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**NEW THREATS IN THE ENERGY SECTOR: TERRORIST ATTACKS
AGAINST ENERGY INFRASTRUCTURE AND THE CASE OF
NIGERIA**

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To my father

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Chapter 1: INTRODUCTION

The world is changing and along with this change, new threats appear in the international forefront. Energy has always been of major importance. However, more recently, energy is more and more a subject of discussion concerning the developments that are on the way. The purpose of this project is to count down the existing threats in the international landscape and relate them with the concept of energy.

In order to deal with the threats concerning the energy sector it is important to clarify what sort of risks and threats we are facing. Such threats have to do with politically imposed sanctions and embargoes, depletion of resources, or unexpected larger demand. Threats such as energy shortages that can affect both the supply and the demand and as a result both the energy exporting countries and the energy importing countries. Threats that have to do with how the energy can become the cause of conflict among countries. So how can the international relations become dangerous for the energy security? The threats that nuclear energy, nuclear weapons and renewable energy entail, will also be mentioned. The danger of the environmental change, as well as the threats of the technological changes and developments, are included too. The project will analyze the threat of terrorism and cyber terrorism, as well as the terrorist weapons and it will focus on the terrorism that has to do with the energy sector. Examples of terrorist attacks of some terrorist organizations will be mentioned. Finally, there will be a reference to Nigeria, as it is a country that bases a great part of its economy on the production of oil and gas and it is really important to see how a country like this can be affected by terrorism and how can terrorist organizations such as Boko Haram, destabilize the whole country. It is necessary to understand what is the involvement of the governments and how can they become responsible for such destabilization. We will also refer to other organizations such as MEND, that act in the Niger Delta and target pipelines or energy infrastructures in general.

More specifically, it is analyzed the concept of energy security including the security of supply and demand and consequently the security of the energy exporting countries and the energy importing countries. It is also being discussed the use of energy as a weapon, in order to accomplish political goals and satisfy the rights of the states. It is analyzed how the energy can become a cause of conflict in states or among states.

Furthermore, a part of the project is focused on the risks that nuclear energy and renewable energy entail. There are mentioned those threats, concerning the nuclear energy, that are related to its radiation effects, the nuclear power plant accidents, (some nuclear accidents will be mentioned)the environmental risks and the nuclear weapons. In addition, as far as the renewable energy is concerned, the political and economic risks, the technological and environmental dangers are also referred.

Continually, it is discussed the subject of climate change and how can the technological choices and developments affect the environment.

A big part of the project has to do with terrorism. At first, there will be an effort to define terrorism, by dividing terrorism and terror and by using the definition given by the OAU Convention on the Prevention and Combating of Terrorism. Secondly, the sources of terrorism are clarified and we will try to look into the terrorist groups, and understand the way they think and act. Thirdly, the weapons that terrorists use, will be mentioned. There will also be a reference to the cyber terrorism and the example of the virus Stuxnet will be mentioned too.

The next chapter will be devoted to the relation of terrorism with the energy security. More specifically, a survey is written down, concerning the terrorist attacks against Energy Transmission Infrastructure, in the years 1998-2007 and 2004-2008. We will also see another survey that concerns the attacks on energy infrastructure between 2010-2014.

In the following chapter, we will focus on the country of Nigeria and the Niger Delta. We will examine how terrorism in Nigeria, is related to Islam and to what extent. We will focus on the action of terrorist organizations such as Boko Haram or MEND. Boko Haram is the organization that causes the biggest trouble and instability in the country, so there will be an analysis of its foundation and an effort to understand its ideology will be also made. Afterwards, we will look more thoroughly, how Boko Haram is connected with the oil exploration in Northeast Nigeria and her relation with violent actions in Cameroon, Chad and Niger. At last, we will make a reference on the relation of Boko Haram with the Islamic State.

Moving on to the Niger Delta, we will examine the history of the Niger Delta crisis and we will see how this crisis is related to the appearance of MEND. A small reference for the Niger Delta Avengers, is also made.

Chapter 2: ENERGY AND SECURITY

2.1: Energy security

Energy has always been very important in the international forefront and the current developments, enhance this importance. Energy is one of the tools that can explain the actions of states. It is important to examine how international relations and energy interact. Not only energy has an impact on international relations but also international relations act in a way that can affect the energy business, the energy diplomacy and the energy economics in general. In order to examine these parameters we need to have an overview concerning the changes that occur, internationally. We need to examine the changes as well as the developments that happen in the energy sector, that have to do with the "fossil fuels", the "oil prices", the "nuclear energy", the "legal and normative frameworks", the "impact of the shale gas revolution", the "rise of natural gas" as well as the "economic challenges" and the "geopolitical competition". In addition to these we should also examine, what are the capabilities and what are the restraints of an economy based on the natural resources. What their politics can be?¹All these aspects have a strong correlation with the energy security and the security in general.

There may be many ways in order to define security. Security can be measured with objective criteria, so this definition of security is based on external criteria. For example security means the absence of threats and crises. On the other hand, there are subjective criteria too, which have to do with the fact that each individual, has its own perspective for the concept of security. Energy security is related to external security of energy system but it is also related to human or societal security.²

Energy is an extremely important necessity in the human's life in general, but also in the industry and transportation. It is related to the economic and social

¹Mert Bilgin, *Introduction to the issue: Energy and International Relations*, SAM, vol.22(2017) 1-3

²Bengt Johansson, A Broadened typology on energy and security, ELSEVIER, Energy 53 (2013) 199-205

development, the balance of power in the international foreground and the national, as well as international security.³

According to IEA energy security is "the uninterrupted availability of energy sources at an affordable price". We could divide the energy security into two types. The long-term energy security and the short-term energy security. The first type has to do with the investments in the energy supply in accordance with the economic developments and the environmental changes. The second type, concerns the ability an energy system has to react and to manage to cope with sudden changes that have to do with the balance between the supply and demand.⁴

The concept of energy security has to do with the availability, the affordability, the acceptability and the accessibility. These dimensions are known as the four As. Beginning with the concept of the availability, it is necessary to look at the aspects of security of supply, production, dependency and diversification, self-sufficiency and renewable energy. Secondly, the affordability has to do with the price stability, the concept of equity, the market liquidity as well as the dependency.

Thirdly, the acceptability, concerns the social satisfaction, the innovation, the investment and employment and off course the environment. Last but not least, the concept of accessibility is a very important one, as it focuses on the import stability, the trade, the political stability, the military power and the safety and reliability.⁵

The concept of energy security is different when we talk about the energy exporting countries than that of energy security, that concerns the energy importing countries. On the one hand, energy producing countries focus on the security of demand. On the other hand, energy consuming countries aim at preserving the security of supply. For the energy exporting countries it is more complicated. This happens because countries that export energy, most of the times base their economy on exports and from this perspective they have to try also to secure the capability of supplying. However, such a thing does not happen often, and as a result many exporting countries face problems concerning the security of domestic supply.⁶

³ Energy Charter Secretariat (2015), *International Energy Security: Common Concept for Energy Producing, Consuming and Transit countries*.

⁴IEA (2019), *Defining energy security*. Retrieved from: <https://www.iea.org/topics/energysecurity/whatisenergysecurity/>

⁵Jingzeheng Ren, Benjamin Sovacool, Quantifying, measuring and strategizing energy security: Determining the most meaningful dimensions and metrics. *Energy* 76(2014) 838-849

⁶ Energy Charter Secretariat (2015), *International Energy Security: Common Concept for Energy Producing, Consuming and Transit countries*.

