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BRAZIL'S NUCLEAR POLICY AND ITS RISE ON INTERNATIONAL
STAGE¹POLITYKA NUKLEARNA BRAZYLI I JEJ ZNACZENIE
NA ARENIE MIĘDZYNARODOWEJ

Streszczenie: Z globalnego punktu widzenia z pewnością nie brakuje prac naukowych, profesjonalnych analiz naukowych czy artykułów dziennikarskich poświęconych Brazylii i jej programowi jądrowemu. Twierdzenia takiego nie można jednak wykorzystać przy omawianiu środkowoeuropejskiej wiedzy o programie nuklearnym Brazylii i ambicjach w zakresie bezpieczeństwa. Rozważając powyższe, niniejszy artykuł ma na celu przybliżenie aktualnego przywódcy Ameryki Południowej dla czytelników w naszym regionie i krótko przedstawić jej programowi jądrowemu, wpłynąć na kształtowanie zagranicznej polityki bezpieczeństwa. Brazylii i projekcję kraju na arenie międzynarodowej.

Słowa kluczowe: program jądrowy, energia jądrowa, reaktor jądrowy, nieprolifracja

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Abstract. From global point of view, there is certainly no shortage of academic contributions, professional scientific analyses or journalistic articles focused on Brazil and its nuclear program. However, such an assertion cannot be used when discussing Central European knowledge of Brazil's nuclear program and security ambitions. Considered all above, this article aims to bring closer the current South-American leader to readers in our region and briefly introduce them to its nuclear program, influence it has on forming Brazil's foreign security policy and projection of the country internationally.

Key words: nuclear program, nuclear energy, nuclear reactor, non-proliferation.

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The beginnings and the development of Brazilian nuclear program

The first ambitions to develop a nuclear program in Brazil can be dated to 1930s, though, first official proposal has only been put forward to the government in 1947. Brazil's nuclear identity is historically defined by two central motives: 1.) negative experience with limitations on transferring nuclear technology from abroad, which explain the effort for independence in this field; 2.) bilateral relations between Brazil and Argentina, which to a great extent determined the development and heading of both countries' nuclear programs (Kassenova, 2014)². Brazil's interest in nuclear technology development begun with works around the Manhattan Project, when supplying the United States with uranium ore till mid-1950s. Afterwards, the government complemented new policy of so-called "specific compensation" according to which supplying of strategic Brazilian raw materials (minerals) intended for nuclear technology development in other countries subjects to reciprocal transfer of technological know-how to aid developing the nuclear sector in Brazil. *"Specific compensation" policy is one of the expressions of widespread desire of part of Brazilian government officials to acquire the same nuclear technology as the world's superpowers* (Patti, 2012, s. 1)³.

On institutional level, came creation of National Scientific Council in 1951 (NSC – Conselho Nacional de Pesquisas)⁴, tasked primarily with coordination of nuclear energy development. The following years, Brazil unsuccessfully tried to obtain uranium enrichment⁵ technology from European countries. These efforts were blocked by the USA under pretenses of fears

² Relations between Brazil and Argentina in nuclear field began in the form of rivalry, which stimulated development of nuclear programs in both countries. Nowadays, mutual rivalry has been replaced by effective system of bilateral guarantees, one of the key elements of current Brazilian nuclear policy.

³ Alberto presented his first proposal of Brazilian nuclear program to the Brazilian National Security Council (Conselho de Segurança Nacional) as early as 1947 (<http://digitalarchive.wilsoncenter.document/116912>). Some of the Council members have accepted the proposal, even considered using nuclear energy as a tool for "future generations". Under pressure from the USA, implementation of the plan was deferred throughout governing term of President Eurico Gaspar Dutra until its end in 1951, when founding NSC headed by Admiral Alberto.

⁴ The Council has later been renamed to National Council for Scientific Development and Technology (Conselho Nacional de Desenvolvimento Científico e Tecnológico).

⁵ Pre-negotiated agreements with West Germany, France and Great Britain.

from nuclear weapons spreading. Complete collapse came after wide-spread political unrest in the country required the full attention be turned to domestic task from all other fields, nuclear program included. Later heading of Brazilian nuclear policy was defined by cooperation with Washington within strict lines of “Atoms for Peace” program, consequence of pro-US government, with the USA standing as only acceptable supplier of nuclear materials and technology. Despite early ambitious plans to build Brazil’s own nuclear industry, throughout 1950s – 1960s, were all nuclear-related activities limited to solely scientific purposes. By preventing its continental rival in reaching its ambitions, United States succeeded in maintaining total nuclear dominance on American continent. It is necessary to note, that in addition to adverse external conditions, the South-American leader lacked sufficient capacities and complex strategy to successfully build a nuclear industry. Poor political situation and deep civil crisis in the country also prevented statesmen from fully indulging in this field.

