

## **Cold War Order and Technology Development in Indonesia**

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### **Abstract**

*After revolution period (1949-1950), Indonesians had to face several social and economic problem, urging development in all sectors of life. They needed to build public transportation, communication, education, health and agriculture, emphasizing on “developmentalism” in modernizing society. Meanwhile, Indonesia and other Third World countries also urged decolonization through anti-Westernism and anti-Imperialism. Relations between decolonization and development opened a new discourse in Third World countries in 1950’s. Constructivism approach in political science and international relations emphasize excessively on military and ideological conflicts among liberalism and communism. However, the studies ignore pragmatic view of Third World countries during Cold War in order to develop the countries in economic and social lives. Author finds that Cold War Order forced Third World countries to adapt with anti-imperialism ideology and development necessities. Third World leaders, such as Sukarno, Nehru, Nasser, did not always view Cold War from political rivalry perspective. They urged Third World countries to be strong and advance country through development of new technology. In 1959 Indonesia, for instance, established Bandung Institute of Technology (ITB) in order to produce future Indonesian engineers and scientists. Sukarno also built Planetarium and Observatory in order to encourage research on astronomy science. Cold War Order which rose after 1940’s offered opportunities for building technology. Indonesia and other Third World countries received many opportunities from Great Powers in building science and technology. In this article, author observes another story of Cold War which not only emphasizes on political and military conflict, but “cooperation” and “development” in building science and technology. Author argues that Cold War Order was not solely shape political conflict among Great Powers in Third World countries, yet it offered opportunities for Indonesia to develop technology.*

**Keywords:** *Cold War Order; Development, Indonesia, Science, Technology.*

## **Introduction**

This article observes history of Cold War and technology development in Indonesia in 1950-1989. Author analyzes how Cold War order and independent-and-active foreign policy gave significant impact on technology development in Indonesia. In this article, author analyzes Cold War history from technology and international relations perspectives. Author underlines that the technology development in Third World countries, such as Indonesia, are inseparable from influence of Cold War order and Great Powers rivalry. During the war, United States of America (USA) and Union of Soviet Socialist Republic (USSR) did not merely compete on political, economy and military, but also on technological innovation. Through realism approach, Indonesia benefited from the competition for its domestic interests in strengthening science and technology in favor of development purposes. During the war (and until today), Indonesia embraced an independent (*bebas*)-and-active foreign policy. In Guided Democracy era (1959-1965), for instance, Indonesia tended to build close relation with USSR and its allies. Furthermore, at same time she joined “Jakarta-Pnom Penh-Beijing” axis. On the contrary, during New Order era (1967-1998) Indonesia and West had warmer relations. According to the background, author examines how did Cold War order influences technology development in Indonesia? How did Indonesia applies independent-and-active foreign policy for technology development?

The number of studies about Cold War has paid great attention on various perspectives. Odd Arne Westad (2010) emphasizes on the importance of aspects on ideology, political economy and technology in Cold War studies.<sup>1</sup> Either does Westad show how science and technology had great influence on Cold War. Demands of energy for industrial production had encouraged Great Powers to form alliances during the war. The Great Powers, for instance, needed oil to guarantee industrial production in their countries. In addition, nuclear technology also had become main narrative in the Cold War studies. In his article, Odd Arne Westad says “to many people, the conflict was about the products of the new science, and first and foremost about nuclear weapons and the threat their use posed to all humanity”.<sup>2</sup> Therefore, technology has become important aspect for Cold War studies in Europe, North America and Asian African countries.

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<sup>1</sup> Odd Arne Westad, “The Cold War and the International History of the Twentieth Century,” in *The Cambridge History of the Cold War*, ed. Melvyn P. Leffler and Odd Arne Westad, Origins, vol. 1 (Cambridge: Cambridge University Press, 2010), 1–19.; Odd Arne Westad, “The New International History of the Cold War: Three (Possible) Paradigms,” *Diplomatic History* 24, no. 4 (2000): 551–65.

<sup>2</sup> Westad, “The Cold War and the International History of the Twentieth Century,” 11.

Nonetheless, Cold War studies regarding technology development is largely emphasized on nuclear weapon.<sup>3</sup> Since atomic weapon was used in Second World War, many developed countries started developing the weapon. Furthermore, some scholars see Cold War as the war to win nuclear competition. For realists in international relations studies, nuclear weapon is an important aspect as an analytical unit to map conflict and competition between Great Powers during the war. Wells, for instance, says that “nuclear weapons also had a significant influence on U.S. relations with its allies.”<sup>4</sup> Formation of nuclear development-based political alliances had caused anxiety among people over Nuclear War. The war had been imagined by British writer H. G. Wells in his novel, published in 1914, entitled *The World Set Free*.<sup>5</sup> The fear of the Nuclear War created mass mobilization to control nuclear development. Lawrence Wittner (2009) sheds light on how attempts to control nuclear weapon has been “the biggest mass movement of modern history”<sup>6</sup>.

Developed technology during Cold War was not only nuclear weapon, but also communication, information and transportation technologies. Those technologies played significant roles during the war, especially in Third World countries. Odd Arne Westad (2000) says that computer was important technology during Cold War.<sup>7</sup> Moreover, computer technology became determinant factor of rivalry between USA and Soviet when “The Soviet Union and Eastern Europe were cut off from this development by choice as well as by design”<sup>8</sup>. In addition, technology was (and is) needed in exploring energy sources such as coal, hydrocarbon, electricity, oil and so forth. The exploration caused great consequences over energy such as conflict, war and environment change. Regarding the impact on energy exploration, Vaclav Smil (2017) says that “not

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<sup>3</sup> John Lewis Gaddis et al., eds., *Cold War Statesmen Confront the Bomb: Nuclear Diplomacy since 1945* (Oxford: Oxford University Press, 1999).; Samule F. Wells J.R., “Nuclear Weapons and European Security during the Cold War,” *Diplomatic History* 16, no. 2 (1992): 278–86.; Jennifer G. Mathers, *The Russian Nuclear Shield from Stalin to Yeltsin* (Oxford: Macmillan, 2000); Matthew Grant, *After the Bomb: Civil Defence and Nuclear War in Britain 1945-68* (New York: Palgrave Macmillan, 2010).

<sup>4</sup> J.R., “Nuclear Weapons and European Security during the Cold War,” 281.

<sup>5</sup> H. G. Wells, “The World Set Free,” The Project Gutenberg Ebook <https://www.gutenberg.org/files/1059/1059-h/1059-h.htm> , n.d.; H.G. Wells, “The World Set Free,” <https://www.atomicheritage.org/key-documents/hg-wells-world-set-free>, March 12, 2022.