2.2: Security of supply

Energy security has always been linked to oil supply. This means that the energy systems need to be protected from vulnerabilities such as disruptions. Disruptions can also have consequences in other fuels sources or in infrastructures.

Most of the times, the notion of security of supply is linked with the availability and the price aspect. The availability concerns the energy resources at a national and a global level as well. The security of supply in general, has to do with the energy infrastructure and off course diversity. In addition, we should make a reference to the necessity of transparency, a characteristic that the energy market must have.

We could say that all these factors, in combination with the characteristic of independency, as far as the energy supply is concerned, are the composing characteristics of a state with security of supply. But what are those threats that can destabilize this security? Energy interruptions or increases in prices could be such threats. Interruptions can become really dangerous if they are happening for a long period of time. Furthermore, it is of great importance for the security maintenance that the interruption or the price increase, will not be sudden. If such incidents occur completely out of the blue, this diminishes the effectiveness of a state to handle these changes. In addition to these, market instability can also be the result of small capacity of production, of weather incidents or a result of wars or even terrorist attacks.

IEA has developed a tool in order to measure energy security, so as to foresee the pre mentioned vulnerabilities. The IEA Model of Short-term Energy Security (MOSES), examines the risks that can appear in an energy system because of sudden physical disruptions. It also examines the resilience of that system. It examines not only the oil sector but also the infrastructures in general that have to do with the energy sector. It also focuses on the number of entry points in a country, the amount of stocks or the diversity the country has as far as its suppliers is concerned.⁷

⁷IEA (2019), Defining energy security. Retrieved from:
<https://www.iea.org/topics/energysecurity/whatisenergysecurity/>

2.3: Security of demand

The security of demand is as important as the security of supply. The stability of prices and of course open transportation are necessary. However, there is a difference between importing/consuming countries and exporting/producing countries. While the first category prefers low prices, the second category prefers prices that remain at a high level, so as to maintain the security of demand. Moreover, another threat to security of demand, could be that of climate policies, which could be related to renewable energy. Such policies would maybe have as a result, the rise on the price of the unconventional oil and thus cause an increasing rent on conventional oil.⁸

2.4: Energy importing countries

According to IEA, energy security is the "uninterrupted availability of energy sources at an affordable price". This makes the perspective of energy importing countries understood. We should observe that this particular definition does not include any environmental or social concerns.

One of the major importers is Europe. Europe aims at gaining self sufficiency and tries to have diversification. The notion of diversification is a very important one as it has to do with the fact that states that are dependent on energy imports, need to have an adequate number of suppliers in order not to suffer from shortages. Europe strongly believes that in order to achieve energy security and avoid future threats, there is a need for a competitive market.

Continuing, US is the largest energy importer and the second largest energy exporter. Recently the shale gas revolution, tends to transform US into an energy exporter. This fact consists a factor that could help US not to lose the hegemonic power it has until now. The shale gas revolution in accordance with the LNG export projects, are those facts that give US the security needed, in the energy sector.

⁸Bengt Johansson, A Broadened typology on energy and security. Energy 53 (2013) 199-205

Japan is another country, extremely dependent on imported energy. Japan is facing insecurity, concerning the supply of energy. This became more intense after the Fukushima nuclear accident in 2011. Furthermore, China is the second largest energy importer, after the US. Last but not least comes India, which is also a very important energy importer.

2.5: Energy exporting countries

The energy security as far as the exporting countries is concerned, it has to do with the security of supply, as mentioned before. However, there are views according to which, energy security for the exporting countries means that the exports are stable and have "reasonable" price, in order to achieve economic development and stability. After the collapse of the price of oil in 1986, the oil exporting countries faced difficulties concerning the revenues of the exports of oil, which were falling. This fact in combination with the decision of many importing countries to reduce their dependency on oil, led the exporting countries to invest in new facilities. Collapses of oil prices followed in 1998, 2009 and then in 2014. According to OPEC there is a strong "interrelationship between global security of petroleum supply and the security and predictability of demand".

Russia is one of the major energy exporters and suppliers of energy in Europe. Europe is based on a liberalized model and this fact, along with the limited gas demand in Europe and the Ukrainian crisis started in 2013, led Russia to have concerns about its security of demand. More specifically, the Third Energy Package, aims at achieving the third party access to gas infrastructures and at achieving adequate unbundling. Gazprom on the other hand is opposing to all these targets.

Iran and Saudi Arabia are two other energy exporting countries that want energy security of demand. Furthermore, Canada is a net exporter of oil, coal, natural gas and electricity. However, because of the shale gas revolution, the exports of Canada in US have been reduced.⁹

⁹ Energy Charter Secretariat (2015), *International Energy Security: Common Concept for Energy Producing, Consuming and Transit countries*.

2.6: The energy as a "weapon"

The term comes as a result of the nationalization of oil and gas operations. The so called "energy weapon" refers to the fact that governments can disturb energy supplies, having as an excuse political reasons. These disruptions could be a result of cuts of supply from the suppliers side or difficulties in transition caused by transit countries that control pipelines and transport corridors. The disruptions are more dangerous when supplies are low or there are no other transit means for supplying, than the pipelines that are blocked. This is something that can cause worse trouble in the future as the demand for oil and gas may rise. The states that have nationalized the resources may be those states that in the future will use this "energy weapon" more systematically.¹⁰

2.7: Energy and conflicts

The energy system, from the supply to the final use of energy, can become a cause of conflict in states or among states. The energy system is composed of the primary resources, the international energy markets, the energy infrastructure and the demand and use of energy.

As far as the primary resources is concerned, they are distributed unevenly and this makes apparent the need of states to accumulate and control the resources. Competition for the resources is a very common cause of conflict. An example could be that in Second World War, when Hitler tried to control Caucasian oil-fields, so as to empower the military of German. The control of the resources works as an indicator of power. If a state controls a great amount of resources it can exercise any kind of power. High resource rents are the result of low production cost. This is a problem linked to non-renewable resources. The local scarcity of the renewable resources, as a result of the environmental degradation, can cause conflict. This could happen because of the depletion of the conventional resources, such as fossil

¹⁰ Peter Johnston (2011), *Energy Security Threats*. Retrieved from: https://www.academia.edu/813465/Energy_Security_Threats (accessed June 30, 2019)

fuels. The renewables appear as an alternative, causing conflicts related to the appropriation of land.

Continuing, the structure of international energy markets can be a cause of conflicts among states. In this category the number of exporters, the export and financial liquidity, the price volatility as well as the transparency in the energy market, play a great role, as they "decide" if conflicts will exist.

States use energy in a way that they achieve their own security by violating many times the sovereignty of another state. In another case an actor can use energy as a way in order to achieve other political goals, as referred earlier. The energy system can be the cause of the conflict as a factor of destabilization of the society. For instance, production or exploration activities can cause environmental problems.

Even if energy resources are numerous, they are unequally distributed. The same happens with energy infrastructures that can be concentrated in a geographical territory by causing this way bottlenecks. The fact that energy has economic value as it can lead to prosperity, makes some actors want to control some vital points. This can obviously cause the reaction of other actors, causing conflicts. All these, bring in our minds the concept of sovereignty. The states can have rights in a certain territory. However, conflicts can still occur when another state questions this sovereignty and also when the borders are disputed.

