Energy Diplomacy as a Form of Soft Power: The Rise and Fall of Brazil's Ethanol Diplomacy in Africa

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Introduction

Since the late 1990s, Brazil has become an important actor on the international stage. By establishing bilateral and multilateral cooperation, the Brazilian government focuses on strengthening shared values and normative commitments. Brazil attempts to gain access to the international decision-making tables through peaceful means solely, instead of using aggression and force (Stolte 2015: 77). In this way Brazil tries to achieve its main goal: become a major global power. When Lula Da Silva (2003-2010) came to power in 2003, ethanol diplomacy in Africa became part of this strategy.

Over the last 40 years Brazil successfully developed an ethanol program. As a result, Brazilian sugarcane ethanol currently provides a sustainable alternative for gasoline in transport. It is considered the ''most successful alternative fuel to date'' as its greenhouse gas (GHG) reduction is significantly higher compared to ethanol from other sources (Sperling & Gordon 2009: 95). For example, Walter *et al.* found that the sugarcane ethanol GHG emissions savings are around 75%, while the maximum emissions savings from corn, which is the primary source of the world's fuel ethanol and the primarily used in the United States, is around 35% (Walter *et al*. 2008: 47). Lula tried to replicate this successful model in African countries in order to make it a globally traded commodity and increase Brazil's influence on the continent, which in turn could contribute to its aspirations of becoming a global player. The question then arises as to:

How is Brazil's ethanol diplomacy incorporated in its foreign policy strategy in Africa in the 21st century and how successful has this strategy been to gain global influence?

To answer this question this essay firstly analyzes the concept energy diplomacy and it discusses the soft power theory to explain how and why energy diplomacy is used. Secondly, it addresses Brazil's biofuels developments over time and the main actors within the field of ethanol diplomacy. Thirdly, it discusses how Brazil employed this strategy in Africa and the effectiveness of this strategy to achieve its foreign policy goals. It examines to what extent biofuels have been implemented successfully in Africa and to what extent it contributed to Brazil's presence in Africa and making ethanol a globally traded commodity. In addition, it examines the impact of the international concerns regarding biofuels' benefits on Brazil's strategy and whether these concerns have been justified. It does so by analyzing the presumed and actual impact of biofuels on local and household level in African countries. Finally, it ends with the conclusion answering the research question.

The purpose of this analysis is to show how Brazil employed its ethanol diplomacy in Africa as a foreign policy instrument in order to achieve its goal to become a global player and to what extent

this strategy has been effective. This analysis focuses on the 21th century as ethanol diplomacy was introduced under Lula's presidency (2003-2010), and continued under President Rousseff (2011-2016). Although the policy diminished under Rousseff and is not continued under Temer (2016-present), including these presidencies illustrates why ethanol diplomacy in Africa has stagnated. This subject is scientifically relevant due to the need to combat climate change, the global significance of ethanol as an alternative to fossil fuels and the increasing concerns about its impact on African countries. In addition, there is a small amount of English literature about the Brazilian government's ethanol diplomacy in Africa and the actual impact on food security. Analyzing Portuguese speeches and policy documents contributes to the existing literature.

Chapter 1|Energy diplomacy as a form of soft power

Energy security and energy diplomacy

In order to understand how the Brazilian government is conducting ethanol diplomacy and what its motivations are to use this strategy, it is important to define what ethanol diplomacy exactly is. Ethanol diplomacy fits into the broader concept of energy diplomacy. Therefore, this chapter will explain the concept energy diplomacy and its importance to energy supplier states and energy consumer states and it defines what ethanol diplomacy is. In addition, it explains the soft/hard power theory of Joseph Nye because this theory provides an explanation of how and why energy diplomacy is used.

Although there is no consensus about the exact definition of energy diplomacy, several scholars have used Goldthau's definition (de Jesus 2013: 500; Chan *et al.* 2012: 146; Chaban & Knodt 2015: 458; Dalgaard 2012: 65). Goldthau (2010: 28) defines the concept as:

''the use of foreign policy to secure access to energy supplies abroad and to promote (mostly bilateral, that is, government to government) cooperation in the energy sector.''

According to Goldthau, energy importers use diplomacy to secure their energy supply whereas energy exporters use it to strengthen their 'access to markets or reserves' (*Ibid,* 25). Thus, in order to achieve energy security, governments cooperate and this is called energy diplomacy. Another way to secure access to energy supplies is with the use of threats, economic sanctions or force, making use of hard power (Kruse 2014: 35). However, because the Brazilian government cooperates with other countries to achieve energy security; this analysis focuses on energy diplomacy. Goldthau's definition of energy diplomacy, however, has received criticism because it links energy to the security and competiveness norm only (Chaban & Knodt 2015: 46). Chaban & Knodt state that as the energy market is changing rapidly, it is important to consider sustainability norms as well (*ibid*). The emergence of biofuels in energy diplomacy supports the argument to include these sustainability norms.

Since 2000, biofuels have gained importance in energy diplomacy and consequently several scholars used the term ethanol diplomacy to describe the transferring of agricultural and industrial technologies for the production of ethanol to developing countries, the exchange of know-how and private-sector investment, enabling these countries to enter into a competitive market (Almeida 2009:11 & Fulquet & Pelfini 2015: 124). Countries using ethanol diplomacy seek to create an international market for ethanol and want to make ethanol a globally traded commodity, which in

turn could boost its sustainable production (de Jesus 2013: 501). In order to achieve this goal, a large number of countries need to both produce and consume ethanol. Moreover, ethanol diplomacy is employed to strengthen strategic international partnerships and stimulate economic and social transformation in developing countries that have the potential to produce sustainable ethanol (de Jesus 2013: 502). In these countries, it could reduce foreign dependence on energy and generate income for their populations, which could also contribute to food security (*Ibid*).