<sup>6</sup> Lawrence S. Wittner, *Confronting the Bomb: A Short History of the World Nuclear Disarmament Movement* (Stanford: Stanford University Press, 2009), 221.

<sup>7</sup> Westad, “The Cold War and the International History of the Twentieth Century.”

<sup>8</sup> Westad, 559.

surprisingly, many technical advances brought about new fuels and new prime movers were rapidly adapted for destructive uses.”<sup>9</sup>

Studies about technology and Cold War are more examined from Great Powers perspective. Odd Arne Westad (1992) says that “The Cold War, as political paradigm, was always stronger in the center than in the periphery”.<sup>10</sup> In this article, author focuses on examining technology development in Indonesia during Cold War. Indonesian historiography on Cold War history itself is still dominated by ideology and political economy perspectives. The rivalry between USA and USSR in Indonesia had encouraged conflict in 1950’s until 1965.<sup>11</sup> After the fall of Sukarno in 1967, New Order government, under the reign of Suharto, strongly opposed communism, building stronger relations with Western countries. During New Order era, Indonesia focused most likely on political domestic interests in order to create economic development (*pembangunan ekonomi*). At this time Indonesia built “stabilisation to the promotion of long run economic development and structural change”.<sup>12</sup> In the New Order period, Indonesia seek to develop technology in favor of economic development. Nonetheless, many studies regarding New Order focuses on political economy because Suharto government behaved as an authoritarian government, centering his political and economic power in his own hand.<sup>13</sup> In this sense, role of military of political activity in Indonesia was growing stronger.<sup>14</sup> In addition to political,

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<sup>9</sup> Vaclav Smil, *Energy and Civilization: A History* (Cambridge, MA: MIT Press, 2017), 368.

<sup>10</sup> Odd Arne Westad, “Rethinking Revolutions: The Cold War in the Third World,” *Journal of Peace Research* 29, no. 4 (1992): 462.

<sup>11</sup> Indonesian history studies about Cold War are dominated by ideological conflict among political parties, governments, military and people. Those factors were correlated with political stabilisation in domestic affair. See, George McT. Kahin, *Nationalism and Revolution in Indonesia* (Ithaca NY: Cornell University, 1952); Herbert Feith, *The Decline of Constitutional Democracy in Indonesia* (New York: Equinox, 2006); Robert Cribb, “Genocide in Indonesia, 1965-1966,” *Journal of Genocide Research* 11, no. 4 (2001). Richard Robinson, *Soeharto & Bangkitnya Kapitalisme Indonesia* (Jakarta: Komunitas Bambu, 2012); Sidney Jones, “New Order Repression and the Birth of Jemaah Islamiyah,” in *Soeharto’s New Order and Its Legacy: Essays in Honour of Harold Crouch*, ed. Edward Aspinall and Greg Fealy (Canberra: ANU Press, 2010).; Chiara Formichi, *Islam and the Making of the Nation: Kartosuwiryo and Political Islam in 20th Century Indonesia* (Leiden: KITLV, 2012).

<sup>12</sup> Anne Booth, *The Indonesian Economy in the Nineteenth and Centuries: A History of Missed Opportunities* (Hampshire and London: Macmillan, 1998), 183.

<sup>13</sup> For political economy studies regarding New Order Indonesia, see: Robinson, *Soeharto & Bangkitnya Kapitalisme Indonesia*. Hal Hill, *Foreign Investment and Industrialization in Indonesia* (Singapore: Oxford University Press, 1988); William Ascher, “From Oil to Timber: The Political Economy of off-Budget Development Financing in Indonesia,” *Indonesia* 65 (1998): 37–61; Hal Hill and Dionisius Narjoko, “Managing Industrialisation in a Globalising Economy: Lessons from the Soeharto Era,” in *Soeharto’s New Order and Its Legacy: Essays in Honour of Harold Crouch*, ed. Edward Aspinall and Greg Fealy (Canberra: ANU Press, 2010), 49–66.

<sup>14</sup> For military studies in Indonesia, see: Harold Crouch, *The Army and Politics in Indonesia* (New York: Equinox, n.d.).

economy and military, studies regarding technology development in Indonesia has been written by some scholars.<sup>15</sup> Sulfikar Amir (2007), for instance, writes an article regarding how the impact of nationalist rhetoric and technology development in Indonesia.<sup>16</sup> Mentioning IPTN (*National Aircraft Industry*) as sample of technological innovation, Amir argues that “technological nationalism works as a form of ideology to create a shared feeling of national identity and pride through technological artifacts.”<sup>17</sup>

In this article, author emphasizes on technology development in the context of Cold War order. Unlike other scholars that focus largely on economy and domestic political affair, author places technology development in Indonesia in the context of international system. Therefore, author examines how the rivalry between USA and USSR in the context of Cold War order influenced Indonesia to strengthen science and technology development. Through realism perspective, author believes that the struggle for power is useful to view technology development in Indonesia during Cold War. The rivalry between the Great Powers globally had encouraged Third World countries, such as Indonesia, to develop technology.

### **Indonesia and The Rise of Cold War Order**

Emergence of Cold War was inseparable from post-Second World War situation. After the end of the Second World War, USA and USSR emerged as two dominant Great Powers which formed bipolar system in international order. Both countries were dominant and hegemon powers in international system. Accordingly, Cold War order was an international system dominated by USA and USSR as two Great Powers in the world. In addition, the order was a part of realist order as there are two or more dominant big powers that “have little choice but to act according to realist dictates and engage in security competition with

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<sup>15</sup> David McKendrick, “Obstacles to ‘Catch-Up’: The Case of the Indonesian Aircraft Industry,” *Bulletin of Indonesian Economic Studies* 28, no. 1 (1992): 39–66; Roberto M. Cornejo, “When Sukarno Sought the Bomb: Indonesian Nuclear Aspirations in the Mid-1960’s,” *Non-Proliferation Review*, 2000, 31–43; Thee Kian Wie, “Policies Affecting Indonesia’s Industrial Technology Development,” *ASEAN Economic Bulletin* 23, no. 3 (2006): 341–59; Sulfikar Amir, *The Technological State in Indonesia: The Co-Constitution of High Technology and Authoritarian Politics* (Oxon: Routledge, 2013); Sulfikar Amir, “Nationalist Rhetoric and Technological Development: The Indonesian Aircraft Industry in the New Order Regime,” *Technology in Society* 29, no. 3 (2007): 283–93; Sulfikar Amir, “The Regime and the Airplane: High Technology and Nationalism in Indonesia,” *Buletin of Science, Technology & Society* 24, no. 2 (2004): 107–14.