Furthermore, conflicts could be the result of diverging interests. Each actor aims at influencing the international energy flows in order to gain security. Some interventions can be explained that way. An example, is that of US that intervened militarily in the oil rich Middle East, in order to have benefits and enhance its national security, by controlling the energy resources. If a state wants to control the flow of energy, it needs to have a hegemonic position. However, even if a hegemonic power exists, this can cause conflicts with the states of the periphery. The conflicts may be related to the structure of the global energy market, for instance.

It is important to make a reference to the energy systems that are used as political tools, which means that energy is used for the accomplishment of political goals. Examples of the use of energy systems as means of political conflicts, are the bottlenecks or the short-term disruptions. These can be results of reduction of flow by suppliers or interference of a third party that aims at damaging the interest of the producers. An expression of the latest is the terrorist attacks against energy systems.

In this point, we will focus on the energy system as a whole and we will examine it as a cause of conflict. The same energy system can cause a conflict or deteriorate an already existing. This is known as a "threat multiplier". The expression has to do with the fact that the conflict is not going to happen for sure but there is always the possibility. We can make a distinction of these threats caused by the energy system. We can talk about the resource curse phenomenon, where resources are abundant and as a result states, base all their economy on the exports of these resources causing lower economic growth. Secondly, the scarcity of renewable resources is the result of the environmental degradation. This has to do with the fact that all the activities, concerning the production, extraction, distribution and the use of energy, can cause environmental problems. Furthermore, the problems on the supply of energy can have instability effects. As referred earlier in this project, energy security means availability, affordability and accessibility in energy resources. If these do not exist, there is always the danger of destabilization of the economy and thus of the society. In addition to these, it is worth mentioning that energy prices are connected with food prices. When the energy and food prices started to increase at the beginning of the 21st century, the undernourished population increased.¹¹

Chapter 3: NUCLEAR ENERGY AND RENEWABLES

3.1: Nuclear energy

Recently there has been a growing need of producing more energy in order for the countries to meet their growing energy demand . However, this fact comes in combination with another fact, that of the diminishing of the CO₂ emissions. The environmental change along with the energy insecurity of importing countries led states to take the decision to reduce the use of fossil fuels, by making investments in nuclear and renewable energy.

Nuclear energy, acts in a way that both reduces the CO₂ emissions and comes across the energy needs of many countries. Nuclear power plants play a really important role in the reduction of the greenhouse gas emissions which are produced by the electricity sector in the OECD countries.

¹¹Andre Mansson (2014). *Energy conflict and war: Towards a conceptual framework*. Energy Research & Social Science ,4, 106-116

Renewables are also a way to come across the environmental degradation and contribute to the target of 2050 to reduce the greenhouse gas emissions to a rate of 50%.¹²

3.1.1: Nuclear energy and radiation effects

During the fission process, great amounts of energy are released. Nuclear reactions are capable of producing extremely high levels of radioactivity and they are also very rapid. If a great amount of radiation is absorbed by the human body, for a period of time, this can lead to illness or even death. Skin cells and cancer cells are those that are more vulnerable to radiation. The amount of risk of cancer depends on the exposure of radiation, which means it depends on the age of the person who is exposed and off course on how long the person is exposed. The studies that have been made on the survivals of Hiroshima and Nagasaki atomic bomb explosion, offer the complete data concerning the effects of radiation on human's health. Another survey concerns the Chernobyl nuclear accident.

3.1.2: Nuclear power plant accidents

These types of accidents are categorized in two accidents. The first type of accident is called a criticality accident and it occurs when the reactor produces energy that increases without control. The second accident is the loss-of-coolant accident. This accident happens when the speed of the removing of the thermal energy from the reactor is not high enough. This has as a result the melting of the fuel and thus there can be a damage in the reactor. The Three Mile Island nuclear plant accident in 1979, is an example of such kind of accident.¹³

SOME NUCLEAR ACCIDENTS

¹² Nickolas Apergis, James E. Payne, Koyo Menyah, Yemane Wolde-Ryfael, *On the causal dynamics between emissions, nuclear energy, renewable energy and economic growth*. Ecological Economics 69(2010) 2255-2260

¹³ John Tabak, PH.D., *Nuclear energy*, Infobase Publishing : New York, 2009

Fukushima Daiichi

On the 11th of March in 2011, the eastern Japan was struck by an earthquake and tsunami that caused an accident at the Fukushima Daiichi power plant. During the earthquake, the external power to the reactors was cut off. The tsunami exceeded the levels that the plant could handle and as a result, the cooling system of the plant was completely destroyed. The fuel was overheated and this led to hydrogen explosions. The result was the destruction of three of the reactor buildings. Because of the damaged reactors, radiation was released and it contaminated the area. Over 100.000 people were evacuated from their homes, even if there were no incidents of radiation sickness or deaths. However, the maintaining of the evacuation caused 1000 deaths.¹⁴¹⁵

Chernobyl

The Chernobyl accident occurred on April 26, 1986. During a test that was conducted, an unexpected surge in power resulted in an explosion and fire. During this test the safety deprecations were not adequate and there was no information about the possible risks of such test. The explosions were two. The first one was a consequence of water flashing into steam. The contents of the reactor were exposed in the air. A few seconds later, a second explosion happened, as a result of the mixing of hydrogen and other materials from the reactor with the air. The fires that were caused, resulted in updrafts which carried radioactive materials into the atmosphere. These materials were spread by the air. Almost 220.000 people evacuated their homes.¹⁶¹⁷

Three Mile Island

The Three Mile Island, is known as the most serious nuclear accident that happened in US. The accident happened in 1979. A cooling malfunction caused the melting and the destruction of the Three Mile Island 2 reactor.

¹⁴World Nuclear Assosiation (2018). Retrieved from: <https://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/fukushima-accident.aspx> (accessed June 25, 2019)

¹⁵ Union of Concerned Scientists, A brief history of nuclear accidents worldwide. Retrieved from: <https://www.ucsusa.org/nuclear-power/nuclear-power-accidents/history-nuclear-accidents> (accessed June 25, 2019)

¹⁶ Union of Concerned Scientists, A brief history of nuclear accidents worldwide. Retrieved from: <https://www.ucsusa.org/nuclear-power/nuclear-power-accidents/history-nuclear-accidents> (accessed June 25, 2019)

¹⁷JohnTabak, PH.D., *Nuclear energy*, Infobase Publishing : New York, 2009

Radioactive gas was released but fortunately there were no injuries or deaths.¹⁸¹⁹

3.1.3: The environmental threats of nuclear power

The use of nuclear power, raises questions about what the environmental consequences can be. On the one hand, nuclear energy is an alternative, in order to reduce carbon usages. As a result no carbon dioxide is released into the atmosphere and thus the global warming phenomenon is reduced. Furthermore, nuclear power can be a solution for those countries that do not have adequate amount of resources. On the other hand, the nuclear energy generation comes as a result of the exploitation of nuclear reactions. Nuclear reactions produce dangerous wastes. Moreover and after the examples of nuclear accidents, it is necessary to say that the consequences of such accidents, are also long term, which means that the next generations are affected too.