Thus, energy diplomacy is not only used to gain access to energy supplies, it is used to develop sustainable production and use of energy as well. In achieving these goals, it focuses on cooperation instead of using threats of force. Ethanol diplomacy is a specific part of energy diplomacy and tries to achieve these goals by transferring technology and know-how for (sustainable) ethanol to developing countries. In this way ethanol can be turned into a globally traded commodity and thereby energy security will be achieved.

Hard Power versus Soft Power in Energy Diplomacy

As mentioned above, energy security can be achieved through cooperation, called energy diplomacy, or through the use of threats or force. In both ways a country uses its power to influence other countries to act in a particular way. Therefore, this paragraph discusses the concept of power and Joseph Nye's power theory, which gives an explanation of how and why energy diplomacy is used.

Power has emerged as a central concept in international relations and can be defined as 'having the ability to influence another to act in ways in which that entity would not have acted otherwise' (Wilson 2008: 114). For a long time, the power concept was mainly seen from a realist perspective (Winter 2005: 40). In realism, the ultimate outcomes or goals are protecting the state's national interest and survival by ensuring power and security. Furthermore, realism assumes that states are the dominant actors with no higher international authority above them. They act in circumstances of anarchy and in order to survive and preserve independence they rely on their own devices, with military force as their ultimate instrument (Nye 2013: 6). According to Nye, however, due to the information revolution and increasing globalization and interdependence, this realist perspective of power is changing and countries cannot achieve all their goals acting on their own anymore (*Ibid,* 5). Therefore one should not only 'think in terms of power over others' (*Ibidem*). 'One must also think in terms of power to accomplish goals which involves power with others' (*Ibidem*). In today's world, connectedness and networks have become a valuable source of power. For this reason, on many transnational issues empowering others could help countries achieving their goals (*Ibidem*). Nye divides these two types of power in hard and soft power. According to Wilson (2008:

114), hard power is the capability to coerce another entity to act in a way in which it would not have acted otherwise. Coercive diplomacy, economic sanctions and military intervention are hard power sources that are used to enforce national interests (Wilson 2008:114; Art 1996; Campbell and O'Hanlon 2006; Cooper 2004; Wagner 2005). Nye adds that hard power rests on inducements (carrots) and threats (sticks) and includes tangible factors like force and money (Nye 2008:29; 2013:7). Gray agrees with Nye that it has become more difficult to achieve goals by using hard power alone. However, he states that 'this greater difficulty does not mean that military force has lost its distinctive ability to secure some political decisions' (Gray 2011: vii). According to Gray, military power will long remain a vital instrument of policy (Gray 2011: ix).

For many countries hard power has long been the most used form of power to achieve energy security. Besides the US, several European countries secured their oil supplies by using threats, economic sanctions or force. For example, already in 1914, the British troops captured Basra (modern Iraq) to protect the Persian oil and refineries (Barker 2009: 26-27). A more recent example is the US invasion in Iraq in 2003. Oil was not the sole objective of this war; however, it was an important one (Antonia Juhasz 2013). Thus, throughout history, hard power has been used to secure access to oil supplies. However, oil security can also be achieved through cooperation instead of the use of threats and coercion. For example, Cuba got access to Venezuelan oil in return for doctors, teachers, sports trainers and military advisors (Piccone & Trinkunas 2014). In this case, energy security has been achieved making use of soft power. Nye introduced this soft power concept and described it as 'the ability of a country to structure a situation so that other countries develop preferences or define their (national) interests in ways consistent with its own' (Nye 1990: 168). Examples of these preferences or interests are; national security, energy security, sustainability, development, trade and global influence. The capacity to establish preferences is often associated with intangible assets like an attractive personality, political values and institutions and having moral authority or perceived legitimacy of policies (Nye 2008: 95). It is 'the ability to entice and attract', making 'others want what you want' (*Ibid* 95;94). Moreover, according to Gallarotti, in general soft power can derive from two sources; international- and domestic sources (Gallarotti 2011: 20). International sources include a nation's respect for international laws, norms and institutions and domestic sources include culture, social cohesion, freedom and through political institutions which have to be founded on strong principles of democracy (*Ibid,* 21). These sources contribute to a state's positive image and this attracts other states. As a result, this increases the influence of these soft power states in world politics (*Ibid,* 20). In his most recent versions of the theory, Nye emphasizes the idea of attraction as an important mechanism behind the effects he attributes to soft power (Hall 2010: 206). Soft power can thus be considered a foreign policy tool.