<sup>16</sup> Amir, “Nationalist Rhetoric and Technological Development: The Indonesian Aircraft Industry in the New Order Regime.”

<sup>17</sup> Amir, 292.

each other.”<sup>18</sup> John Mearsheimer (2019) emphasizes that if world order becomes realist, then “ideological considerations are subordinated to security considerations in these circumstances”.<sup>19</sup> Therefore, Cold War order emphasized on security approach, not ideological approach. Under the order, there are no countries which can dominate the world through ideological expansion either communism or liberalism. Nevertheless, USA and USSR in this sense could do “cooperation”, yet with strategic and security approach.

Accordingly, the Cold War order was an order where competition between the Great Powers occurred in the context of security and strategic position. Every the Great Powers tried to protect their interests in various countries. They built military pact, such as NATO and Warsaw Pact, in order to protect their strategic interests. In the Cold War order, competition was main element in building international relations among countries. At this time, cooperation still existed, although it was addressed to win competition. Third World countries benefited from the order for their national interests. Although the countries did not have military and economic power just like USA and USSR, they had bargaining position in geopolitical context. Indonesia was one of Third World countries that had strategic position in Southeast Asia. Either USA and USSR both had strategic interests in Indonesia. Nevertheless, Indonesia tried to benefit from their rivalries for Indonesian national interests.

During Cold War, Indonesia and Asian African countries avoided to enter alignment with USA and USSR by forming Third World alliance in Bandung Conference in 1955. They subsequently formed similar alliance in United Nations (UN) and held Non Alignment Movement to prove that they did not want to enter into alliance with USA and USSR. Nevertheless, Third World countries prioritize their national interests in their foreign policies. In short, position of Third World countries in Cold War order were flexible where they benefited from rivalry of USA and USSR for their national interests.

During Cold War (until today) Indonesia embraced principle of independence (*bebas*) and active foreign policy. Background of the policy was the importance of Indonesian position against imperialism and colonialism, prioritizing independence and self-determination for colonized countries. According to Vice President Mohammad Hatta (1945-1956), the principle of independence and active was stated by Indonesian government on 2 September 1948.

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<sup>18</sup> John J. Mearsheimer, “Bound to Fail: The Rise and Fall of the Liberal International Order,” *International Security* 43, no. 4 (2019): 12.

<sup>19</sup> Mearsheimer, 12.

Have the Indonesian people fighting for their freedom no other course of action open to them than to choose between being pro-Russian or pro-American? Is there no other position that can be taken in the pursuit of our national ideals? The Indonesian Government is of opinion that the position to be taken is that Indonesia should not be a *passive* party in the area of international politics but that it should be an *active* agent entitled to decide its own standpoint...the policy of the Republic of Indonesia must be resolved in the light of its own interests and should be executed in consonance with the situations and facts it has to face...The lines of Indonesia's policy cannot be determined by the bent of the policy of some other country which has its own interests to service.<sup>20</sup>

Accordingly, independent and active foreign policy is a principle which choose a foreign policy based on Indonesian own standpoint according to national interests without intervention from foreign countries. In this sense, Mohammad Hatta (1953) also explained that 'independent' means that Indonesia may build friendship "with peoples belonging to either bloc, or to none, on a basis of respect for each other's independence"<sup>21</sup>. Hatta also stated that independence and active principle did (and does) not mean that Indonesia avoided every foreign aids, but Indonesia "is prepared to receive intellectual, material and moral assistance from any country whatsoever, provided there is no lessening of, or threat to, her independence and sovereignty."<sup>22</sup> According the statement of Mohammad Hatta, it was known that independent and active principle opened opportunity for Indonesia to received intellectual aids from foreign countries to develop science and technology as long as it did not threatened Indonesian independence and sovereignty. In 1958 Mohammad Hatta emphasized that:

The United States and Soviet Russia have demonstrated their skill and recorded their great progress in various fields of knowledge and technology; each in turn overtakes the other in presenting a new invention. It would be good if they would compete with each other, and each try to excel the other, in creating an atmosphere of peace in the world. Indonesia would be one the beneficiaries.<sup>23</sup>

In the context of Cold War, independent and active policy could be interpreted to build diplomatic relations with any foreign countries. Furthermore, the policy allowed Indonesia to avoid international relations with any countries and international organisations, aggrements if those could harmful Indonesian

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<sup>20</sup> Mohammad Hatta, "Indonesia's Foreign Policy," *Foreign Affairs* 31, no. 3 (1953): 441–52.

<sup>21</sup> Hatta, 447.

<sup>22</sup> Hatta, 447.

<sup>23</sup> Mohammad Hatta, "Indonesia between the Power Blocs," *Foreign Affairs* 31, no. 3 (1958): 438–84.

national interests. President Sukarno understood that independent and active foreign policy allowed him to refuse international relations with any foreign countries that could threaten the country's sovereignty. For instance, in 1965 Indonesia quitted from UN membership because it refuses Malaysia to be non-permanent member of Security Council.<sup>24</sup> In this sense, Sukarno popularize another principle named '*Berdikari*' or 'Stand up in our own foot'.

Interpretation of independent and active foreign policy during Guided Democracy era as *Berdikari*, especially from Western countries, had created economic instability, so that accelerating political crisis in Indonesia in 1965. Meanwhile, President Suharto emphasized more on economic development by opening cooperation as principle of independent and active foreign policy. One of breakthrough from Suharto government was that Indonesia became one of founder of ASEAN (Association of Southeast Asian Nations). ASEAN has aims to strengthen relations among Southeast Asian countries. In addition, ASEAN was also founded to normalize Indonesia-Malaysia relations which had been deteriorated by political confrontation in Guided Democracy era..

### **Development and The Lack of Indonesian Engineers**

Story of Cold War is not only about the rivalry between USA and USSR, but also regarding the Third World countries' attempts to prioritize development and decolonization. The two terms –development and decolonization –appear inharmony that creates paradox from Third World leaders. On one side, the Third World leaders needed technical assistance and aids to build social economic stability, however on another side, they emphasized on the importances of decolonization, revolution, anti-imperialism and anti-Westernism. Relations between development and decolonization in Indonesia experienced dynamic which based on domestic and foreign political changes. When Masjumi led Indonesian cabinet in 1950's, relations between Indonesia and USA became warmer. Indonesia also received foreign aids, such as Mutual Security Act of USA which caused the fall of Sukiman Cabinet in Februari 1952.<sup>25</sup> Meanwhile, decolonization and anti-imperialism rhetoric became stronger when Indonesian parliament was dominated by PNI (National Indonesian Party) under the leadership of Prime Minister Ali Sastroamidjojo. Moreover, during Ali Cabinet Indonesia successfully held Bandung Conference in 1955 which voiced anti-imperialism, encouraging the Third World countries to enter alliance either with

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<sup>24</sup> "Suara Indonesia," *Suara Indonesia*, January 9, 1965.; Sukarno Sukarno, *Mahkota Kemerdekaan Bukan Keanggotaan PBB, Tetapi Berdiri Di Atas Kaki Sendiri* (Jakarta: Departemen Penerangan RI, 1965).