The turning point came at the end of 1960s, when ruling government created complex national plan for nuclear energy development, while implementing strong policy opposing Non-proliferation treaty (NPT)⁶. Country’s interest in nuclear-sector development, at this time, related to its broad spectrum-of-use possibilities, from energetics and industry, all the way to scientific purposes. World oil crisis and consequential oil price increase partially forced Brazil to look into other energy sources, one of them being the nuclear. Events on the international forum markedly supported country’s embankment on the nuclear road, while providing great argument to defend such decision for government when facing public. Another relevant factor moving Brazil further towards the nuclear path was Argentina’s own advancement in the field, paradoxically, coming from desire to technologically catch-up with its Brazilian rival. Anyhow, nuclear technology was seen by Brazilian governing elites as primarily a symbol of modernity, allowing the country to get international recognition and higher self-confidence.

⁶ The South-American giant was interested in purchasing technology to build nuclear power plants and a goal to create national nuclear industrial park with an aim to rule its own nuclear fuel cycle (long-term).

The first results came in 1971, when the agreement was reached with US-based corporation Westinghouse and United States Atomic Energy Commission (USAEC) to purchase the first nuclear power plant (Angra 1⁷) and be supplied with nuclear fuel. The USA possessed monopoly for supplying with its own nuclear fuel, made by uranium enrichment in the national laboratories in Oak Ridge. Despite this, Brazil always aimed to obtain the know-how and required technology to master the uranium enrichment technique via gradual adoption of technologies of complete nuclear fuel cycle⁸. During contract renewal negotiations, the country was seeking to purchase complete fuel cycle, including capacities for uranium enrichment. However, Brazil's absence as a signatory to Non-proliferation treaty (NPT) provided Washington with an ideal negotiating argument in an effort to express reservations to such demands. Westinghouse, therefore, refused these Brazilian requests, in accordance with the USA policy of non-proliferation, but instead offered development of further reactors under pretext of exclusivity for US fuel supply (Skidmore, 1990).

World events, in the form of oil crisis and India's first nuclear test, significantly changed international community's view on the nuclear issues. These events also led to the USA reviewing its nuclear policy. Nixon's administration embarked on strict control mode when dealing with nuclear materials intended for weapons production and related production capacities. In order to lower the economic and financial burden to the government, the White House initiated internal changes, as well, aiming to privatize uranium-enrichment sector and further on, forcing USAEC to modify supplying conditions of fuel for reactors exported abroad. This meant shifting from guarantee of fuel supply throughout the lifespan of the reactors to controlled periodical purchase of enriched uranium on set dates. In addition, as a consequence to an ongoing privatization, US sector was unable to expand its en-

⁷ Angra 1 Nuclear Power Plant with light-water reactor and 626 megawatt output was first put into operation in 1985.

⁸ President Ernesto Geisel's government (1974 – 1979) counted on country's own nuclear fuel production through purchasing double-use technology, such as uranium enrichment and fuel processing, required for plutonium production. Detail information available at: <http://digitalarchive.wilsoncenter.org/document/116915>.

richment capacities to an extent of being capable of meeting the demand; leading to creation of production cap⁹.

“These changes in the USA policy instigated other countries to become more independent and less attached to nuclear materials from the United States” (Brenner, 2009, s. 14). In Brazil’s particular case, this meant cancellation of reactor-lifespan guarantee of fuel supply for Angra 1 led to breakdown of negotiations for 10 billion dollar contract to supply for all of 12 reactors. Epithet “fuel crisis” is commonly used by numerous experts when regarding this era within international nuclear politics. In the end, however, this actually sped-up Brazil’s own nuclear and energetic plans¹⁰. It is necessary to state, that elected Brazilian government was only interested in acquiring nuclear technology for purely peaceful purposes, although, in the coming years, military-led Brazil worked on extensive, top secret, nuclear program.

Searching for alternative solutions and possibilities of cooperation in transferring technology of double-use and supply of new nuclear reactors led Brazil to negotiations with European countries. After the unsuccessful end to negotiations with France, Brazil signed an agreement on nuclear cooperation with West Germany, who committed to building 8 nuclear reactors together with nuclear fuel cycle facilities, subject to the safeguards of International Atomic Energy Agency (IAEA)¹¹. The USA, concerned with Brazil’s true intentions in nuclear sector¹² strongly opposed the agreement and

⁹ USAEC suspended any new contracts for supplies of enriched uranium to third countries and categorized the existing ones for fuel supply to 45 reactors with a clause “conditional”, given the assumption of the US being incapable to meet the demand. This also concerned two existing contracts with Brazil.

¹⁰ Brazil had long been seeking to obtain a complete nuclear fuel cycle, including capacities for uranium enrichment. “Plan 90” – introduced in 1974 by Brazilian national electricity company Eletrobrás counted with 12 nuclear power plants being built by 1990 to meet country’s growing energetic needs, in context with maintaining economic growth and an ambition to build sufficient capacities to compensate for possible future deficiencies in hydro-energetic sector.

¹¹ Currently, Brazil operates two nuclear reactors in Nuclear Power Plant Angra 2. Nuclear Power Plant Angra 3 is estimated to, according to the latest assumptions, begin operating in 2018.