Continuing, there is another issue that occurs, that of the linkage between nuclear energy and nuclear weapons. Even if, according to nuclear industry, nuclear energy is separate from nuclear weapons, plutonium comes from nuclear reactors and nuclear weapons can be constructed by plutonium. Nowadays, all reactors can produce materials, from which nuclear weapons can be made and another example of such materials, is the uranium. The role of International Atomic Energy Agency, is to ensure that nuclear material will not be used for the construction of nuclear weapons. However, the danger still exists and it will continue to exist while states do not abandon nuclear weapons. Moreover, nuclear accidents can have after-effects, as nuclear reactors have great quantities of radioactive nuclei. If these quantities are released and spread into the air, during a nuclear accident, then the effects on human and on animals will be inevitable. That is because, these amounts will pass into the organism of humans or animals through the air or through the food chain.

Radioactive materials , in large quantities cause deaths. But also in smaller quantities, radiation is lethal. These materials are also linked to cancer or genetic mutation. The fear of nuclear accidents is enlarged, recently, because

¹⁸World Nuclear Association (2018). Retrieved from: <https://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/three-mile-island-accident.aspx> (accessed 25 June, 2019)

¹⁹ Union of Concerned Scientists, A brief history of nuclear accidents worldwide. Retrieved from: <https://www.ucsusa.org/nuclear-power/nuclear-power-accidents/history-nuclear-accidents> (accessed June 25, 2019)

of the rise of terrorism internationally. There is a fear that terrorist organizations can cause nuclear accidents.²⁰

In addition to these radiation wastes, continue to increase and as a consequence the environmental problem continues to increase. Nuclear fuel and reprocessing plants are the two most hazardous radioactive wastes. The wastes that create much concern are those that are high-level, and this means that it is urgent to find a solution.

3.1.4: Environmental effects of a power plant

To begin with, during the construction of the power plant, there will be some environmental threats. Air pollution or noise could be some of the effects. Later on, when the power plant starts operating, it will need some water for the cooling of the steam turbine condenser. So it will be necessary for the power plant to have water and it will be provided by a local source. However, the amount of water has to be returned, but it has higher temperature. This fact can have effects on the aquatic and marine environment. Finally, when the power plant comes at the end of its life there is the time for decommissioning, a procedure that can also cause environmental concerns.

3.1.5: Nuclear weapons

As a consequence of nuclear energy, comes the nuclear weapons. The views about the nuclear weapons are controversial. On the one hand, it is said that nuclear weapons can offer stability in the international system, as a consequence of the balance of fear. This means that states with nuclear weapons avoid getting involved in war with other states with nuclear weapons, simply because there is the danger of complete destruction. On the other hand, there are views, according to which, there is always the risk of nuclear wars. Threats of every kind are possible.

First of all, we will discuss what their consequences can be, in a domestic level. The rulers of the states face the possibility of becoming authoritarian, as a result of the extreme importance of controlling the nuclear weapons. Moreover, for some states that are characterized by political instability and instability in general, it becomes very difficult to control the nuclear weapons and thus very difficult to control the decision to use these weapons.

²⁰ Paul Breeze, *The environment effects of nuclear power*. Nuclear Power (2017) 85-93

Furthermore, neighboring states with nuclear weapons, may feel insecure and as a result they start getting armed, more and more. In this way the civil security is at risk. If internal security is at risk then external instability underlies.

Secondly, we will discuss about the fears that exist, which concern the nuclear weapons at a regional level. What can we say about the regional stability? In history there are examples showing that nuclear weapons have made states become cautious with one another. According to Kenneth Waltz, nuclear weapons function as a deterrent of war, as states and their governments act in a rational way. An example is the Soviet Union and the People's Republic of China, that coexist in a competitive and hostile environment. Moreover, another example is that of the cold war, during which, both the United States and the Soviet Union, were deterring one another. However, history has also taught us that states cannot resist being hostile with one another, when issues of sovereignty and national interest show up. Even if it is difficult to deal with nuclear wars, we have to observe that it may be possible to have use of nuclear weapons. Weaker states, states that are overwhelmed by the feeling of retaliation is only one reason that states could use nuclear weapons. In general, when it comes for the national interests of the states, then everything is possible to happen.

In this point, we have to make a reference to the view, opposite to that of Waltz, according to which, the nuclear weapons can become destructive. Contrary to Waltz view, there exist questions such as why we should take as a fact that states act rationally? or is it possible to "develop survivable nuclear forces to maintain stable deterrence?", " what is the likely influence of the structures and biases on military organizations of the prevention of accidental and unauthorized uses of nuclear weapons in new proliferating states?" These questions come from the organizational theory of Scott Sagan, as an alternative to the Rational deterrence theory of Kenneth Waltz.²¹

3.2: Renewable energy

When we talk about renewable energy, we mean the biomass, the hydropower or wind power. The renewable sources that are used for the production of electricity interact with fossil fuel technologies and nuclear power. In the electricity production, the hydro power plays a dominant role. However, bioenergy, wind power and solar power contribute too. Renewable

²¹Scott D. Sagan, Kenneth N. Waltz (1995), The spread of nuclear weapons: A debate, p. 3-87

energy, appears as an alternative, in order to mitigate the GHG emissions from carbon. As far as the future is concerned, it is expected that renewable technologies such as solar power installed in buildings, that are small-scaled, will expand while large-scaled centralized wind or solar power plants, are expected to be developed for economic reasons.

3.2.1: Renewable energy and economic and political risks

One characteristic of renewable sources, is that they are not centralized and that they are available in all countries. This is an advantage of renewables because states cannot use them as a means of pressure, as for example Russia does with natural gas. Furthermore, conflicts among countries may be diminished, as countries will become more independent as the renewable sources are not centralized. Some analysts, have focused on risks that EU could possibly have, because of the new interdependencies, which have to do with the imports of renewable electricity from North Africa. The result is that EU is vulnerable to political action from the countries-suppliers. Moreover, according to other analysts, the vulnerability of power plants to attacks, depends on their technology.

In addition, there is another risk concerning tensions that are the result of the increasing use of the renewable energy. We should also make a reference to the results of the increasing production of biomass that have to do with the reduction of the land available for food production, something that can put in danger the food security. Food prices could increase if demand for bioenergy will also increase. This fact can lead to tension among different groups, as many groups, land owners for example, will be benefited, while groups that belong to consumers, will lose. Taking the previous into consideration, we should say that the food security is in danger.

Last but not least, another source of conflict, is the increasing demand for scarce materials, such as tellurium, ruthenium or indium, lithium and platinum. These materials, are concentrated to certain countries, and this can become a reason for conflict.

3.2.2: Renewable energy and technological risk

The renewable source that we can refer as a reason for technological risk is the hydropower and that is because the safety of dams is a major issue.

Dams include large amounts of energy and the consequences will be extremely severe if these dams are damaged. This fact, in combination with the possibility of hostile attacks, make hydropower a risky solution.