<sup>25</sup> Rizal Sukma, *Islam in Indonesian Foreign Policy* (London & New York: Routledge, n.d.), 30.



USA or USSR. Accordingly, the necessities of development and decolonization were needed in the same time between 1945-1965.

Indonesian statemen in 1950's emphasized on the importance of development to "fulfill" independence era. In his speech in University of Gadjah Mada (UGM) in 1956, Mohammad Hatta said that "it is impossible if revolution works too long". According to Hatta, if revolution worked for long time, then "all of buildings are in ruin".<sup>26</sup> Accordingly, Hatta argued that Indonesia should had focused on development, not on revolution which could deteriorate many fields. Hatta warned the fall of Indonesia was caused by revolution rhetoric: "comtemplate what has been achieved in the field of education and teaching and agriculture!"<sup>27</sup>

Indonesian philosopher and writer, Sutan Takdir Alisjahbana, was one of figure that offered argument regarding the importance of development and modernization based on science and technology. Sutan Takdir argued that after independence, Indonesia encountered several difficulties because it lacked of professional officer to build the country. In *Confluence* magazine, led by William Y. Elliot and Henry Kissinger, Sutan Takdir Alisjahbana explained that Indonesia lacked of professional officers.

Many of the present difficulties are undoubtedly due to the lack of experienced and trained personnel, both in the business world and in government, and this has resulted in much uneven and indecisive action. Among a population of eighty million Indonesia has only about one thousand physicians, three hundred lawyers, eighty fully qualified engineers, and ten economists to cope with all its various problems.<sup>28</sup>

In 1950's Indonesia was in early phase of development, so that it intensified several endeavors to build economy, science and technology. In the field of science and technology, Indonesia relied on her two universities, University of Indonesia (UI) and University of Gadjah Mada (UGM). Faculty of Engineering UI (FTUI) in Bandung was the best science and technology education center in Indonesia. The school was a successor of Technische Hooze School (THS) founded by Dutch colonial administration in 1920's. In addition to FTUI, Indonesia also had Faculty of Exact and Natural Science UI (FIPIAUI) in Bandung. In 1958 FIPIA had several majors such as physical science (natural

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<sup>26</sup> Mohammad Hatta, "Revolusi Tidak Boleh Terlalu Lama," in *Pemikiran Politik Indonesia 1945-1965*, ed. Herbert Feith and Lance Castle (Jakarta: LP3ES, 1988), 82.

<sup>27</sup> Hatta, 81.

<sup>28</sup> Sutan Takdir Alisjahbana, "Tensions in Indonesian Life and Culture," *Confluence: An International Forum* 2, no. 1 (March 1953): 13-14.

science, exact science, chemistry, astronomy and meteorology), natural science (biology and geology) and pharmacy.<sup>29</sup> Meanwhile, FTUI had several majors such as civil engineering, chemical engineering, mechanical engineering, electricity engineering, mining, geodesy and physical engineering.<sup>30</sup> President Sukarno also was an alumni of civil engineering from THS Bandung during the reign of Dutch colonial administration. Although he was an engineer, Sukarno choose to be an anti-colonial activist. President Bacharuddin Jusuf Habibie (1998-1999) also one of former FTUI student in Bandung. However, he choose to continue his study in aeronautic engineering in Germany.

Beside university, Indonesia's attempt to build science and technology was by forming Indonesian Science Society (MIPI) in 1956.<sup>31</sup> The formation of MIPI was signed by ACT no.6 1956. It was known that the Act was made to national interests, "the advancement and the promotion of science should be based on the national principle which ensures freedom to engage in scientific work in the national interests of peace and mankind."<sup>32</sup> Therefore, science was considered as a foundation of technology in favor of national interests. It shows that the national interest was main factor for Indonesian development. Nevertheless, MIPI also had to cooperate with other institutions to develop science. In the Chapter II article 4 Act no.6 1956, MIPI had to "to promote cooperative and coordinative relations amongst and between governmental dan non-governmental institutes."<sup>33</sup>

In order to build science and technology education, Indonesia did not only rely on rhetoric of revolution and anti-colonialism. In 1950's Indonesia benefited from Cold War order and the rivalry between USA and USSR in science and technological innovation. As mentioned by Mohammad Hatta that "Indonesia would be one the beneficiaries" from the rivalry between Great Powers.<sup>34</sup> Historian B.H.M. Vlekke (1957) says that Indonesian's necessities to build relationship with developed countries were corellated with "a desire for greater material welfare and have created new needs on a large scale"<sup>35</sup>. Therefore, Indonesia kept building relations with other countries to develop technology.

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<sup>29</sup> "Pikiran Rakjat," *Pikiran Rakjat*, July 4, 1958.

<sup>30</sup> "Pikiran Rakjat," *Pikiran Rakjat*, February 10, 1955.

<sup>31</sup> MIPI is the origin of Indonesian Science Institution (LIPI). In 2021 LIPI was then merged with other research institutions, such as Biological Moleculer Institution (LBM) Eijkman and *Badan Percepatan dan Pembangunan Teknologi* (BPPT), to be National Innovation and Research Institution (BRIN).

<sup>32</sup> *Undang-Undang Madjelis Ilmu Pengetahuan Indonesia* (Djakarta: Madjelis Ilmu Pengetahuan Indonesia, n.d.).

<sup>33</sup> *Undang-Undang Madjelis Ilmu Pengetahuan Indonesia*.

<sup>34</sup> Hatta, "Indonesia between the Power Blocs," 483-84.

<sup>35</sup> B. H. M. Vlekke, *Indonesia in 1956: Political and Economic Aspects* (Hague and New York: Netherlands Institute of International Affairs distributed in cooperation with the Institute of Pacific Relations, 1957), 65.