¹² The USA tried to prevent the agreement with West Germany, fearing the possibility of Brazilian military regime becoming entity disseminating nuclear weapons (given the supply of sensitive technology).

tried to pressurize Bonn into repealing provisions on transfer of sensitive technology of the fuel cycle. The result of American efforts was the agreement containing West Germany's transfer of aerodynamic separation method (jet-nozzle method¹³) with Brazil agreeing to include all of its nuclear facilities under the system of international safeguards¹⁴.

Many members of Brazil's governing elite considered this to be a key step in strengthening of national sovereignty and despite the pressure from the USA refused to back down from signing the agreement with West Germany. *"Americans, our allies, behave worse than our mutual enemy, Russia. [...] Our nuclear program will continue, at least to the extent to which it stays up to us, regardless of internal and external pressure ... We are not interested in nuclear bomb, but want to be independent, able to build our own future and thereby avoid influence of any future global oil or energetic crisis"* (U. S. Embassy Cable, Brazilian ..., 1976, s. 2).

On national level, in creation of an institutional framework for nuclear sector by the government, came the founding of state-owned corporation Nuclebras in 1975¹⁵. Brazil's agreement with West Germany was considered as a highly promising and this enthusiasm was mirrored by statements from not only political and diplomatic spheres, but academia, as well. Then-Brazilian Foreign Minister, Antonio Azeredo da Silveira, commented on the concluded agreement as *"a new technological and political status of Brazil as a direct result of concluded nuclear agreement"* (Gall, 1976, s. 1). The damper came in form of restrictive politics of Washington (mainly during Jimmy Carter's administration from 1977 – 1981) and financial crisis in the country, when the South-American leader had to re-evaluate its civil nuclear program and give-up plans to build a plutonium-reprocessing facility.

¹³ Aerodynamic separation method works on similar principle as separating centrifuge, although, it's high energetic demands means high operating costs. However, at the time, the method was in early development stages and has not yet been licensed for industrial use.

¹⁴ In 1978, the U. S. Congress passed Nuclear Non-proliferation Act, which demanded international nuclear safeguards (IAEA safeguards) in full extent as one of the conditions for transfer of nuclear materials, effectively blocking any possibility of Brazil receiving American nuclear fuel.

¹⁵ Carrier diplomat, Paulo Nogueira Batista, heading many of Brazil's nuclear issues negotiations since the late 1960s, was named into Nuclebras' top management.

The main reason for Washington's negative stance on nuclear technology transfer to Brazil was Brazil's intention to sell nuclear know-how and further export of nuclear power plants to other developing countries (Schirm, 1994). Besides that, the USA feared destabilization of international system and reduction of its global dominant position, while not excluding the USA's commercial interests – their share on nuclear reactor supply amounted to as much as 90%. Strategic interest of the United States was ratification of Non-proliferation Treaty (NPT) by Brazil and other developing countries aimed at maintaining the existing balance of nuclear superpowers. Brazil saw US-efforts as *“an attempt to prevent industrial countries access to socio-economic benefits of nuclear energy and nuclear technology”* (Wrobel, 1996, s. 341). Even today, some Brazilian experts account country's difficulties at obtaining nuclear program in 1970s to the USA pressuring West Germany. *“American intervention into country's industrial and technological development hit sensitive Brazilian spot, which allowed right and left-wing nationalists to see the United States as a selfish rival instead of a partner”* (Espach and Tulchin, 2010, s. 5).

Practical results of the agreement, have compared to original ambitions been quite “restrained”. Delay in construction of Nuclear Power Plants Angra 2 and 3¹⁶ has grown to enormous proportions and has required constant budget increases. German technology of uranium enrichment via aerodynamic separation method, which at the time of purchase reached experimental levels at best, was shown to be inapplicable in real-life environment; and cascade pilot project¹⁷ in Resende was abandoned before actual uranium enrichment process even begun. The only successful project has been the construction of Angra 2 Nuclear Power Plant, which began operating in 2000.

Brazil's military nuclear program

The disappointment of Brazilian governing elites from the failure of bilateral agreement with West Germany, failure of practical use of aerody-

¹⁶ Nuclear Power Plant Angra 2 began operating as late as 2000 and Nuclear Power Plant Angra 3 is still in construction with estimated completion date set to be in 2018.

¹⁷ Centrifuge cascade – one of uranium enrichment methods by gradual (cascading) increase of enrichment level.

namic separation method for uranium enrichment, problems with nuclear fuel supply, ever-growing dependence on import of nuclear technology from abroad and consolidating more-and-more strict policy of non-proliferation by the USA led Brazil to re-orientate its nuclear ambitions to military sector and strengthening its efforts to possess independent nuclear fuel cycle. The deciding factor in introducing secret military nuclear program was the desire for international prestige, geopolitical dominance in the region, as well as fears of Argentina's progress in the field of nuclear research. *"We need to look after strategic and political advantages of every single country which has the capacity to cause a nuclear explosion. This refers specifically to countries seeking renewal of former prestige within international relations"* (Gaspari, 2004, s. 129). The secret military project was not connected to international cooperation neither included in IAEA's international safeguards system and was not influenced by U. S. and Nuclear Suppliers Group's (NSG¹⁸) restrictions.