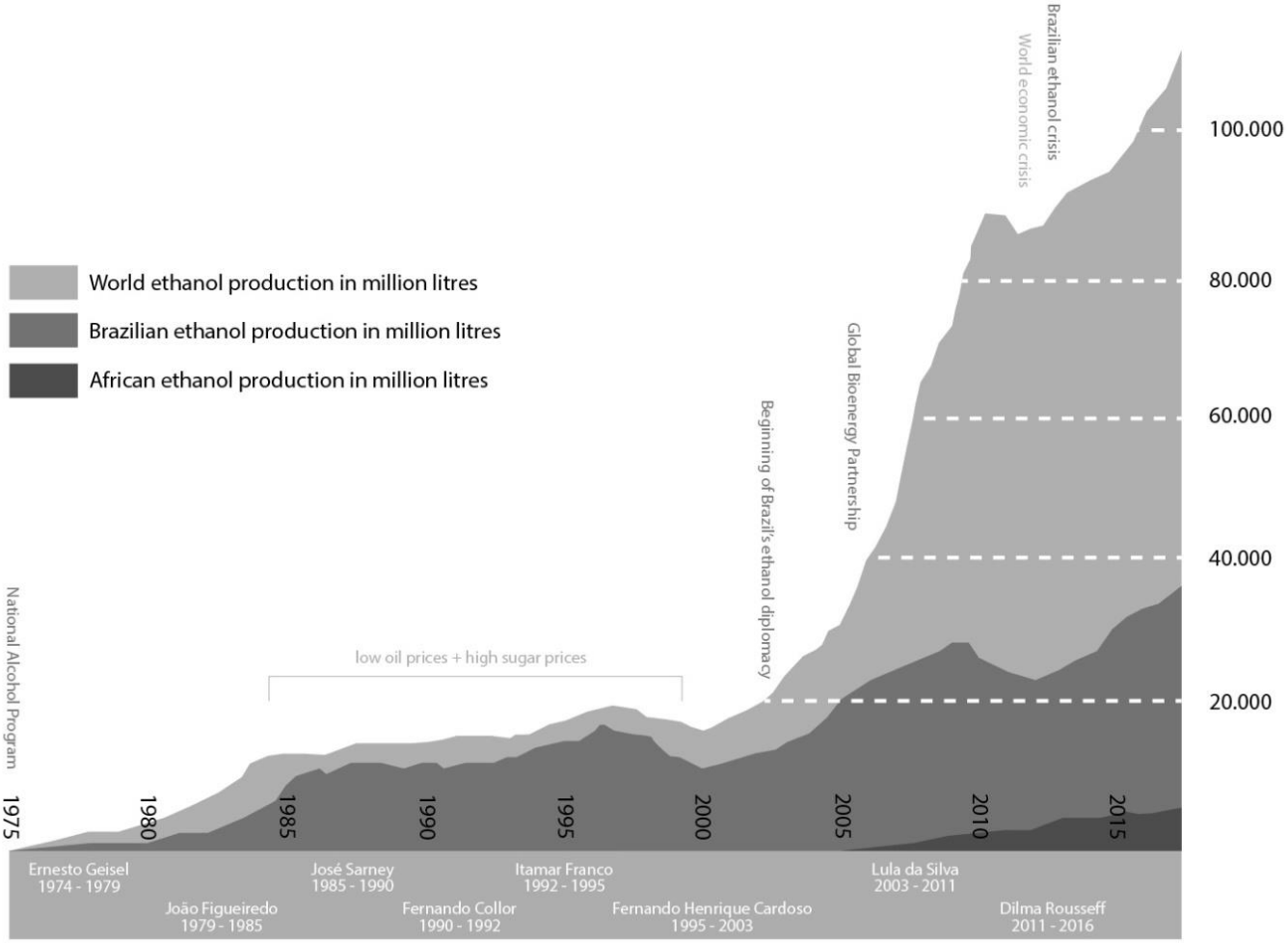
However, Mattern (2005) criticizes this idea of attraction. She argues that attraction is not 'natural' assuming that it is a socially produced 'reality'. Nye has not sufficiently explained where 'attraction' comes from. Moreover, she states that soft power relies on communication exchange and therefore involves arguments via representational force (verbal fighting) in order to persuade people. According to Mattern, this representational force has an element of coercion. Therefore, soft power is not soft but rather a prolongation of hard power (Dutta, International Affairs Forum). Besides, Hall argues that the concept of attraction itself is an unwieldy theoretical tool. He states that Nye describes attraction as a psychological tool, but Nye does not explain the psychology behind it. 'It is hence unclear exactly what generates attraction, whether or not attraction takes different forms or is transferable across categories, how attraction can be translated into support, and how permanent an asset's attraction actually is' (Hall 2010: 206). Therefore, Nye's concept of attraction 'appears at best an imprecise basis for a category of analysis' (*Ibid*).

Besides hard- and soft power, more recently Nye introduced ''smart power''. This form of power is the capability to combine soft- and hard power. (Nye 2008: 94). An important aspect of smart power is the focus on non-state actors like citizens and the media. In the 21sth century, information has become accessible for the public and the public has become an important aspect in the success of strategies. Therefore, smart strategies must have an information and communications component (Nye 2013: 6). However, due to its focus on relationships between governments, the soft power theory is particularly pertinent to this analysis. Moreover, the above description of ethanol diplomacy is primarily applied through a soft power strategy as ethanol diplomacy is based on attraction of governments rather than coercion. In addition, in existing literature several scholars already made a link between soft power and ethanol diplomacy (Fulquet & Pelfini 2014: 128; Afionis 2016: 4). For instance, Fulquet & Pelfini state that Brazil's ethanol diplomacy is part of its South-South cooperation with Africa, and this cooperation is a source of Brazilian soft power. For these reasons, this paper concentrates primarily on Nye's soft power theory.

Chapter 2 | The development of ethanol diplomacy in Brazil

Within the broader framework of energy diplomacy, President Lula (2003-2010) primarily focused on ethanol in its foreign energy policy due to its dependence on other countries for oil during that period and due to ethanol's economic and environmental benefits. This chapter provides an overview of how ethanol production developed in Brazil, in what way Lula incorporated ethanol in the government's foreign policy and how this continued under his successors. To illustrate the historical developments of the Brazilian, African and worldwide ethanol production, there is a graph is provided below.