3.2.3: Renewable energy and environmental risks

Even if renewable energy does not affect the environment that much, as the fossil fuels do, renewable energy has its consequences too. An example is bioenergy. If bioenergy is produced in wrong places and with wrong methods, this can lead to problems. Other effects can also occur, if the areas for producing food transform into areas for producing energy. Negative effects of biomass have to do with the fact that the traditional use of biomass, is related to air pollution. Another problem is related to the fact that many bioenergy production systems are based on irrigation. This means that the water resources can have effects. As far as the biodiversity is concerned, it has to do with how biomass is exploited and with what methodologies. Finally, we have to say that, as biomass requires a lot of water, it is necessary to focus on water conservation and that's because water resources are scarce.²²

Chapter 4: Climate change

Climate change is strongly correlated with the energy security. Refugees that seek asylum from ecological disasters, is one aspect of the effects of climate change on energy security. Furthermore, air pollution can have an impact on human and ecological health. Air pollution is a cause of a lot of health problems, or even deaths. In addition, another issue concerning environmental problems, has to do with the water availability and quality. There is a need not only to have available water, but it is also necessary that the water is safe in order to drink it. Another issue related to water availability is that of electricity. Hydro, fossil and nuclear power plants, need the supply of water. As a result, an inadequate amount of water could lead to problems on electricity, in many regions. Moreover, changes in land-use can also become a threat to energy security. Deforestation, for instance, can influence the social stability, destroy the biodiversity, or have an impact on the nature reserves.

²²Bengt Johansson, *Security aspects of future renewable energy systems - A short overview*. Energy 61 (2013) 598-605

Generally, climate change is related to damages of power plants, destroying of crops or disruptions of imported energy. However, it is also related to food security, health problems or migration.

As far as the air pollution is concerned, according to the International Energy Agency(IEA), many Asian cities such as Manila or Bangkok, are victims of the rapid industrialization, use of coal or excessive use of vehicles, that are causes of air pollution. According to estimations of the World Health Organization, 517,700 people in Asia die, due to air pollution.

Continuing with the water, we have to say, as previously referred, that water has to be adequate and safe. According to United Nations, water consumption comes in a large degree from agriculture or from nuclear power, hydropower or thermal power. The energy sector not only consumes water but also contaminates it. This has effects on households or enterprises, farmers and off course on fish and on marine organisms generally. Problems in water supply and in water quality, cause 1,7 million deaths in a year. Added to these, global warming can cause the rise of the level of the sea.

In this point, we have to make a reference to the land-use change. Climate change along with air pollution and water contamination can have effects on energy security and on land-use change. Land can be affected from the energy production. For example, the conversion of a forest into a place in order to locate energy crops.

How energy technology options affect the environment?

To begin with, energy efficiency, in recent years, has to do with the transition from conventional power plants, such as coal power plants, to unconventional ones, such as lowering thermostats or combined heat and power units. However, new unconventional technologies can have also environmental impacts.

Moreover, nuclear power has impacts on the environmental change, by contributing to air or water pollution and by affecting the land use. Furthermore, shale gas, has made its appearance recently, as an unconventional natural gas that is extracted from gas shales, for example from porous rocks. However, shale gas has many environmental impacts. It can affect the air, the water and the land use too. Continuing with the conventional coal, its extraction can cause serious problems to ecosystems and pollute water. Clean coal is also a polluter to the environment and a contributor to climate change.

Moving one to oil and natural gas, its exploration, drilling and refinement, can cause serious environmental risks. In addition, as far as hydroelectricity is concerned, it has serious effects on water. It also affects climate change or air pollution but it does not have that severe effects on them. Wind energy, has the more serious effects on birds. Wind turbines for instance, can become a danger for birds. Lastly, solar photovoltaics, geothermal, or biomass, pose threats to the environment.²³

Chapter 5: TERRORISM

5.1: Terrorism as a threat

Terrorism has to be seen as a form of violence. The attacks are targeted and aim at terrorizing. Most of the times the reason is political. By these attacks, terrorists intend to undermine the rival. The rival is always a group or state with different ideology. The complexity of the notion of terrorism as well as the different types of terrorism makes it really difficult to find one and only definition. In order to define it we have to take into consideration the incentives of the terrorists, their targets and the means they use in order to cause intimidation effects. All these, apparently differ from case to case.²⁴

The effects, terrorism intends to have, are psychological. This means that the intimidation effects are not restricted in the group that is under the terrorist attack. The feeling of terror is expected to expand to many other groups. So the purpose is to provoke a general feeling of terror. According to US law, terrorism is a "premeditated, politically motivated violence perpetrated against noncombatant targets by subnational groups or clandestine agents" (US Code, 22, par. 2656f(d))²⁵.

²³Benjamin Sovacool, *Environmental issues, climate change, and energy security in developing Asia*, ADB, 2014

²⁴Stephen Vertigans, *Terrorism*. International Encyclopedia of the Social & Behavioral Sciences(2015) vol. 24 p. 237-243

²⁵Barry S. Levy, Victor W. Sider, *Terrorism*. International Encyclopedia of public health (2017) vol. 7 p. 152-157

5.2: Defining terrorism

There is a distinction between terror and terrorism. "The use of bombs or hand grenade itself is terror, but terrorism goes beyond that." (Olu Awofeso, Kingsley Ogunne, 2017). We have to observe that terrorism can be a very controversial issue. According to Conte (2010), some examples make the controversy of the term apparent. For instance, Yassir Arafat and Nelson Mandella were both awarded the Noble Peace Prize. On the contrary, United States were referring to them as terrorists and they were both included in the list of most wanted terrorists. Another example is that of Osama Bin Laden. Him and his comrades were characterized by the United States as freedom fighters, during the 1980s. However, this positive opinion does not exist anymore in US. Furthermore, we should not ignore the case of Hezbollah. Hezbollah was always characterized as a terrorist organization by the US. However, the EU did not have the same opinion. Eventually in 2013 Hezbollah was officially a terrorist organization.

The term terrorism gained the meaning we all have now in our minds, when George Bush characterized the attacks of 11th of September 2001 in America, as terrorist attacks.

In this point it would be useful to see some definitions of terrorism. According to Peter Chalk terrorism is "the systematic use of illegitimate violence that is employed by sub-state actors as a means of achieving specific political objectives. (Chalk ,1999:151). Furthermore, Schmid and Jongman (1988:28), define terrorism " an enxiety-inspiring method of repeated violent action, employed by (semi-)clandestine individual, group or state actors, for idiosyncratic, criminal or political reasons, whereby – in contrast to assassination – the direct targets of violence are not the main target."

Another definition has its roots in the OAU Convention on the Prevention and Combating of Terrorism. According to article 1(3) terrorism is:

(a) any act which is a violation of the criminal laws of a State Party and which may endanger the life, physical integrity or freedom, or cause serious injury or death to, any person, any number or group of persons or causes or may cause damage to public or private property, natural resources, environmental or cultural heritage and is calculated or intended to:

(i) intimidate, put in fear, force, coerce or induce any government, body, institution, the general public or any segment thereof, to do or abstain from

doing any act, or to adopt or abandon a particular standpoint, or to act according to certain principles; or

(ii) disrupt any public service, the delivery of any essential service to the public or to create a public emergency; or

(iii) create general insurrection in a State.