Since the development of military nuclear program ran concurrently with the civil nuclear

program, it is often referred to as parallel. The program ran under the secret name of "Project Solimões" and was financed by the federal government and later coordinated by the Brazilian Navy. All three sections of Brazilian Armed Forces together with coordination support of National Nuclear Energy Commission (Comissão Nacional de Energia Nuclear – CNEN) and Nuclear Energy Research Institute (Instituto de Pesquisas Energéticas e Nucleares – IPEN) cooperated on the development of the program that reportedly included sections such as nuclear weapons research, underground nuclear tests and miniature reactor construction for naval nuclear propulsion development¹⁹. The Navy had the most refined concept in form of nuclear submarine program, which represented the determinant component of the complete parallel nuclear program. Brazilian Navy introduced two projects: 1.) The Cyclone (Ciclone) – development of nuclear fuel cycle (ultracentrifuge

¹⁸ Nuclear Suppliers Group (NSG) – group of nuclear fuel and/or nuclear technology producing countries.

¹⁹ See: <http://digitalarchive.wilsoncenter.org/document/116917> - the parallel military program structure.

for uranium enrichment); and 2.) The Oar (Remo) – development of naval nuclear propulsion (construction of submarine nuclear propulsion). Gradually, as many as 9 centrifuges were built and made operational²⁰ until September 1987 public declaration of President José Sarney about Brazil being capable of autonomous uranium enrichment through its own nuclear program, considered top secret till then. In 1989, the parallel program was dismantled and all of its sections were fully integrated into the civil program under the international safeguards system.

Even today, experts cannot reach consensus on whether Brazilian government or military planned for nuclear armament. Wöhlcke identifies five possible motives for Brazilian Armed Forces' efforts to obtain nuclear weapons:

- I. Demonstration of power in relation to the civil society*
- II. Symbolic demonstration of independence in relation to the US-hegemonic politics*
- III. Emphasis on entitlement to regional leadership*
- IV. Improvement of self-standing within international system to a relevant-developing-power status*
- V. Reaction to Argentina's atomic program (Wöhlcke, Brasilienals Produzent ..., 1987, s. 124).*

Majority of foreign authors claim Brazil was seeking obtaining of nuclear weapons, which is agreed by certain Brazilian experts and media, who talk about Brazil, at least, considering the construction of nuclear weapon. Formally, anyway, no political decision was ever made in relation to building a nuclear bomb (Kassenova, 2014).

²⁰ Mentioned research (São Pãolo) and industrial (National Research Centre Aramar in Iperó) facilities for uranium enrichment were capable of uranium enrichment to levels required for nuclear weapons development, though, it is assumed neither have ever produced such highly-enriched uranium.

Transformation process and the advent of democracy in context of nuclear issues

The process of democratization throughout 1980s – 1990s brought gradual implementation of civil democracy principles to Brazil. The government adopted number of measures in an effort to increase transparency of actions within military nuclear program with a view to its gradual abolition. New Constitution ordered all nuclear activities be taken strictly with the aim of peaceful purposes (Article 21). Despite the military being gradually forced to give-up any attempts at governing the country, it succeeded in maintaining significant authority and the Navy has kept its uranium enrichment and submarine nuclear propulsion programs all the way till present²¹.

During the second term of President Collor (1990 – 1992), military nuclear program was first suspended and later permanently terminated. Even though Collor had radically cut-down submarine nuclear propulsion program's budget, the program was able to survive. At the 54th UN General Assembly in New York (1990), Collor publicly declared Brazil's refusal of *"any idea of nuclear explosion tests, even with the aim of peaceful purposes"* (De Seixas Corrêa, 2013, s. 638). Thereby, he became the first President in history to refuse peaceful purposes nuclear explosions²². The biggest South-American country declared the intention to produce solely low-enriched uranium to the limit of 20% enrichment as a consequence of political decision. Following governments of Itamar Franco (1992 – 1994) and Fernando Henrique Cardoso (1995 – 2003) led to further cut-downs in military nuclear program budget, though, only ever as deep as to maintaining its functionality.

In 1995, the USA decided to abandon its restrictions on weapons export and technology sales as a result of rapid progress of democratization process in Brazil and in context of the regional development. In addition, Brazil ratified Non-proliferation Treaty (NPT) in 1997 and a year later, also, the Com-

²¹ During Fernando Collor de Melo's administration, parallel program lost its privileged financial status. Financing of Air Forces' nuclear programs (laser uranium enrichment method), as well as that of the Army (GCR reactor), was in context of new government priorities, radically reduced and later completely cancelled.

²² PNEs – peaceful nuclear explosions.

prehensive Test Ban Treaty (CTBT). By formally adhering to all relevant international control mechanisms and treaties within the nuclear sector, Brazil institutionally completed the process of building its regional superpower status.