Furthermore, in the middle of conflict between Indonesia and Netherland, both countries kept continuing to build relations in order to develop technology. In 1950 Minister of Education Abu Hanifah visited Netherland to look for engineers (technical experts). According to Abu Hanifah, “I come here in order to look for tehcnical experts for universities and middle schools”.<sup>36</sup> Cooperation for building technology was also executed by private foundation, such as Hatta Foundation. Executive Chair of the foundation Margono Djojohadikusumo said that the foundation had sent two Indonesian National Military (TNI) officers to be trained in Westinghouse Electric, USA.<sup>37</sup> In 1951 Indonesia also sent three envoys to learn ice meat industry in USA.<sup>38</sup> Beside USA, Indonesia also built cooperation European countries, such as Germany, to train Indonesian engineers and military. In 1952, for instance, Indonesia invited Ir. J. Kohnkamp and K. Von Ditlein to give technical training for Indonesian Navy in Surabaya, East Java.<sup>39</sup> When Nikita Khrushchev arrived in Jakarta in late February 1960, Indonesia also opened cooperation with USSR in the field of education, science institution, engineering and industry.<sup>40</sup> Accordingly, Indonesia benefited from every opportunities in Cold War order. The country tried to make benefit from the rivalry between USA and USSR and their allies in technology innovation, sending envoys, students, military officers to learn technology in those countries.

In Cold War order Great Powers applied foreign policy with security and strategic approach. Accordingly, attempts to nurture international relations by USA and USSR were more focused on their own strategic and security interests. According to realist paradigm –originated from Thucydides, Machiavelli and Hobbes –Great Powers can force small countries what they want. Meanwhile, small countries should obey what Great Powers want. In this kind of circumstance, Indonesia as a middle power in 1950’s, used strategic approach from the rivalry between USA and USSR. Indonesian statemen also choose to open opportunities to cooperate with USA, USSR and other developed countries for its national interests. Indonesia could not execute development without aid and cooperations with Great Powers because it lacked of technical experts and engineers. In 1952, for instance, Indonesia had just had her first chemical engineer named Kho Kiem Tjian from FTUI Bandung.<sup>41</sup> Moreover, Indonesia

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<sup>36</sup> “Pikiran Rakjat,” *Pikiran Rakjat*, June 23, 1950. “Pikiran Rakjat,” *Pikiran Rakjat*, June 13, 1950.

<sup>37</sup> “Pikiran Rakjat,” June 23, 1950.

<sup>38</sup> “Kedaulatan Rakjat,” *Kedaulatan Rakjat*, October 1, 1951.

<sup>39</sup> “Kedaulatan Rakjat,” *Kedaulatan Rakjat*, May 3, 1952;

<sup>40</sup> “Pikiran Rakjat,” *Pikiran Rakjat*, March 1, 1960.

<sup>41</sup> “No Title,” *Kedaulatan Rakjat*, 1952.

still depended on international organizations, such as UN, to get technical assistance.<sup>42</sup>

### **Technology and Decolonization**

Despite of development, decolonization was another discourse that Indonesian statemen always thought until 1960's. The western-educated statemen, like Mohammad Hatta, more likely commonly prioritize development, cooperation and democracy over rethoric of revolution. They were statemen who believed that development was more important than revolution. Meanwhile, nationalist group led by President Sukarno believed that “revolution is not over yet” so that they needed revolution action through rethoric of anti-imperialism, anti-colonialism, anti-capitalism and, even, anti-Westernism. In addition, communist group –through Indonesian Communist Party (PKI) –built an alliance with nationalist group under PNI in order to expand anti-capitalism and anti-Americanism.<sup>43</sup> Revolution and decolonization were actually a pradox of Indonesian policy that still depended on Western countries and international organizations.

Bandung Conference in 1955 was an attempt of nationalist group, led by PM Ali Sastroamidjojo of PNI, to support anti-colonialism and anti-imperialism policy. Through Bandung Conference, Indonesia gathered Asian African leaders to criticize Cold War order dominated by USA and USSR. The conference caused a suspicion from USA and its allies. Moreover, the conference also invited Prime Minister of China Zhou En Lai. USA at the time did not like China because communist revolution of 1949 led by Mao Zhe Dong had expelled nationalist group of Kuomintang. West by all means viewed the conference with suspicion. Nevertheless, Bandung Conference did not generate hostility among Indonesia and Western countries as those countries kept cooperating together in the field of technological training. Tension between Indonesia and USA occured since 1958 when started nationalization of Netherland companies.<sup>44</sup> In Guided Democracy era (1959-1965) Indonesia is more close to USSR, so that caused suspicion from USA. Strong anti-Western sentiment also deteriorated economic stability. Western power through The International Monetary Fund (IMF), for instance, suspended \$50 million credit for Indonesia.<sup>45</sup> In UN forum, Indonesia also criticized USA

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<sup>42</sup> “Kedaulatan Rakjat,” *Kedaulatan Rakjat*, May 6, 1952.

<sup>43</sup> Vlekke, *Indonesa in 1956: Political and Economic Aspects*, 22–25.

<sup>44</sup> Bondan Kanumoyoso, *Nasionalisasi Perusahaan Belanda Di Indonesia* (Jakarta: Pustaka Sinar Harapan, 2001), 68.

<sup>45</sup> Herbert Feith, “Presiden Soekarno, the Army and the Communists: The Triangle Changes Shape,” *Asian Suvey* 4, no. 8 (1964): 972.

and her allies which still expand imperialism in Asian African countries, such as in Kongo.

In the Guided Democracy era, President Sukarno was appointed as lifetime president (*presiden seumur hidup*). Sukarno interpreted revolution as attempt of decolonization through rhetoric of anti-imperialism and anti-colonialism. Sukarno stated that Indonesian revolution was “concurrent with social conscience of man! Social justice, independence of individual, independence of nations and so forth are embodiment of that social conscience of man!”<sup>46</sup> Nevertheless, at the time Sukarno did not forget development of technology. However, the development in the Guided Democracy era emphasized more on rhetoric of nationalism and anti-imperialism, rather than building cooperation with Western countries.

One of Sukarno’s attempt in building technology was the foundation of Bandung Institut of Technology (ITB) in 1959. On 2 March 1959 FTUI and FIPIAUI Bandung were transformed into new autonomous college named ITB. In his speech in the opening of ITB, Sukarno stated that there were obligations to “arrange people whose justice and prosperous and it cannot be achieved without technology”.<sup>47</sup> In the future, ITB would play greater role on educating Indonesian engineers who fulfilled important role in private companies and government institutions. Renowned Indonesian engineer named Soemantri Brodjonegoro stated that ITB would run “industrial affiliation and research”. So far, Indonesia, according to Soemantri, “encounters development (industrialization) problems. In building new industries, then [Indonesia] needed cooperation between pure and applied sciences.”<sup>48</sup> Through the foundation of ITB, Indonesia clearly wanted an university which could support industrialization.