(b) any promotion, sponsoring, contribution to, command, aid, incitement, encouragement, attempt, threat, conspiracy, organizing, or procurement of any person, with the intent to commit any act referred to in paragraph(a) (i) to(iii).²⁶

5.3:The sources of terrorism

It is more wise not to stay in definitions of terrorism. In order to become more realists, it is much more useful, to look the action of the terrorist groups by looking the situation as a whole. It is recently very usual to confuse and identify the concept of terrorism with the concept of crime. We tend to identify any violent action with the terrorism. Terrorism is the result of a combination of geostrategic choices and socioeconomic changes and conditions. Terrorism has always been following the technological changes. ISIS used to make violent actions and at the same time it was taking a video of them. Nowadays, terrorism can use a computer, for example. Furthermore, in order to understand terrorism we should also see and understand the action of the governments. For instance, even before the attack of 11/09/2001, the Western governments had already called Islam an enemy. Moreover, another factor that should be taken into consideration when we examine the causes of terrorism, is that of climate change that forces people to migration. Another source of terrorism that we should take into consideration, is that, which is linked to extreme and conservative views of many governments. There are many groups that are affected by such views and do not hesitate to take the guns.²⁷

Terrorism can be found in any form. Its roots can be historical, political, economic or social. They can be philosophical, ideological or religious. The political factor maybe has been the most usual one during the history of

²⁶Olu Awofeso, Kingsley Ogunne, Resurgence in the Niger Delta and the discourse of terrorism in Nigeria, *Journal of Law, Policy and Globalization*(2017) vol. 63 p. 165-170

²⁷Mary Bossi, radio 98,4. Retrieved from:
<https://www.youtube.com/watch?v=cr1Wysz9SW4> (accessed 20 August, 2019)

terrorism. It is most of the times used by weaker groups that do not have adequate political or military power. Moreover, poverty is a factor that contributes a lot to the causes of terrorism. Low income countries, with their population owning the 1% of the world's wealth, are characterized by incidents of manifestations of religious fundamentalism. These manifestations, have affected the rise of terrorism, in these countries. In this point, maybe is useful to link the notion of humiliation. These countries are often characterized by the feeling of shame and this, in combination with the belief in honor, make groups in these countries, to get involved in terrorist acts.

Furthermore, moving on to a physiological factor, there are incidents that are linked with how many people deal with the feeling of belonging in a group or in an entity, in general. This maybe gives them the strength they need in order to feel powerful.²⁸

In many surveys there has been a focus on the regime of the country in which the terrorist attack happens. According to this view, democracies are also prone to face terrorist attacks.

5.4: Looking inside terrorist groups

Terrorist attacks are more easy when they have the form of mass attacks. It is more usual (it was more usual in the past) to see groups of terrorists rather than individuals alone. This happens because the aim is to cause fear, something that is much more feasible if the terrorist is a group. Even if recently there are more and more violent actions, by the so called "lonely wolves", it is much more wise to examine the situation in total. That's because behind this "wolf" there are many other "wolves" and off course many governments to look through. According to Crenshaw (2011: 46) "Interactions among members of the group, may be more important in determining behavior than the psychological predispositions of individual members". "A pattern of mutual reassurance, solidarity and comradeship develops, in which the members of the group reinforce each other's righteousness, image of a hostile world and sense of mission" (Crenshaw, 2011: 47),(Vertigans, 2015). According to some approaches, the violent activism can easily transform into terrorist actions. However, terrorist groups do not chose members that easily,

²⁸Barry S. Levy, Victor W. Sider, *Terrorism*. International Encyclopedia of public health (2017) vol. 7 p. 152-157

as many believe. In order to access in a terrorist group, an individual must have "credible links". (Vertigans, 2015) This means that the individual needs to be known by the group, in order to get incorporated.

According to other approaches, these individuals are not "natural" terrorists. On the contrary, they need to be educated in order to get involved into actions of violence. "Certainly a variety of schools in diverse locations such as Northern Ireland, the United States and Saudi Arabia have contributed to perceptions of superiority, injustice and separation" (Vertigans, 2015). Moreover, Internet is another way to strengthen terrorism as it offers adequate and useful information. Lastly, terrorist groups, need to be characterized by solidarity and the members are strongly linked with one another. This offers the terrorist group the appropriate strength, in order to come across their targets.

5.5: Methods and purposes of terrorism attacks

Factors such as location or histories of violence determine at a high degree, the types and forms of terrorism. Terrorist groups most of the times, have specific expressions of violence. They "blow up things, kill people or seize hostages" (Jenkins, 1985). During the 19th century, the Russian anarchists, tended to conduct assassinations. Many examples followed, one of which is the Palestinian groups that were hijacking planes. In the latest years, it is really frequent for terrorists, to commit suicide, Muslim and Tamil groups are known for such behaviors. These are "forms of self sacrifice" (Vertigans, 2015), and there are off course more examples. Terrorist groups, such as Al Qaida are known for conducting explosions, with the belief that "death in the name of Allah was not suicide but martyrdom". (Vertigans, 2015).

According to Crenshaw (2011: 9), the aims of terrorist groups depend on five main reasons: 1. to set the political agenda, 2. to undermine the opposing government's authority, 3. to provoke an overreaction, 4. to mobilize potential supporters and 5. to coerce compliance.²⁹

Taking these into account it is necessary to write down the incentives of terrorists aiming at the energy sector. According to Lukas Tichy and Jan Eichler, the terrorists that aim at energy targets, are divided in two groups. On the one hand, there are the non state actors that are politically motivated and on the other hand there are those groups that work under the financial support of state actors. These two groups have different motivations and some of them are:

²⁹Stephen Vertigans, *Terrorism*. International Encyclopedia of the Social & Behavioral Sciences (2015) vol. 24 p. 237-243

" (1) an expectation that the attack will cause catastrophic damage to a nation's economy,

(2) a desire for retaliation by an extremist group against one of the industry's nodes over a specific demand issue or general grievance,

(3) a desire to cause a government to appear inept and incapable of protecting its crucial infrastructure and citizens,

(4) a desire to spread panic throughout society by creating the perception that every critical node in a country's infrastructure is vulnerable to attack,

(5) the aim to obtain funding from oil production"(Lukas Tichy and Jan Eichler, 2017)³⁰

5.6:Terrorist weapons

In terrorist acts the most frequent types of weapons that are used are the small arms, the explosives or the incendiaries. The last two categories are often used by terrorists and there are examples of their use in the past. Between 1980 and 1990, occurred 12.216 bombings in the United States. These incidents caused almost 2 millions of injuries and 241 deaths. Between 1990 and 1994, the bombing attacks reached the number of 8.567 and almost 2.000 more happened in the United States. Between 1997 and 2001, there were numerous incidents linked with bombs, explosives and incendiaries. It is obvious that actions like these aim at and accomplish to provoke terror and chaos.³¹

³⁰Lukáš Tichý& Jan Eichler (2017): Terrorist Attacks on the Energy Sector: The Case of Al Qaeda and the Islamic State, Studies in Conflict & Terrorism. Retrieved from

[:https://www.tandfonline.com/doi/full/10.1080/1057610X.2017.1323469](https://www.tandfonline.com/doi/full/10.1080/1057610X.2017.1323469)

³¹ Barry S. Levy, Victor W. Sider, *Terrorism*, Elsevier Inc. International Encyclopedia of public health (2017) vol. 7 p. 152-157

5.6.1: Use of chemical weapons

The chemical weapons, can be easily constructed as the materials needed for their construction are moving free in the market and the technology for their production is also easy. The chemical weapons can be constructed by anyone who wants to construct them. This is a view that can be easily enhanced by some national legislations. An example is that of the Constitution of the United States, that gives the appropriate protection to the citizens by providing them the freedom of religion, the freedom of speech and Press freedom, and along with them it provides the freedom of possession and use of weapons.³²

Any chemical, used by terrorist groups, can cause a lot of injuries to humans or to animals and of course it can also cause death, because they can have toxic effects. These weapons were used during the 1st World War, even if they were forbidden by the First International World Peace Conference in Hague in 1899. Later on, in 1925, although according to the Geneva Protocol, the use of chemicals is an unlawful act, incidents of such use of chemicals followed during the next years. Colonial powers in Morocco, Afghanistan and Ethiopia used mustard bombs. Furthermore, during the 2nd World War, chemical weapons were developed by both the Germans and the Allies. Continuing the use of such weapons was not absent when Iraq invaded Iran and then when Iraq attacked against the Kurdish population. Afterwards, during the Cold War, both the Soviet Union and the United States used tones of chemical weapons.