Ratification of Non-proliferation Treaty was based on pragmatic decision by President Cardoso, which in the end, only officially confirmed Brazilian commitment to international principles of non-proliferation. In spite of this, Brazilian diplomats still considered NPT as not-fair and discriminatory, arguing it only takes into consideration nuclear capacities of original member states. Some even claimed it to transgress the sovereignty of the country (Brazil Nuclear Program, 1997). However, if Brazil wanted to maintain its chances to get a seat on UN Security Council and gain a standing as a global player, ratification of Non-proliferation Treaty was key to these efforts, while also helping the South-American giant in consolidating its profile as a responsible player within international relations²³.

Nuclear ambitions of Lula da Silva

Following Luiz Inácio Lula da Silva's election as a new President came the resurrection of Brazil's nuclear issue with an emphasis on developing nation's own submarine nuclear propulsion program. Besides that, Nuclear Power Plant Angra 2 finally begun operating (2000) and two year later, Nuclebras²⁴ had begun the construction of uranium enrichment industrial facility using Navy-developed technology²⁵. This decision was heavily influenced by country's opposing stance to signing the Additional Protocol (AP)²⁶, when many believed it necessary to protect national industrial secrets.

²³ Meaning President Cardoso stopped seeing NPT as discriminatory.

²⁴ Brazil's nuclear industry company (Nuclebras – Industrias Nucleares Brasileiras).

²⁵ In 2005, Nuclebras and Brazilian Navy constructed pressure vessel for installation of terrestrial submarine reactor prototype.

²⁶ Additional Protocol (AP) is legally binding document, which complements IAEA's international safeguards agreements. AP gives IAEA additional competencies to review and verify safeguard agreements of the country. It is intended for countries that ratified one of IAEA's three international safeguards agreements. In practice, AP allows wider access to information and nuclear facilities, thereby, providing IAEA with a more comprehensive picture of signatory countries' nuclear programs, plans, materials, etc. As a result, this helps to secure undeclared nuclear material and activity in these countries.

Politically, Lula's approval of submarine program meant "detachment" to certain degree from previous military regimes. Military dictatorship initiated projects were usually perceived negatively, therefore, support of Lula (not coming from military background) is seen as key turning point. *"When Lula came to power, the program was cleansed, with the political left displaying sympathy towards it"* (Kassenova, 2014, s. 28). During Lula's second administration, submarine program activities only strengthened. Practically, this meant robust budget increase and creation of general coordination program for nuclear submarines program development.

At the same time, bilateral agreement with France on mutual cooperation in conventional and nuclear submarines development was signed²⁷. In July 2014, President Dilma Rousseff, ceremonially opened a shipyard, that should bring around Brazil's first nuclear submarine – implementing Brazil's own technology – by 2023. Mutual project of Brazilian company Odebrecht and French DCNS has been tasked with its construction, with eventual rise to a total being as many as six. From non-proliferation's point of view, the fuel choice is a key factor for propulsion of nuclear submarines. In general, nuclear submarines can be fuelled by either low-enriched uranium (LEU²⁸) or high-enriched uranium (HEU²⁹)³⁰. Production of uranium enriched to 20% in non-nuclear countries often generates disputes, since once uranium enrichment level reaches 20%, most of the job in isotopes separation needed to reach 90% enrichment (level of uranium enrichment needed for nuclear weapons construction) is already done. All the current facts suggest Brazilian nuclear submarines will be fuelled by LEU (18 – 19%). Although, Brazilian experts stress, in principle, it is a sovereign right of the country to choose the type of fuel it uses.

²⁷ According to the agreement, both countries should build 4 diesel-electric submarines with France providing Brazil assistance in non-nuclear components development for the nuclear submarines.

²⁸ Uranium enriched up to 19,9%.

²⁹ Uranium enriched above 20%.

³⁰ For example, the USA and Great Britain use uranium enriched to more than 90%, whereas Russia relies on uranium enriched to more than 20%. France switched from HEU to LEU in its nuclear submarines, while China, reportedly, uses solely LEU.

Lula's administration brought nuclear submarine program to the forefront, making it a focal element of Brazil's nuclear ambitions. Certainly, historical parallel (1970s) can be found in Brazilian nuclear development activities. South-America's biggest country has had ambitious energetic plans in the 21st century (Brazil 2030³¹), which besides nuclear submarines construction include construction of several nuclear power plants, as well as finishing of Angra 3 Nuclear Power Plant by 2018.

The international community and Brazilian nuclear policy

Brazil's nuclear ambitions make him a relevant international player within the nuclear sphere. Throughout the last half-century, Brazilian activities in this field have developed from efforts to gaining an access to nuclear technologies, industrialization of nuclear fuel cycle, broadening of the country's nuclear program, all the way to the ambition of constructing its first nuclear submarines. Given the notable rise of the South-American giant within global order, it is important to understand country's interpretations, interactions, perceptions and reactions to key international institutions, mechanisms and instruments in fulfilling its nuclear policy. However, the fact remains, that Brazil has never been an advocate of status quo in the international nuclear politics and has considered it, mainly in context with NPT, as discriminatory and preferential, favoring certain small group of countries, while preventing others from equal access to nuclear energy use³². From Brazil's point of view, current configuration of nuclear issues is unfair and unsustainable.