From perspective of decolonization and revolution, the country was eager to establish their own industries, so that it could be independence (*mandiri*) and not depended on Western countries’s aids. On 28 January 1960, Prof. Dr. Sarwono (Head of MIPI) and Brigjen Prof. Dr. Moestopo (Dean of Faculty of Natural Science University of Padjadjaran) visited some research centers in University of Padjadjaran, Bandung. *Pikiran Rakjat* newspaper states that Pharmacy Research Center should “results several medical receipts made from plants which growth in Indonesia, so that Indonesian people health does not depend on foreign

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<sup>46</sup> Sukarno Sukarno, “Kembali Ke Rel Revolusi,” in *Pemikiran Politik Indonesia 1945-1965*, ed. Herbert Feith and Lance Castle (Jakarta: LP3ES, 1988), 91.

<sup>47</sup> “Pikiran Rakjat,” *Pikiran Rakjat*, March 3, 1959.

<sup>48</sup> “Pikiran Rakjat,” *Pikiran Rakjat*, January 30, 1959.

countries”.<sup>49</sup> Subsequently, Prof. Dr. Moestopo also mentioned that Physics Research Center was hoped to “counter explorer and sputnik.”<sup>50</sup>

Nationalism and anti-imperialism had strong relation with technology development during Guided Democracy era. The opening of ITB, attended by President Sukarno and leader of Vietnamese communist Ho Chi Minh, signed a link between technology and anti-imperialism.<sup>51</sup> As a leader of community group in Vietnam, Ho Chi Minh had certainly anti-imperialism and anti-Americanism visions. In the opening of ITB, Ho Chi Minh gave a speech, calling for “long live Bandung Spirit!”.<sup>52</sup> It signed that technology would be built in ITB should brought Bandung spirit initiated in Bandung Conference 1955. Meanwhile, Sukarno interpreted technology development through ITB would aim to create prosperous society by supplying “enough food, many clothes, and houses with radio, television and electricity.”<sup>53</sup>

The Paradox of decolonization was seen when Indonesia should built relation with USSR and USA in 1960’s. On one side, Indonesia emphasized on independence (*kemandirian*) on technology field, however on another side, Indonesia could not avoid cooperation with other countries, especially USSR. In this sense, as a developing country, Indonesia could not avoid influence of Great Powers. However, the close relation between Indonesia and USSR in 1960’s was still an embodiment of independence and active foreign policy because the relation was addressed to national interest.<sup>54</sup> Furthermore, thanks to the cooperation, USSR planned to give atom reactor to Indonesia. Dean of University Padjadjaran, Prof. Dr. Moestopo stated that University of Padjadjaran had a Nuclear Studies Center. He was even optimistic that Bandung city could be “center of scientific research in the field of atom power for peace purpose.”<sup>55</sup>

*Pikiran Rakjat* newspaper notes that USSR would give aid for approximately \$250.000 to build atom reactor. Before Nikita Khrushchev arrived in Indonesia, the country itself had Institute of Atomic Energy (*Lembaga Tenaga Atom*, LTA) in Jakarta. Director of the institution, Drs. M.A. Nasution, stated that Indonesia had had attempts to develop atom before the arrival of Khrushchev to Jakarta. Indonesia had planned to build Radioaktif Research Center in Pasar

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<sup>49</sup> “Pikiran Rakjat,” *Pikiran Rakjat*, January 28, 1960.

<sup>50</sup> “Pikiran Rakjat.”

<sup>51</sup> “No Title,” *Pikiran Rakjat*, 1959.

<sup>52</sup> “Pikiran Rakjat,” March 3, 1959.

<sup>53</sup> “Pikiran Rakjat.”

<sup>54</sup> Indonesia actually had signed agreement with USA in developing nuclear weapon for peace purpose on 21 September 1960, see: Cornejo, “When Sukarno Sought the Bomb: Indonesian Nuclear Aspirations in the Mid-1960’s,” 32.

<sup>55</sup> “Pikiran Rakjat,” *Pikiran Rakjat*, March 2, 1960.

Minggu, Jakarta. In addition, the country also had planned to establish atom reactor in Bandung, helping UGM, Yogyakarta, to develop research on atom. According to M.A. Nasution, Indonesia also had sent 23 experts on atom to learn in foreign countries, such as India, USA and USSR.<sup>56</sup> As mentioned before, the technology development during the Guided Democracy was influenced by revolution and anti-imperialism rhetorics. Sukarno considered that producing atom energy was “important for the people and the nation in finishing the national revolution, and because of that should be possessed and mastered by the nation.”<sup>57</sup>

Attempts of building technology during the Guided Democracy era had been viewed as paradox action. Decolonization and revolution initiated by Sukarno tried to place Indonesia as an independence (*mandiri*) nation, even being a part of anti-imperialism and Third World power. However, on another side, Indonesia still needed building relationship with various countries to build their technologies and industries. The lack of engineer and professional officer encouraged Indonesia to adapt with pragmatic situation. Indonesia’s sympathy of left countries opened a way to build relation with USSR in the field of atom technology. USA certainly considered that the relations as military and security threat in Southeast Asia. Moreover, Indonesia and USSR had a plan to establish atom reactor in some Indonesian cities. It would change USA’s strategies to face communism in Southeast Asia. For Indonesia, its cooperation with USSR was a part of national interest purpose. Through realist political thought, Indonesia attempted to benefit the rivalry between USA and USSR on building technology.

### **New Order and Technology Development**

In the middle of 1960’s Sukarno had to balancing a power between PKI and military.<sup>58</sup> At the time Both PKI and military had dominant power in Indonesia. The emergence of PKI and Indonesia’s close relationship with USSR and her allies had made USA was more suspicious to Indonesia. As a Great Power in Cold War order, USA did not want its political and economic interests in Southeast Asia fall to communist group. After the fall of Sukarno from his position as president in 1967, USA viewed that Indonesia had to be more closer with Western countries. As a successor of Sukarno, President Suharto (1967-1998), although still embraced independent and active foreign policy, built more close relations with Western countries. The rise of Suharto signed new era named New Order

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<sup>56</sup> “Pikiran Rakjat,” *Pikiran Rakjat*, March 9, 1960.

<sup>57</sup> “Undang-Undang No. No.31 Tahun 1964 tentang Ketentuan-Ketentuan Pokok Tenaga Atom, Presiden Republik Indonesia”, cited from Cornejo, “When Sukarno Sought the Bomb: Indonesian Nuclear Aspirations in the Mid-1960’s,” 33.