Ethanol Production in Brazil, Africa and Worldwide



**Sources: Energy Information Administration; Bio Energy Connection; World Watch Institute; Ren21.*
**Graph created by the author*

The emergence of biofuels in Brazil: Interaction between the oil scarcity and biofuels development

Throughout history, energy resources have always played an important role in foreign policy. Around 1900 oil became the dominant energy source and consequently worldwide the oil industry grew rapidly. However, due to a periodically short supply of oil, countries started to search for alternative energy sources (Pousa *et al.* 2007: 5393). This was also the case in Brazil since it relied on the import of oil and gas for its energy supply. It was already during the 1940s when the first attempts were made to exploit energy from (vegetable/seeds-) oils and fats in internal combustion engines (*Ibidem*). However, it was only after the oil crisis of 1973 when Brazil started to push the development of biofuels. The government temporarily suspended the quota system which was introduced in 1941 to give farmers the opportunity to benefit of higher sugar prices. By suspending the quota system, the amount of sugar cane produced by large-scale companies dramatically increased. This led to the expansion of large-scale mills because those mills produced sugar more efficiently than the smaller mills (Cordonnier 2009). In 1975, the Brazilian government introduced the National Alcohol Program (ProÁlcool). This program focused on the production of sugarcane ethanol with the purpose to create sufficient supply of energy, to counterweight fluctuations in global sugar prices and to provide a solution for Brazil's surplus of sugar cane production by creating a stable local demand. (Walter & Cortez 1999; Sorda *et al.* 2010: 6981). Between 1985 and 2000 the development in ethanol stagnated due to the decline in oil prices and high international sugar prices which made it more beneficial to produce sugar again. As a consequence, consumers lost confidence in ethanol as an alternative fuel in transport and cars were converted back to gasoline (Revista Veja 1989). This changed again due to the surge in oil prices in the early 2000's, the introduction of flexi-fuel cars (vehicles with an internal combustion engine that is able to run on more than one fuel, for instance gasoline with ethanol) on the Brazilian market in 2003 and Lula's active ethanol diplomacy from 2003 onwards. These developments brought ethanol back to its initial success; ethanol production increased again and flexi-fuel cars were sold successfully. However, between 2009 and 2014 the Brazilian ethanol industry experienced yet another crisis. Causes of this crisis were; the world economic crisis between 2008-2012; high sugar prices in the world market which made it more attractive to produce sugar instead of ethanol; poor sugarcane harvests and a freeze on petrol and diesel prices imposed by the Brazilian government, making oil more attractive than ethanol (Colitt & Nielsen 2012; The Economist 2012; Bevill 2011 & Angelo 2012). By 2012, 41 ethanol plants out of approximately 400 have closed (Claudio 2012). Ethanol appeared not a priority policy for President Rousseff (2011-2016). The president accorded more attention to the discovered oilfields which is, for instance, illustrated by her decision to control inflation by freezing petrol prices and cutting taxes on petrol while not applying these measures on ethanol. Since 2015, it appears that the ethanol industry is recovering from its

crisis. UNICA, the Brazilian sugarcane industry association, announced that the sugarcane harvest of 2015-2016 is expected to increase compared to last year, 'with a higher percentage of sugarcane going to ethanol production' than the previous harvest (Voegele 2015) Moreover, Brazil's current President, Michel Temer (2016-present), has the ambition to boost ethanol production in Brazil and therefore in December 2016, Brazil's Ministry of Mines and Energy launched the RenovaBio programme. This initiative seeks to boost the market share of renewable fuels, like ethanol and biodiesel, in the national market (Renewables Now 2016).

Actors in the field of ethanol diplomacy

Brazil, the US and the EU are the three key actors in the field ethanol production. Nevertheless, it was only in the late 1990s when US and the EU became interested in the development of ethanol too as they became aware that ethanol could contribute to climate change mitigation and domestic energy security (Dauvergne & Neville 2009:1089). Between 2000 and 2006, the US and the EU introduced biofuels policies and consequently the global biofuels sector grew significantly (*Ibid,* 1090).

Brazil, as the second largest producer of ethanol and leading exporter of ethanol, has been involved in many bilateral and multilateral initiatives. In 2007, Brazil signed a Memorandum of Understanding (MoU) with world's largest ethanol producer, the United States, to strengthen their partnership in the production of ethanol (Ministério das Relações Exteriores 2007b; Schlesinger 2012: 11). The key motives of this cooperation were increasing energy security and promoting the sustainable production of ethanol with the ultimate goal to transform ethanol into a globally trade energy commodity (Ministério das Relações Exteriores 2011a: 159; Frauendorfer 2015:156). Bilaterally, they agreed to share technologies and cooperate in the research and development of advanced biofuels (Ministério das Relações Exteriores 2007b). Moreover, in 2011, President Rousseff and President Obama 'committed to enhance the bilateral and multilateral dialogue on sustainable production and use of bioenergy' (Ministério das Relações Exteriores 2011). Trilaterally, they established joint projects in several Central American countries, Senegal and Guinea-Bissau to conduct feasibility studies and establish biofuels infrastructures in these countries (Ministério das Relações Exteriores 2007b; US Dept. of State 2008). Brazil also strengthened its cooperation with the EU, the third largest producer of ethanol after the US and Brazil. In May 2007, Brazil and the EU established the 'EC-Brazil Regular Energy Policy Dialogue' to expand the exchange of knowledge and experience and thereby reinforcing their energy cooperation (European Commission 2007: 1; Frauendorfer 2015: 158). In addition, at the third EU-Brazil Summit in Stockholm in 2009, Brazil and

the EU made a plan to develop feasibility studies on the production of biofuels in Mozambique and Kenya (EEAS 2011; Schlesinger 2012: 12) It must be noted, however, that eventually the EU did not participate in these feasibility studies. Moreover, Brazil signed approximately 40 MoU's with other states from all continents and with regional organizations such as the West African Economic and Monetary Union to strengthen biofuels cooperation too (Ministério das Relações Exteriores 2011b). In 2008, Brazil also signed a MoU with India and South Africa to establish a Trilateral Task Force on Biofuels to strengthen biofuels cooperation among the IBSA countries (Decreto N◦ 6.965, 2009).