The proposal of NPT by the USA and Russia, introduced to the international community in 1960s, represents by no means interests of Brazil and others (India, Argentina, etc.). According to Brazil, NPT has reflected the world order of that era, meaning the Cold War era, when two superpowers possessed mutual destruction capacities with unprecedented nuclear arsenal, ready to destroy its rival, in case of need. Even though, NPT is consid-

³¹ PNE 2030 – National Energetic Plan 2030.

³² In this case, this concerns mainly, so called, Nuclear Weapon States (NWS), who can be considered to have a "defining" standing on nuclear issues. These are: the USA, Great Britain, France, China and Russia (recognized by NPT as NWS). Other countries to have run nuclear tests and therefore can be de facto assumed to possess nuclear weapon are: India, Pakistan and North Korea. This group also includes Israel, though, it never confirmed possession of nuclear weapons (and remains unlikely to do so in coming years).

ered to be a universal treaty defining the institutional framework for non-proliferation, many countries, nowadays, openly discuss a nuclear weapons free world or of complete elimination of weapons of mass destruction. Brazil has become a relatively late signatory of NPT, only ratifying in 1998. The main argument against the treaty was it entrusting the responsibility to protect non-nuclear countries by the nuclear superpowers, which goes against the basic attributes of each state, that being an ability to defend itself. Another reason for Brazil's discomfort with the treaty was the fact of it being introduced by the two superpowers without consulting other countries, which could, according to Brazilian elites, be seen in its content, described as unbalanced in commitments for nuclear and non-nuclear countries (Rosenbaum, Cooper, 1992). *"Treaty proposal's essential deficiency was, according to Brazil, a lack of global commitment to nuclear disarmament"* (Patti, 2012, s. 70).

It comes as no surprise then, that Brazil's accession to NPT was not unanimous. The opposition insisted on non-ratification, arguing Brazil has practically already agreed to similar international commitments by signing i. e. Treaty of Tlatelolco, creation of mutual safeguards system with Argentina and IAEA; besides, the idea of purely peaceful purposes use of nuclear energy and a ban on nuclear weapons are enshrined directly in the Brazilian Constitution. Till present, many experts claim NPT to have been a mistake for Brazil, since it did not bring any further substantial or technological advantages. On the contrary, supporters of NPT claim its ratification has brought about greater access to nuclear technology for peaceful purposes and the membership showed in form of certain political advantages, too.

Ever since becoming signatory of NPT, Brazil's main ambition has been global nuclear disarmament. To reach this objective, a list of required practical measures was compiled, together with formation of an informal group of countries, the so called, New Agenda Coalition (NAC³³), whose 13 practical

³³ New Agenda Coalition (NAC) – Brazil, Egypt, Ireland, South Africa and Mexico – informal group of countries seeking international consensus and real progress in nuclear disarmament. The group does not consider NPT to be permanent and sees need to intensify continuation of nuclear disarmament process. NAC presents regular reports to the 1. Committee

steps were part of the final document of the NPT Review Conference in 2010 (2010 Review Conference ..., 2010)^{34,35}. Incapability of, mainly, the USA and China to implement concrete institutional and practical measures aimed at radical reduction of their nuclear arsenals led to minimal real progress towards disarmament. Currently, both these countries go with a claim of “we will possess nuclear weapons as long as they exist”. Some experts even argue, that *“the United States are trying to maintain its undeniable dominance in the means of warfare”* (Kassenova, 2014, s. 55).

“Brazil is not as naïve as to think nuclear weapons can be dismantled in one night ... though, we have to see the light at the end of a tunnel. Time horizon, however flexible, will significantly contribute to weakening of current unsustainable order based on granting privileges to minority, while taking them away from majority”(Statement by Ambassador ..., 2010, s. 3). Dilma Rousseff’s country profiles itself as an advocate of moral values within the topic of non-proliferation and disarmament. Brazil gave up its military nuclear program with potential for nuclear weapons development and publicly declares its stance, emphasizing on maintaining such stance in the future.

Conclusion or Quo Vadis Brazil?

Despite ambitious ideas of the South-American leader, an actual state of country’s nuclear policy is less favorable. Current turbulent period finds Brazil torn by economic problems, deep political crisis and corruption scandals of gigantic proportions. Situation from five years ago, when we were witnessing active nuclear diplomacy, broadening plans for national nuclear sources and efforts for practical implementation of nuclear submarines project, are nowadays being “sidetracked”.

of the UN for disarmament and international security. In 2013, all members of the NAC have joined the newly formed Humanitarian initiative.

³⁴ More information at http://carnegieendowment.org/files/13_steps.pdf, Final document of the 2010 NPT Review Conference:
[http://www.un.org/ga/search/view_doc.asp?symbol=NPT/CONF.2010/50%20\(VOL.I\)](http://www.un.org/ga/search/view_doc.asp?symbol=NPT/CONF.2010/50%20(VOL.I)).