<sup>58</sup> Feith, “Presiden Soekarno, the Army and the Communists: The Triangle Changes Shape,” 969–80.

that abandoned rhetoric of anti-imperialism and anti-capitalism during the Guided Democracy era. He focused more on economic development, rather than voicing political rhetoric abroad. Suharto abandoned rhetoric of decolonization, focusing on “low profile” political gesture and economic stability. Accordingly, national interest in New Order era was defined as economic interest.<sup>59</sup>

In building strong economic stability, President Suharto was helped by technocrat and technologist group. The technologist group consisted of Indonesian engineers which were led by Bacharuddin Jusuf Habibie (1936-2019). Almost most of technology development during New Order era (1967-1998) was influenced by Habibie’s role in Suharto Cabinet. Born in Parepare, South Sulawesi, in 1936, Habibie was an Indonesian engineer who got Ph.D degree in aeronautics engineering from Technische Hochschule Aachen, Germany. Before arrived in Germany, Habibie was a student of mechanical engineering at FTUI Bandung. The emergence of Habibie was inseparable from Cold War order influencing Europe. After the fall of Second World War, Germany was divided into West Germany and East Germany. Habibie lived and studied in West Germany influenced by American liberalism.

West Germany was the rising country in post-Second World War through technology and industry development. According to Sulfikar Amir (2013), Habibie was highly impressed by development of industry in Germany. In the future, his impression of developed West Germany would influenced his view of development.<sup>60</sup> In addition, inspiration Habibie obtained from West Germany was the links between technology and nationalism. Sulfikar Amir also states that Habibie believed that “the nationalist spirit that powerfully motivated German people to regain their dignity as a sovereign nation through industrial prowess.”<sup>61</sup> In 1974 Habibie was called by President Suharto to help him on developing technology in Indonesia. Habibie’s career during New Order era was highly impressive. He initiated the emergence of Agency for the Assesement and Application Technology Indonesia (*Badan Pengkajian dan Penerapan Teknologi*, BPPT) and Nusantara Airflight Industry ( *Industri Pesawat Terbang Nusantara*, IPTN).<sup>62</sup> Suharto also appointed Habibie as a minister of research and technology. In 1998 Habibie replaced Suharto as president of Indonesia, initiating

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<sup>59</sup> Riza Sukma, “The Evolution of Indonesia’s Foreign Policy: An Indonesian View,” *Asian Survey* 35, no. 3 (1995): 312. During New Order Indonesian economic relied on agriculture, manufacturing and services, see: Wie, “Policies Affecting Indonesia’s Industrial Technology Development,” 324.

<sup>60</sup> Amir, *The Technological State in Indonesia: The Co-Constitution of High Technology and Authoritarian Politics*, 43.

<sup>61</sup> Amir, 43.

<sup>62</sup> The initial name of IPTN was Nurtanio Aircraft Industry, but the name was changed to be National Aircraft Industry.



Reformation era in modern Indonesian history. Close relation between Habibie and Suharto had influenced Habibie's career. In 1990 Habibie also founded Indonesian Association of Muslim Intellectuals ( *Ikatan Cendekiawan Muslim Indonesia*, ICMI).<sup>63</sup>

New Order government emphasized on the importance of economic stability. Therefore, technology development was prioritized to improve economic stability. Technology development, says Habibie, should be executed to create added-value (*nilai tambah*). Habibie concluded that "the core of production as economic activity is adding value to raw material, component, or anything from early material from that process."<sup>64</sup> To obtain added-value is to improve the role of technology. Accordingly, Habibie believed that "companies which can be using precisely usefully technologies to ensure products whose similiar high value with lower cost will have competitiveness than other companies."<sup>65</sup> Habibie's thought who integrates technology-based added-value into economic development known as Habibiomics. Habibiomics focuses on emphasizing the role of competitive advantage. The advantage includes added-value in the production process. Added-value is created because of technologies created by engineers. Accordingly, products produced by a country or company can be cheaper and have high quality, so that winning competition with other countries. Therefore, according to Habibiomics, technology is main factor on lowering production cost. In short, Habibiomics "rejects the excessive focus on lowering production costs through the use of cheap labor..."<sup>66</sup>.

Habibiomics school of thought was a criticism of early economic policy of New Order government which focuses on comparative advantage initiated by economist Widjojo Nitisastro and his colleagues from Faculty of Economic UI (FEUI).<sup>67</sup> They were known as "Mafia Berkeley" because they were alumni of University of California Berkeley, USA. Their thoughts were known as Widjojonomics because it was led by Widjojo Nitisastro (Head of Bappenas).

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<sup>63</sup> The rise of Habibie and ICMI were considered as the rise of Indonesian Muslim middle class, see: Robert W. Hefner, "Islam, State, and Civil Society: ICMI and the Struggle for the Indonesian Middle Class," *Indonesia* 56 (1993): 1–35.

<sup>64</sup> B.J. Habibie, *Ilmu Pengetahuan, Teknologi & Pembangunan Bangsa*, vol. 1997 (Jakarta: Badan Pengkajian dan Penerapan Teknologi, n.d.), 9.

<sup>65</sup> Habibie, 1997:10.

<sup>66</sup> Sulfikar Amir, "The Engineers versus the Economists: The Disunity of Technocracy Inn Indonesian Development," *Bulletin of Science, Technology & Society* 28, no. 4 (2008): 320. Habibie's supporters emphasized on competition, believing that technology was a key to be competitive fulfill basic needs, see: Iskandar Alisjahbana, "Polemik Koperasi, Kurikulum Dan Kebudayaan," *Kompas*, March 21, 1978; A. Hasnan Habib, "Teknologi Dan Dampaknya Pada Hubungan Luar Negeri," *Kompas*, April 9, 1987.

<sup>67</sup> Peter McCawley and Thee Kian Wie, "In Memoriam: Widjojo Nitisastro, 1927-2012," *Bulletin of Indonesian Economic Studies* 48, no. 2 (2012): 277.

According to Widjojonomics, economic advantage of a certain country can only be obtained by low cost production. The cost in Indonesia, according Widjojonomics, can be achieved by relying on abundant natural resources and cheap labor.<sup>68</sup>

In order to support technology development and industrialisation, Habibie formed two pivotal institutions which developed technology in Indonesia during New Order era namely BPPT and IPTN. As an aircraft industry, the emergence of IPTN was important turning point for modern Indonesia because IPTN was a breakthrough in the field of technology. The industry was opened officially by President Suharto on 23 August 1976.<sup>69</sup> Sulfikar Amir (2013) mentions that Habibie applied four steps of building technology in IPTN. In the first step, IPTN used existing technology to produce products based on domestic demands. In the second step, IPTN built new product using existing technology. Third step, technology development and upgraded technical system. In the last step, IPTN built capacity in basic research.<sup>70</sup> According to those steps, Habibie wanted gradually Indonesia to create original technology. Nevertheless, he realized that in order to create original technology Indonesia should conduct technology transfer from developed countries in the first step.