In addition, Brazil has been involved in several global initiatives. In 2006, the Global Bioenergy Partnership (GBEP) was launched with Brazil as co-chair between 2008 and 2012 (GBEP 2008; GBEP 2010; GBEP 2011). It was the result of a consultation process among the G8+5 (Brazil, China, India, Mexico and South Africa). The purpose of the GBEP is providing a mechanism to foster the development and production of biomass for energy, focusing on developing countries (GBEP website). In 2007, Brazil along with the US, China, the EU Commission, India and South Africa launched the International Biofuels Forum. The forum was created with the goal to establish an international biofuels market and make ethanol a global commodity (Estado de São Paulo 2007).

It must be noted that almost all of those initiatives were set up under Lula's presidency (2003-2010). As mentioned above, under Rousseff's presidency (2011-2016) biofuels cooperation did not have a priority. Nonetheless, she did mention international cooperation in the field of biofuels in several meetings[1] and in 2012 BNDES provided almost US$ 2 million for a technical study the viability of biofuels production in countries of the Economic and Monetary Union of West Africa (UEMOA) (Invest in Brazil 2012). However, due to the economic crisis in Brazil, Rousseff reduced Brazil's aid budget. As a result, technical cooperation assistance requests from (particularly) African countries were declined. The overall budget of The Ministry of Agriculture for cooperation was reduced more than 50%, which constrained its ability to pursue biofuels projects in Brazil that could possibly be extended to Africa (Afionis 2016:16). Under Temer's presidency South-South cooperation has not been re-established. However, under his presidency (2016-present), Brazil did launch the BioFuture Platform, a collective effort of 20 countries, to support combat climate change and nurture solutions in low carbon transport (BrazilGovNews 2016).

Thus, being the third largest producer of ethanol in the world, Brazil is an important actor in the in the field of ethanol diplomacy. During Lula's presidency, Brazil established many MoUs both with the two key players in ethanol production, the US and the EU, and with developing countries such as Africa. Moreover, Brazil has become a member of several global initiatives. Under Rousseff's presidency (2011-2016) international ethanol cooperation diminished due to the ethanol crisis,

[1]See for example, the joint statement with the US in 2011 and with Sweden in 2012 (Ministério das Relações Exteriores (2011 & 2012)

especially with developing countries. However, since 2015 the crisis seems to recover and the President Temer attempts to boost ethanol production in the national market while participating in the Biofuture Platform. It is uncertain, though, whether president Temer will increase bilateral cooperation (with developing countries) in the field of ethanol again.

Chapter 3 | Ethanol diplomacy in Africa as a foreign policy strategy to gain global influence

To understand how Brazil employs ethanol diplomacy as a foreign policy tool to achieve its main goal: to become a global player, this chapter discusses the importance of Africa to Brazil's goal. Moreover, it provides an analysis of how the Brazilian government promoted biofuels in Africa and to what extent its ethanol diplomacy in Africa has been successful in achieving its main goal.

Why promote ethanol in Africa?

Part of Lula's strategy to gain global leadership was to create an international ethanol market and become a world leader in this market. To achieve these goals, both countries consuming ethanol and countries producing ethanol were needed (Dalgaard 2012: 175; Afionis 2016: 2). However, it is only possible to replicate Brazil's sugarcane-ethanol model in countries with the same climate and where enough land is available. The African savannahs and the Brazilian cerrado have similar agro-climatic conditions and are therefore suitable to replicate Brazil's model (Dalgaard 2012: 178). Moreover, Africa has sufficient land available where biofuel production could be expanded (*ibidem*)—in contrast to, for instance, Central American and Caribbean countries (Afionis 2016: 3). These two factors make Africa important for Lula's ambitions to make ethanol a globally traded commodity.

In addition, Brazil's close cultural, historical, and economic ties with several African countries, like Mozambique and Angola, were considered to be key forces behind Brazil's ambition to strengthen relations with Africa (*Ibidem*). Lastly, ethanol diplomacy in Africa fitted within Lula's wider foreign policy strategy of South-South cooperation; supporting Africa to fulfill its potential for development. Ethanol diplomacy could contribute to this development since it has the capability to contribute energy security and social and economic development (Dalgaard 2012: 170).

How Lula promoted the production and use of ethanol in Africa

Being part of Brazil's South-South cooperation strategy, promoting the production and use of ethanol in third countries became a tool of Lula's foreign policy. In interviews and speeches Lula promoted the production and use of biofuels. For example, at the opening of the Africa-South America Summit in Nigeria in 2006 he stated that biofuels 'have enormous potential to make the true agricultural and energy revolution on our continents' (Resenha 2006: 184). He pointed out that biofuels diversify Africa's energy matrix and create a large number of jobs (*Ibidem*). Moreover, in the Folha de S. Paulo, during the G8 Summit in St Petersburg, he stated that biofuels will reduce the energy dependency on a limited amount of countries and will protect the environment by reducing GHG emissions (Folha de

S. Paulo 2006). Thus according to Lula, biofuels contribute to energy security while, at the same time, they reduce greenhouse gas emissions and provide economic and social benefits. With these words he responded to the concerns expressed over the future supply and availability of oil, the environmental effects of it, as well as the dependence on a limited amount of states for the supply of oil, while oil provides a large amount of energy worldwide (Bomberg 2006: 13; Deming 2003; Dalgaard 2012: 170). The world faced threats to energy security again and Lula had a potential solution to this problem as Brazil already overcame this threat in the 1970s with the National Alcohol Program.

