The dynamic development of science and technology requires the Indonesian government to modernize various defense and security equipment.
2. The new concept of civil-military relations in Indonesia must be realized based on

the trust built by both parties in order to realize the form of Total Defense.

3. Defense science from a philosophical analysis must be socialized to various elements of national resources in order to provide confidence that national defense is an important element in maintaining the sovereignty of the Republic of Indonesia.

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