In the context of Cold War, technology vision of Habibie was important to avoid dependency on developed countries. However, the technology development in Indonesia did not mean that isolated Indonesia from international forum. In building technology, Indonesia still built cooperation with relatively prosperous Western countries, such as USA and West European countries. IPTN, for instance, was a result of cooperation between MBB of Germany and Construcciones Aeronauticas, S.A. (CASA) of Spain. Many Indonesian engineers in IPTN needed assistance from Western companies to build technical and administrative skills. Amir (2013) shows how IPTN opened cooperation with foreign companies, especially Western companies, such as MBB, CASA and French Aerospatiale.<sup>71</sup>

On the contrary, Indonesia avoided close relations with communist countries. There were many reasons why Indonesia choose to build relation with Western countries. One of the reason was that Indonesian government opposed

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<sup>68</sup> Amir, "The Engineers versus the Economists: The Disunity of Technocracy Inn Indonesian Development," 319–20.

<sup>69</sup> Amir, *The Technological State in Indonesia: The Co-Constitution of High Technology and Authoritarian Politics*, 101.

<sup>70</sup> Amir, 103.

<sup>71</sup> Amir, "Nationalist Rhetoric and Technological Development: The Indonesian Aircraft Industry in the New Order Regime," 65.

communist group within the country after PKI rebellion in 1965. Indonesia itself opened diplomatic relation with China only in 1990. In addition, the proximity of Indonesia and Western countries was because the West becomes more prosperous, so that New Order government benefited from it to economic development.<sup>72</sup>

One of sample of proximity between Indonesia and USA in technology project was the launch of Palapa Saltelite. In 1976 Indonesia started launching Sstelite of Palapa A1 and A2 with support from . S. National Aeronautics and Space Administration (NASA). The satellite was brought by Delta Rocket to outer space.<sup>73</sup> Subsequently, NASA also helped Indonesia to launch Palapa B2-P to outer space on 21 March 1987. The satellite was successfully launched using Delta Rocket 3920 which took off in The John F. Kennedy Space Center, Florida, USA. The launch of the satellite was preceded by official visit of USA President Ronald Reagan in May 1986.<sup>74</sup> It showed that Indonesia cooperated with Western countries during the Cold War in order to develop their technologies. In this sense, Indonesia benefited of outer space technology from USA as the result of technology rivalry with USSR. Therefore, the launch of the B2-P Satellite was also addressed for national interest. The national interest of the satellite was told by Minister of Research and Technology B.J. Habibie that the launch was “important to Indonesia, because without Communication System of Domestic Satelite (SKSD) Palapa, then the attempts to unite Indonesia under the unity of political and economy would be difficult for the government.”<sup>75</sup> Indonesia also refused the statement that the proximity between Indonesia and USA in the field of satelite technology crushed Indonesian identity as a non-alignment country.<sup>76</sup> In addition, *Kompas* journalist Ninok Leksono stated that the launch of B2-P Satellite was a blessing for Indonesia.

Communication of Palapa Satelite program is actually bringing blessing for telecommunication industry development in domestic affair. Demands for making earth station in big, middle and small level, after the operation of Palapa, opens new era for skill progress and enlargement product they make.<sup>77</sup>

Indonesia benefited from foreign aids of Western countries to improve skill of Indonesian engineers abroad. During Cold War era, foreign aid played important role in attracting countries into Great Power alliances. In realist

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<sup>72</sup> Sukma, “The Evolution of Indonesia’s Foreign Policy: An Indonesian View,” 312.

<sup>73</sup> “Sinar Harapan,” *Sinar Harapan*, May 7, 1986.

<sup>74</sup> “Kompas,” *Kompas*, March 22, 1987.

<sup>75</sup> “ANTARA,” December 10, 1986.

<sup>76</sup> “Sinar Harapan,” *Sinar Harapan*, June 26, 1986.

<sup>77</sup> Ninok Leksono, “Industri Telekomunikasi Dalam Negeri: Maju Karena Berkah Palapa,” *Kompas*, March 21, 1987.

perspective, the aid was attempt of Great Power to secure their security interests in several regions. USA aid, for instance, was addressed to repress communist influence globally.<sup>78</sup> On the contrary, USSR aid was addressed to repress influence of democracy and capitalism. In New Order era, Indonesia benefited from foreign aids of Western countries to improve quality of Indonesian engineers, training and introducing them with developed technology. The engineers studied in many Western universities, especially USA. One of Indonesian engineer who studied in USA during Cold War was Imaduddin Abdurahim. Imaduddin was a student of electrical engineering at ITB. He subsequently continued studying engineering in USA.<sup>79</sup> ITB continued its duty to create Indonesian engineer for helping Indonesian government to develop technology. The Alliance between Habibie and ITB also played important role for making national policy during New Order era.<sup>80</sup>

## **Conclusion**

Cold War order is a realist order where every Great Powers tries to secure their strategical interests. In the context of Cold War order, as a middle power country, Indonesia could not avoid national interest and rivalry of USA and USSR. Nevertheless, Indonesia could benefit from its geopolitical position in the middle of rivalry between USA and USSR. In this context, Indonesia benefited from the rivalry to develop technology for its national interest. In Guided Democracy and New Order era, Indonesia always learned from Great Powers and its alliances how to develop technology. During the Cold War, Indonesian government sent many engineers abroad to learn new technology innovation to be applied in Indonesia. In addition, it is advantage for Indonesia because it had principle of an independent and active foreign policy. Indonesia benefited from the policy to build relations with various countries without loss of its independence and sovereignty. In this article, author argues that principle of an independent and active foreign policy was an important factor on developing technology in Indonesia during Cold War. Through the principle, Indonesia could cooperate with various countries, benefiting from technology innovation of Great Powers and developed countries.

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<sup>78</sup> After the fall of USSR, many foreign aids for developing countries is decreasing. It shows that foreign aid was an instrument of Western countries to fight communism, see: Anne Boschini and Anders Olofsgard, "Foreign Aid: An Instrument for Fighting Communism?," *Journal of Development Studies* 43, no. 4 (2007): 641.

<sup>79</sup> However, in Indonesia, Imaduddin Abdurahim was known as an Islamic activist. He started his political Islam activity from Salman ITB Mosque in Bandung, West Java, see: R. Michael Feener, *Muslim Legal Thought in Modern Indonesia* (Cambridge: Cambridge University Press, 2007), 120.

<sup>80</sup> Amir, "The Engineers versus the Economists: The Disunity of Technocracy Inn Indonesian Development," 319.

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