Moreover, as mentioned above, Lula's ethanol diplomacy was incorporated in the government's South-South cooperation strategy. Instead of providing development aid or assistance, like in the tradition of the western countries, Brazil defined its aid as development partnerships. The guiding principles of this South-South development cooperation were horizontal cooperation, respect for national sovereignty and non-interference in domestic affairs of the partner states (Cabral and Shankland, 2013: 5; Nganje 2016: 663). In addition, in his speeches Lula emphasized that this development cooperation was based on South-South solidarity due to the close historical, cultural and ethnic ties. For example in his speech in Ghana in 2005 he said: 'Our countries share an important historical and cultural heritage. This common heritage manifests itself in the Tabom community, which brings together former slaves returning from Brazil to Ghana' (da Silva 2005). In this way Lula attempted to strengthen Brazil's relationship and cooperation with African countries. The most visible tool of Brazil's South-South cooperation was technical cooperation. Brazil's technical cooperation was designed to share its development policies and strategies with (among others) African countries and was focused on peer learning and capacity building in order to create sustainable development. Most of this cooperation focused on areas where Brazil had successful development and experience like, health, food security and agriculture (Nganje 2016: 663). Ethanol has been part of this South-South technical cooperation with which Brazil tried to enhance its relationship with African countries. Thus, being part of its broader South-South cooperation strategy, Brazil promoted biofuels in Africa by emphasizing the benefits of biofuels and the similarities between Brazil and Africa. As a result, Brazil established biofuels cooperation with many African countries and made them want what Brazil wanted; expand biofuels production. Lula thus used soft power to employ ethanol diplomacy in Africa.

How successful was Brazil's ethanol diplomacy in Africa in gaining global influence?

One of the main purposes of the Brazilian government's ethanol diplomacy, being part of its broader South-South cooperation strategy, was gaining global recognition. This paragraph examines to what extent Brazil's ethanol diplomacy has been successful in accomplishing this goal. It does so by analyzing how much Brazilian influence increased in Africa due to ethanol diplomacy and to what extent Brazilian government has been successful in making biofuels a global traded commodity. Moreover, it discusses to what extent the global debate regarding the benefits of biofuels influenced Brazil's success in gaining international recognition.

As noted above, Brazil's technical cooperation in the field of ethanol was received positively by many African countries. The potential to achieve energy security and to create rural development and jobs were the main reasons for these countries to produce ethanol (Fulquet & Pelfini 2015:122). As a consequence, during Lula's second mandate, the Brazilian government signed MoUs to foster cooperation for the production of energy crops with countries such as Senegal (2007) Ghana (2008), Angola (2010) and Mozambique (2010), as well as with regional organizations like the Economic Community of Western African States (2007) (*Ibid,* 124). This institutionalized cooperation with African countries in the biofuel sector contributed to Brazil's influence on the continent and strengthened the South-South relationship. In addition, the Brazilian government provided feasibility studies conducted by a team of researchers from the Getúlio Vargas Foundatio (a Brazilian higher education institution). These studies were provided costless to the African governments. The African governments then decided whether they wanted to implement the recommended projects. In this way, Brazil tried to attract private investment (Afionis 2016: 9). Moreover, the Brazilian Development Bank (BNDES) financed several ethanol projects, for example in Mozambique, Angola, and Sudan where Brazil had direct presence.

In Mozambique, Brazil was involved in ethanol production through Petrobras' biofuel subsidiary, Petrobras Biocombustível. In 2011, Petrobras Biocombustível, in partnership with another Brazilian biofuels production company called Guaraní, created Sena. The plant for this new company was constructed in the Marromeu region (Sofala province) in Mozambique. The plant is still producing sugar and it is responsible for the production of 25% of the sugar produced in Mozambique (Fulquet & Pelfini. 2015: 127). It must be noted though that in 2017, Tereos purchased Petrobas' 45.9% stake in Guarani, making the French company the 100% owner of Guirani (Biofuels Digest 2017). This indicates that President Temer is not continuing ethanol cooperation in Mozambique. In Angola, Odebrecht Agroindustrial owns 40% of Companhia de Bioenergiade Angola (BIOCOM), a joint venture between Odebrecht, Angolan group Darmer (40%) and the state-owned oil company Sonangol (20%). In constructing the plant, an investment of US$ 400 million was unpacked

with support by BNDES (Fulquet & Pelfini 2015: 127). In the 2015/2016 season, BIOCOM produced 24,770 tons of sugar and 10,2 million litres of ethanol (Angop 2016). In Sudan, a local company called Kenana imported Brazilian equipment and machinery and together with the Brazilian company Dedini, they built a biofuel plant (Afionis 2016: 8). In 2014 the plant produced 633,7 million litres of ethanol and according to the head of the ethanol business unit, 90% is exported to the EU (Reuters 2013). Brazillian policy-makers have portrayed Sudan as a model of sustainable ethanol production, because it is claimed that is has led to enhanced food production, job creation and rural development (*Ibid;* Afionis 2016: 8).

In short, based on the many MoUs signed to foster biofuels cooperation and the three projects in which Brazil had direct presence, it could be concluded that Brazil's ethanol diplomacy has been successful. Brazil contributed to the success of these projects, which are to date still expanding and therewith they have increased Brazil's presence in Africa. However, the overall results of Brazil's ethanol diplomacy in Africa have been meagre. Feasibility studies have not yet led to concrete results, just like many MoUs that should have led to biofuels cooperation.(Afionis 2016: 20-21). Moreover, the overall ethanol production in Africa is only 5% of the world production and therewith Brazil has not been able to make ethanol a globally traded commodity.