The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction entered into force in 1997. However, there followed other incidents of use of chemical weapons. In 2013 Assad regime in Syria made use of chemical weapons, that caused thousands of deaths and injuries.³³

³²Μαίρη Μπόση, *Ζητήματα ασφάλειας στη νέα τάξη πραγμάτων*, Εκδόσεις Παπαζήση: Αθήνα 1999

³³ Barry S. Levy, Victor W. Sider, *Terrorism*. International Encyclopedia of public health (2017) vol. 7 p. 152-157

5.6.2: Use of biological weapons

Another type of weapons is the biological weapons, which have as a target to cause fear because of their destructive effects. These living organisms can cause severe illnesses and deaths to humans or to animals. During the 1st World War, it is said that Germany had caused illness to the cavalries of the Eastern European countries, by using equine disease glanders. Later on, in 1930 actions of Japanese troops, caused the reappearance of plague in areas of China. Continuing, 2nd World War, was not free of such actions. Japanese laboratories conducted experiments on their prisoners of war. Specifically, they were testing organisms on them, that could be used as biological weapons. Moreover, Germany's prisoners were infected during similar tests of biological weapons. Such threats and new dangers depend on how the genetic technology will proceed. According to the Centers for Disease Control and Prevention, there are three categories of biological agents that can cause diseases. The first category, consists of those agents that can pose risks to national security, as they cause mortality and they can easily be transmitted from person to person. The second category, is composed of those agents that cannot be that easily transmitted and are characterized of low level of mortality. Lastly, in the third category, there are those pathogens that are emerging, to cause mass dissemination in the future. United States have improved their ways of prevention against terrorism with biological weapons, after the anthrax epidemic and also after the attacks happened in the World Trade Centre and the Pentagon in 2001.³⁴

5.6.3: Use of nuclear weapons

The issue of nuclear terrorism has to do with the causing of terror to populated groups that started after the changes in the Soviet Union. Another reason for the appearance of such type of terrorism is the arrests that took place, of people who were moving illegal radioactive materials. The possibility of use of nuclear energy by terrorist groups, has to do with the use of nuclear weapons or even the use of radioactive materials in order to pollute the water. The

³⁴ Barry S. Levy, Victor W. Sider, *Terrorism*. International Encyclopedia of public health (2017) vol. 7 p. 152-157

nuclear terrorism is an extremist form of violence that does not have a specific target but can cause a vast amount of victims.³⁵

Nuclear weapons are totally related to terrorism. It is really dangerous if terrorist groups have them in their acquisition as they are ready to use them. It is also possible that these groups can build nuclear weapons on their own, by using fissile materials. Nuclear weapons can release extreme amounts of energy. Such type of weapons were used during the 2nd World War, in Hiroshima and Nagasaki and caused 200.000 deaths and later on caused deaths as a consequence of cancer. As long as nuclear weapons are available to states or groups, the nuclear terrorism will continue to exist.

5.6.4 Use of radiological weapons

Radiological weapons, or as they are named, "dirty bombs", have to do with the use of conventional tools or weapons, that disperse radioactive materials. In World War II, a research was made by the United States, in order to examine how feasible it was to disperse radioactive materials from conventional weapons. Later on , Iraq explored the use of these weapons, against Iran, aiming at causing radiation sickness. However, the amount of radiation was not high enough and as a result, the use of radiological weapons was abandoned. In general, even if this type of weapons would not be fatal for numerous people, it still can cause vast disruption.

5.6.5: Use of antipersonnel Land Mines

These weapons of mass destruction, are deployed or they are suspected to be deployed in many states. Land Mines can cause casualties. The ones that are more likely to come across the effects of the land mines are those people that are rural, such as peasants for instance. Because of the destructive effects of the land mines, in 2014 many states entered in the already existing Mine Ban Treaty (1997), and as a result there has been a big decrease in

³⁵Μαίρη Μπόση, *Ζητήματα ασφάλειας στη νέα τάξη πραγμάτων*, Εκδόσεις Παπαζήση: Αθήνα 1999

their production and thus their use. Moreover, their destruction became more easy and the victims are delimited.³⁶

5.7: Cyberterrorism

The evolution in technology, brought a new age with computers, something that gave new possibilities to terrorist groups. We should take into consideration how easily information can be found. Someone can find how to make a bomb, any sort of bomb, or how it can be feasible to provoke terror via electrical devices. Furthermore, the Internet can be seen as a means of really effective terrorist propaganda. In United States, this form of propaganda is not unlawful and the same happens to many other countries. This type of terrorism is the less risky form for the terrorists. However, these terrorist actions, via computers, can cause great damage to targets such as political entities. As a result, in the 21st century it can be much more easy for terrorists to commit crime in a smarter way than before. They have also the ability to access and destroy or steal data, thanks to hacking.

The most basic and strong weapons of cyber terrorism, are the viruses, the logic bombs and HERF(high-energy radio frequency) guns. Viruses aim at destroying the software. Logic bombs are programmed to detonate at a certain time and they can destroy data. Lastly, HERF guns, through radio signals, can destroy or disable electronic targets. The viruses have the capability to shut down the whole computer system. Spy chips, Trojan horses or warms, are some examples of the vast possibilities to destroy, cyber terrorism has. Targets could be financial institutions, in order to steal their money. We could also say that other possible targets can be power grids or electrical transformers, tanks and aircrafts could be destroyed by high-energy weapons. We could make it even worse, if we refer to foods or drugs that through their interference in the production formulas, can be poisoned. It seems overall, that for terrorist organizations, the cyber terrorism is a less risky way to achieve their goal of gaining money, in order to finance terrorist actions.³⁷

Terrorist organizations see and target critical infrastructures through the Internet. The Group of Governmental Experts on Developments in the Field of Information and Telecommunications in the Context of International Security

³⁶ Barry S. Levy, Victor W. Sider, *Terrorism*, Elsevier Inc. International Encyclopedia of public health (2017) vol. 7 p. 152-157

³⁷Walter Laqueur, *Fanaticism and the arms of mass destruction*, Oxford University Press: New York 1999

noted in a report of July 2015 "that the use of ICT for terrorist purposes, beyond recruitment, financing, training and incitement, including for terrorist attacks against ICTs or ICT-dependent infrastructure, is an increasing possibility which, if left unaddressed, may threaten international peace and security."(CTED, 2017)³⁸

An example of cyberterrorism: stuxnet

Stuxnet refers to a worm included in a USB drive, aiming at infecting software. It was "designed to map out the workings of a nuclear power plant and a virus that slowly destroyed the nuclear centrifuges". It is said that this virus has been created by the US in cooperation with Israel, against Iran. The purpose of the virus was the disruption of the nuclear capability of Iran. The Stuxnet example is a characteristic one, of a nation state attack and makes obvious the risks that underlie, when an infrastructure's control system is connected with a computer.³⁹