³⁵ Key elements, according to Brazil, are: intensification of commitments for countries possessing nuclear weapons towards nuclear disarmament, validation of Comprehensive Test Ban Treaty (CTBT) and beginning of Fissile Material Cut-off Treaty agreement negotiations.

Police-led operation Lava Jato³⁶, originally investigating money-laundering case, gradually led to corruption indictments reaching high posts of Brazil's state-owned oil company Petrobras with connections to political elites and big constructions companies (Odebrecht³⁷)³⁸. Corruptions scandal of such proportions has "only" led to the re-opening of nation-wide discussion on the need for radical structural changes and adoption of measures for long-awaited broad spectrum challenges ahead.

Nuclear policy-wise, during Lula da Silva's reign, Brazil managed to definitively solidify its place on international scene. Not only by proclaimed ambitions to acquire own nuclear technology, build more nuclear power plants³⁹ and master country's own nuclear fuel cycle; but by active participation on relevant issues of international nuclear politics (IAEA verification and international safeguards system, Iranian nuclear program⁴⁰, etc.). Especially, Brazilian efforts in mediating the agreement with Iran did not go unnoticed by the international nuclear community and perhaps for the first time, the world seemed to truly realize South-America's regional leader's nuclear ambitions.

Brazil's nuclear submarine program is the main manifest of country's nuclear policy in the 21st century. Since 2009, more than 3,2 billion USD have

³⁶ Operation Lava Jato (The Carwash) – named after gas station, where money exchange was happening

³⁷ Odebrecht has been one of the biggest suppliers of Brazilian submarine program, while also being awarded contract to build new naval shipyard (for a forementioned nuclear submarines) in Itaguaí, ceremonially opened by President Dilma Rousseff in 2013. The arrest of company's Chief of Executive, Marcel Odebrecht, on accounts of corruption suspicions, company's future become unclear. Odebrecht is accused of bribing Petrobras to win lucrative contracts, artificial overpricing of projects and illegal pumping out of profits to politicians, who in exchange assisted company's interests.

³⁸ List of accused includes high management of Petrobras, the biggest construction companies in the country, whole count of top-level politicians reaching close to former President Lula da Silva.

³⁹ Presently in construction of Nuclear Power Plant Angra 3, estimated to begin operation in 2018.

⁴⁰ In 2010, Brazilian government, in cooperation with Turkey, mediated the agreement with Teheran. This aimed to prevent new sanctions being imposed, as well as possible military intervention against Iran, thereby, contribute to a more peaceful Near East. Reaction of the West to the agreement, however, did not have the desired effect and UN Security Council voted in favor of new sanctions.

been invested in submarine shipyard and naval base constructions. Nuclear submarines construction, promoted by Brazilian governing elites, is seen as a mark of technological advancement of Brazil. Moreover, construction of Nuclear Power Plant Angra 3 has been resumed in 2010, together with plans for further 4 to 8 new nuclear power plants being built. Even though, nuclear energy has never had a major share in nation's energetic mix, diversification of energy sources and gradual decrease of hydro-energetic dependence are key for the country.

What many considered to be a rocket rise of a developing country right to the top of international relations' hierarchical ladder is today shaken in its foundation. Foreign affairs, nuclear politics included, are pushed to the back in context of civil protests and unrests, economical stagnation, social problems and political corruption scandals. Unlike da Silva's administration, current President Rousseff is far less inclined to invest in proactive assertive foreign policy. Domestic problems have come to the centre of attention and diplomacy is simply sidetracked. It seems unlikely Brazil will address global nuclear policy issues in the near future.

At the nuclear policy level, we can assume, given budget restrictions and difficulties with Brazilian public recognition of current government's legitimacy, probability of a deceleration in nuclear submarine program realization. In addition, corruption scandal expansion to energetic sector and ongoing police investigation into Nuclear Power Plant Angra 3 suppliers will likely lead to further delays in construction finalization. In the coming 2 – 3 years, Brazil must undergo fundamental transformation of all aspects of social life, so its political and socioeconomic layout reflects demands and needs of its inhabitants as broadly as possible. Given correct implementation of required measures, positive results can be expected, which in the end, will have brought about higher transparency rate, effectiveness and institutional responsibility, transferring also into nuclear sector.