One of the main reasons for not achieving this goal, are the poor institutional frameworks in many African countries (Duvenage & Tupin 2012: 73). In many states, government involvement in the biofuels sector is missing and there is no proper legal framework for biofuels and sustainability in place (Jumbe & Mkondiwa 2013: 50; Fulquet & Pelfini 2015: 122). Another important reason is the world food crisis of 2007. During this crisis concerns were raised by international organizations about biofuels' benefits. These concerns turned into debates on global and regional issues such as food security, land use change, deforestation, land concentration and other relevant environmental and social impacts (Fulquet & Pelfini 2015: 122). For example, on 22 August 2007, the then Special Rapporteur on the Right to Food, Jean Ziegler, published a report in which he criticized the benefits of biofuels and emphasized their devastating impact on the situation of global food security (Ziegler 2007: 2). Ziegler also called into question the employment opportunities, referring to the slavery like conditions in Brazil (Frauendorfer 2015:148). Moreover, he had described the increasing practice of transforming food crops to biofuels as a as 'a crime against humanity' because it has created food shortages and has increased world food prices thereby leaving millions of people from poor countries hungry (Lederer 2007). He specifically mentioned Africa since food security is a significant issue on this continent. In 2008, the World Bank released the Development Report in which it claimed that biofuels caused an increase in global food prices. The US ethanol program was seen as the main contributor to the rise of maize prices in 2007 and 2008 due the US' highly increased production of corn ethanol (World Bank 2008:70). Moreover, the World Bank was not convinced that biofuels

production could deliver significant environmental benefits. The report did mention Brazil's ethanol from sugarcane as the most efficient type, having the potential to reduce gasoline emissions by 90 percent. However, it stated that this reduction could be less due to emissions generated by land conversion processes (World Bank 2008: 71; Frauendorfer 2015: 149). In 2008, Olivier de Schutter, the new UN Special Rapporteur on the Right to Food, (the successor of Jean Ziegler), gave a more nuanced perspective on biofuels than Ziegler provided (Gallas 2008): de Schutter did argue that biofuels were one of the key factors causing the global food crisis. However, he differentiated between the different sorts of biofuels. He stressed that Brazil's sugarcane ethanol could not be compared with the biofuels produced by the US or the EU because they are less environmentally damaging [due to their high GHG emissions reduction] as other types, although he cautioned that their environmental benefits were exaggerated and their impact on deforestation, use of energy and water were ignored (Frauendorfer 2015: 150).

From 2009 onwards, in the aftermath of the food crisis, many relevant international organizations in the field of bioenergy adjusted their stance regarding biofuels and increasingly stressed the potential benefits. 'IEA Bioenergy, for instance, emphasized that bioenergy could considerably contribute to energy security and the social and economic development in developing countries' (Bauen *et al.* 2009: 2; Frauendorfer 2015: 151) and the FAO suggested that 'a safe integration of food and energy production may be one of the best ways to improve national food and energy security and simultaneously reduce poverty' (FAO 2011c: iii). In 2010, in a follow-up study, the World Bank also softened its position and found that 'biofuels account for only about 1.5 per cent of the area[of land] under grains/oilseeds [. . .] [which] raises serious doubts about claims that biofuels account for a big shift in global demand' (Baffes and Haniotis 2010: 12). Thus, although many of the concerns were unfounded and organizations adjusted their stance, now claiming that biofuels could contribute to food security and energy security and therewith reduce poverty, countries were less enthusiastic about biofuels than prior to the food crisis.[2]

In African countries where Brazil had direct presence the opinions of involved actors were also mixed. In Mozambique's case there is no available information of biofuels projects in which Brazil was directly involved. However, in general, ActionAid found a sharp increase of private investment in sugarcane production while, initially, plans of the government opted for small and medium-scale production carried out primarily by family farmers (ActionAid 2008:4). Moreover, ActionAid pointed out that local NGOs expressed concerns whether these large scale private investments took into account the interests of the local communities and the impact of these investments to the preservation of the local ecosystem (*Ibid 17-18).* In Angola, on the one hand, a

[2] See for instance, the EU's announcement in in October 2012 that it will limit food based crops to 5% in transport (Lewis & Kambas 2012).

local NGO, ADRA, expressed its concerns that sugar and ethanol production requires much land and the government will use the best land for biofuels production, which will displace local farmers. As a result, sugar and ethanol production could compete with food security (Vaisman 2013: 99). In addition, in 2015, Odebrecht was convicted by a Brazilian labour court because Brazilian labourers worked on the BIOCOM plant's construction in slave-like conditions (Reuters 2015). On the other hand, BIOCOM's agribusiness manager Burgus stated that biofuels do not compete with food in sparsely populated tropical countries such as Angola and that BIOCOM did not displace local communities, instead it integrated local people and created jobs for them (Vaisman 2013: 99). For example, BIOCOM trained more than 300 technicians in industrial plant maintenance (Angop 2014). As for Brazil's project in Sudan, Hassan Hashim Erwa Sales and Marketing Corporate Director of the company stated in a presentation to UNCTAD that the project has provided food security, rural development and reduction in poverty. For example, Kenana says it has employed 4,000 people for whom the company provides free medical care (Reuters 2013). However, journalist Ulf Laessing from Reuters stated that 'with their mud-brick houses and unpaved roads, the villages neighboring the plant look as poor as the rest of Sudan. They lack running water and families can be seen filling pots from a small lake near the road from the plant to Khartoum' (Laessing 2013).