Bibliography

Brenner, J. Michael. 2009. *Nuclear Power and Non-Proliferation. The Remaking of U.S. Policy*. Cambridge : Cambridge University Press

- Centro de informações nucleares. 1977. "O programa nuclear brasileiro". Biblioteca Digital Memória da CNEN. Accessed December 14, 2015. <http://memoria.cnen.gov.br/Doc/pdf/cronologia/B0000003.pdf>
- Centro Tecnológico da Marinha em São Paulo, 2016. "Submarino Nuclear." Centro Tecnológico da Marinha em São Paulo. Accessed January 19, 2016. <https://www1.mar.mil.br/ctmsp/submarino-nuclear>
- Cirnicione, Joe. 2004. "A Brief History of the Brazilian Nuclear Program" Carnegie Endowment for International Peace. August 18, 2004. Accessed November 17, 2015. <http://carnegieendowment.org/2004/08/18/brief-history-of-brazilian-nuclear-program>
- De Seixas Corrêa, Luiz Felipe. 2013. *Brazil in the United Nations 1946 – 2011*. Brasília: Fundação Alexandre de Gusmão.
- Espach, Ralph and Tulchin Joseph. 2010. "Brazil's Rising Influence and Its Implications for Other Latin American Nations." Center for Naval Analyses, June 2010. Accessed December 14, 2015. <https://www.cna.org/sites/default/files/CNA%20Brazils%20Rise%20and%20Implications%20for%20Neighbors.pdf>.
- Gall, Norman. 1976. "Atoms for Brazil. Dangers for All". *Foreign Policy*, no. 23, vol. 3: 155-201
- Gaspari, Elio. 2004. *A Ditadura Encurralada*. São Paulo: Companhia das Letras.
- International Atomic Energy Agency. 1976. "Brazil's Nuclear Power Programme". *IAEA Bulletin*, vol 18, no. 3/4
- Kassenova, Togzhan, 2014. *Brazil's Nuclear Kaleidoscope. An Evolving Identity*. Washington: Carnegie Endowment for International Peace.
- Kassenova, Togzhan. 2015. "Turbulent Times for Brazil's Nuclear Projects" Carnegie Endowment for International Peace. October 29, 2015. Accessed February 8, 2016. <http://carnegieendowment.org/2015/10/29/turbulent-times-for-brazil-s-nuclear-projects/ikk6>
- Kidd, Steve. 2013. "Brazil – where is it going in nuclear?" *Nuclear Engineering International*, September 16, 2013. Accessed October 25, 2015. <http://www.neimagazine.com/opinion/opinionbrazil-where-is-it-going-in-nuclear/>.

- Olak A., Labuzik M., Europska Unia. Vybrane Temy. WSBiP v Ostrowiec Św. 2013.
- Nedal, K. Dani. 2011. "The US and Brazil's nuclear program" Fundação Getúlio Vargas, School of Social Sciences, Center for International Relations. June 2011. Accessed March 23, 2016.
- Patti, Carlo. 2012. "Origins and Evolution of the Brazilian Nuclear Program 1947 - 2011" Woodrow Wilson Center for International Scholars. November 15, 2012. Accessed October 17, 2015. <https://www.wilsoncenter.org/publication/origins-and-evolution-the-brazilian-nuclear-program-1947-2011>
- Rühle, Hans. 2010. "Nuclear Proliferation in Latin America: Is Brazil Developing the Bomb?" Spiegel Online International. May 7, 2010. Accessed January 19, 2016. <http://www.spiegel.de/international/world/nuclear-proliferation-in-latin-america-is-brazil-developing-the-bomb-a-693336.html>
- Skidmore, E. Thomas. 1990. *The Politics of Military Rule in Brazil, 1946-1985*. Oxford : Oxford University Press
- Squassoni, Sharon and Fite, David. 2005. "Brazil's Nuclear History." Arms Control Association. October 1, 2005. Accessed January 17, 2016. https://www.armscontrol.org/act/2005_10/Oct-Brazil-History
- Stalcup, Travis. 2012. "What is Brazil up to with its Nuclear Policy?" Georgetown Journal of International Affairs. October 10, 2012. Accessed November 13, 2016. <http://journal.georgetown.edu/what-is-brazil-up-to-with-its-nuclear-policy-by-travis-stalcup/>
- Statement by Ambassador Antonio Guerreiro, Permanent Representative of Brazil to the Conference on Disarmament, Head of the Brazilian Delegation to the I Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, May 2012, Accessed November 17, 2015. <https://unoda-web.s3-accelerate.amazonaws.com/wp-content/uploads/WMD/Nuclear/NPT2015/PrepCom2012/statements/20120502/Brazil.pdf>
- The Library of Congress Country Studies. 1997. "Brazil: A Country Study". Library of Congress. April 1997. https://cdn.loc.gov/master/frdcstdy/br/brazilcountrystu00huds0/brazilcountrystu00huds_0.pdf

Wöhlcke, Manfred. 1987. *Brasilien als Produzent und Exporteur von Rüstungsgütern*. Austin: University of Texas.

Woodrow Wilson International Center for Scholars. 2016. "US Embassy Cable, Brazilian Public Reaction to US Nuclear Policies" Woodrow Wilson International Center for Scholars, Last modified Accessed March 23, 2016. <http://digitalarchive.wilsoncenter.org/document/115212>

World Nuclear Association. 2016. "Nuclear Power in Brazil." World Nuclear Association. Last modified July 2016. Accessed July 15, 2016. <http://www.world-nuclear.org/information-library/country-profiles/countries-a-f/brazil.aspx>

Wrobel, Paulo. 1996. "Brazil and the NPT: Resistance to Change?" *Security Dialogue*, vol. 27: 337-347