These examples show that the companies themselves point out that the projects have a positive impact on food security and rural development. In contrast, local NGOs point out the potential negative impacts of these projects. Nevertheless, they do not provide evidence of the actual impact on the households in these countries. Only Odebrecht's conviction provides some actual evidence, however, it does not provide evidence on the impact on food security or local communities. There is hardly any evidence on the actual impact because most research is conducted on macro-level. Macro-research estimates the impact of the increasing biofuels production in developed countries on international commodity prices and the expected outcome of this estimated impact on households in developing countries (Thornhill *et al. 2016: 954)*. However, more micro-level evidence is needed on biofuels' impact at the local level because existing research on the impact of biofuels on food security has been limited and the results has been inconclusive (*Ibid,* 955: Hodbod and Tomei 2013: 478; Locke and Henley 2014).

Locke and Henley found only five studies that provided sufficient information on the impact of sugarcane production projects on food security in Africa and concluded that 'studies of the impacts of sugarcane production show widely differing impacts on determinants of local communities' food security' (Locke & Henley 2014: 28). They found that while in Kenya it is questionable whether sugarcane provided income benefits and some evidence was found of lower food production, in Zambia and Malawi sugarcane farmers have generally profited from the production (Wafula Netondo et al., 2010; Locke & Henley 2014: 28). Thornhill *et al.* mainly found

positive impacts on local households in Mozambique and Tanzania. They found that biofuels production improved food security; improved income of local households involved in biofuels production and benefited the community as a whole. Moreover, relatively few land was displaced for biofuels production and for the land that was displaced, most local households stated that they received a fair compensation Thornhill *et al.* 2016: 969). However, they also found that biofuels projects in Africa often have poor economic sustainability since two of the five projects they studied closed down. These projects potentially have created greater food insecurity because people who previously worked there, lost their jobs and returned to semi-substance farming, presumably earning less than before (*Ibidem*). Overall, if executed well, the actual impact of biofuels production on local and household level appears to be positive with regard to food security and income.

In sum, although having the potential to create food security and income on local household level in Africa, until today, Brazil has not been able to replicate its ethanol model in Africa and make ethanol a globally traded commodity. Nevertheless, the Brazilian government increased its influence on the African continent because President Lula focused on cooperation and development as part of Brazil's South-South cooperation, emphasized the similarities between Brazil and Africa and promoted the benefits of biofuels. This approach was received positively by many African countries and as a result he signed many MoUs with these countries to strengthen biofuels cooperation. However, due to poor institutional frameworks for biofuels and sustainability in Africa; the ethanol crisis; the diminished international enthusiasm for food crop based biofuels, due to the mixed opinions on biofuels' benefits combined with the little conclusive evidence on the actual impact of biofuels, and other policy priorities of Lula's successors, Brazil has not been able yet to significantly increase biofuels production in Africa and make it a globally traded commodity.

Conclusion

Since the late 1990s, Brazil's influence on the global stage has increased considerably. Instead of using military means, Brazil exerted influence through peaceful means. Brazil has been using this soft power strategy by attracting other countries and forming alliances in order to enhance its position in global affairs. In 2003, ethanol diplomacy in Africa became part of Lula's soft power strategy. As one of the three key players in ethanol production, Brazil formed alliances with many countries and participated in many forums on biofuels development. Especially in Africa, Lula pursued an active foreign policy. The main goals of Brazil's ethanol diplomacy in Africa were increasing its presence on the African continent and making biofuels a globally traded commodity, which would in turn contribute to its main foreign policy goal: becoming a global player. However, to make ethanol a globally traded commodity both countries producing and consuming ethanol are needed. For this reason Africa was important for Lula's ethanol ambitions because Africa has enough land available and a suitable climate to replicate Brazil's ethanol model.

By emphasizing the shared historical and cultural ties and the benefits of biofuels based on Brazil's own experience and by focusing on peer learning and capacity building as part of its South-South cooperation, Lula signed many MOUs with African countries to strengthen biofuels cooperation. Moreover, Brazilian companies were involved in ethanol projects in Mozambique, Angola and Sudan and the BNDES financed several ethanol projects. These actions increased Brazil's presence in Africa and contributed to its aspirations to become a global player. However, in most African countries the results of Brazil's ethanol diplomacy were meager and consequently the Brazilian government has not yet been able to make ethanol a globally traded commodity. Reasons for these meagre results were; poor institutional frameworks for biofuels and sustainability in Africa, the ethanol crisis and the diminished international enthusiasm for food crop based biofuels due to the mixed opinions on biofuels' benefits combined with the little conclusive evidence on the actual impact of biofuels. As a result, after Lula's presidency ethanol diplomacy in Africa continued, but was not a priority policy and under President Temer (2016-present) there is no active foreign policy in the field of ethanol diplomacy in Africa. Further research should concentrate on the actual impact of biofuels on local and household level for projects in which Brazil is involved and on solutions for the poor institutional frameworks on biofuels in Africa. This way it could be established whether Brazilian ethanol diplomacy still has the potential to make ethanol a globally traded commodity and increase Brazil's influence on the world stage.

In short, due to the current global challenges of energy security and climate change, Brazil's experience and expertise in the field of biofuels has contributed to gaining global recognition. Making use of its soft power strategy Lula established biofuels cooperation with many African

countries and therewith Brazil's influence on the continent has increased. However, due to the uncertainties regarding the benefits of biofuels, which has resulted in diminished international interest, combined with the ethanol crisis and poor institutional frameworks, only in a few cases biofuel projects have been developed successfully. For these reasons, after Lula's presidency, biofuels cooperation in Africa has not been a priority policy. As a result, Brazil has not been able yet to make ethanol a globally traded commodity and become a global player.

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