There have been claims that after Stuxnet followed some attacks against US as a retaliation for Stuxnet. In 2012 some American financial Institutions were attacked by hackers, known as the Izz Ad-Din al Qassam Cyber Fighters.⁴⁰

Chapter 6: TERRORISM AND ENERGY SECURITY: attacks against energy infrastructure

6.1: Terrorist attacks against Energy Transmission Infrastructures

Terrorist attacks and sabotage against energy infrastructure, pose a major threat to energy security, as the security of supply is a prerequisite for the safety of a state and off course it is vital for the operation of modern energy infrastructures, such as oil and gas pipelines or tankers. This fact makes clear how attractive the infrastructures can become for terrorist attacks. Energy

³⁸ CTED(2017), *Physical protection of critical infrastructure against terrorist attacks*

³⁹Nailah Mims, *Cyber-attack process*, Critical infrastructure security (2017) p. 1105-1116

⁴⁰Michael Kenney, *Cyber-terrorism in a post stuxnet world*, Elsevier(2015) p. 111-128

Transmission Infrastructures are vulnerable. When we talk about ETIs we refer to oil or gas pipelines or electricity pylons and maybe tankers at sea.⁴¹

According to Tamara Makarenko there are seven categories of terrorist attacks that target the energy sector. The first category which is the most common, is that of bombings on fuel pipelines. The second category has to do with sabotage of oil and gas lines. Continuing the third category, focuses on attacks on offices of oil companies. The fourth category, which is less usual, consists of attacks to oil depots, petrol pumps and also refineries. In the fifth category, we have incidents of hijacking or raiding energy facilities. In this category the terrorists take hostages. The sixth category is focused on facilities that staff oil or on facilities like gas processing plants. The kidnapping of employees of energy companies, a recently more frequent type, is the last category.⁴²

From 2008 in Europe, there is a directive of the European Council (2008/114/EC), that protects Energy Infrastructures. In the field of terrorism that has to do with attacks on energy infrastructures, there are not many researches. However, we can look more carefully, a study of Peter Toft, Arash Duero and Arunas Bieliauskas, that focuses on the question " What are the general patterns and characteristics of contemporary terrorist targeting of energy infrastructure and how can we understand them?"

This particular research focuses on the energy transmission infrastructures, which means that the three researchers that we mentioned before, focus on refineries or high pressure pipelines, high voltage electrical power lines that transport oil, natural gas or electricity. It is apparent that if the transmission part is attacked, this fact can have effects on energy flows.

This particular research offers a quantitative analysis of terrorist attacks on energy infrastructures between the years 1998-2008. The three researchers, for the years 1998-2007 used data from the Global Terrorism Database and for the years 2004-2008, used data from the Worldwide Incidents Tracking System. According to the three researchers, these two datasets are chosen, simply because they offer different definitions of terrorism and this will give more credibility to the research. The Global Terrorism Database defines terrorism: "The threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious or social goal through fear, coercion or intimidation." According to the Worldwide Incidents Tracking

⁴¹Peter Toft, Arash Duero, Arunas Bieliauskas, *Terrorist targeting and energy security*. Energy Policy 38 (2010) 4411-4424

⁴²Lukáš Tichý & Jan Eichler (2017): Terrorist Attacks on the Energy Sector: The Case of Al Qaeda and the Islamic State, *Studies in Conflict & Terrorism*. Retrieved from:
<https://www.tandfonline.com/doi/full/10.1080/1057610X.2017.1323469>

System terrorism occurs when: " (sub-national) groups or individuals acting on political motivation deliberately or recklessly attack civilians/non combatants or their property and the attack does not fall into another special category of political violence, such as crime, rioting or tribal violence".

The results of the study showed that the attacks against energy infrastructures during the period under study, were not that often, taking into consideration the amount of terrorist attacks in general. According to the GTD, the terrorist attacks worldwide reached the 15.254 incidents in the years 1998-2007. The 232 of them were against energy transmission infrastructures. According to WITS report the sum of attacks between the years 2004-2008 was 54.932. Of all them, the 941 were related to attacks against energy infrastructures.

As far as the geographical distribution of attacks is concerned, according to GTD the 71,2% of ETI attacks took place in 4 out of 29 countries. Additionally, according to WITS the 72,4% of ETI attacks occurred in three countries. Columbia, Iraq and Pakistan. However, Russia, Saudi Arabia, United States and Canada, the most basic producers as well as the most basic transit countries, such as Ukraine, Turkey, Azerbaijan and Georgia had 14 attacks (GTD) and 52 attacks(WITS). The result that comes as a consequence of these numbers, is that the attacks are not related with the oil rich countries, according to the authors.

The three authors focus on some groups of terrorists in order to enrich the research by understanding the different terrorist ideologies that exist. The first group is that of nationalist-separatists that have as a target, to create an independent homeland that can be based on ethnic criteria. This can stop the political dominance of a domestic or a foreign ethnic group. The second group is consisted of the secular-utopians that want to impose their own ideology. In this group, exist the left wing groups such as anarchists, Marxists or Leninists, that want to overthrow the capitalist system and on the other hand there are the right wing fascist or racist groups that they want to impose a dictatorship. Finally, it is the group that has a political- religious ideology and position and the aim of such a group, is to impose a theocracy.

However, we need to make clear that terrorist attacks, most of the times, have more than one incentives. For example Al Qaeda, not only has as a goal to spread the ideology of Islam but also wants to create an Islamic caliphate. Even if the majority of incidents happen in ETIs are from nationalists separatists, the difference is not that much and this leads to the position that there is no such an extreme difference among the groups and their attacks to ETIs. For instance "from 139 active nationalist–separatist terrorist groups, 22 attacked ETIs. On the other hand, 12 out of 124 secular–utopians and 9 out of 119 political–religious groups attacked ETIs. Based on these numbers there is no apparent correlation between different terrorist ideologies and a propensity

to attack ETIs" "Of the 137 attacks that could be attributed to a specific attacker, 54% were committed by secular-utopian groups (GTD). The WITS data reflect a similar pattern. With 160 attacks, secular utopians had a share of 50% of overall ETI attacks. Moreover, FARC and ELN committed 67 of the 74 secular-utopian ETI attacks, corresponding to 90.5% (GTD). Similarly, the WITS data shows that FARC (Revolutionary Armed Forces of Columbia) and ELN (National Liberation Army) carried out 140 of the 160 secular-utopian ETI attacks, or about 87.5%."(Peter Toft, Arash Duero, Arunas Bieliauskas, 2010)

The authors after making the appropriate geopolitical analysis, concerning the terrorist attacks against ETIs during the period under study, came to some conclusions. During this period the attacks were concentrated only in three countries. In Columbia, Pakistan and Iraq. Furthermore, the results of the survey showed that there is no correlation between the ideology of any group and the number of attacks. As a result, it seems that the attacks against ETIs are not that dependent on both the geographic place of the region and the ideology of the group.

So what can be the incentives of the terrorists to attack ETIs? According to the authors and conductors of the survey, " Taking into account the basic political ideology of the groups coupled with the particular combination of intimidation effect, symbolic value, attack feasibility, and considerations for outside stakeholders, we propose that, in general, terrorists have limited incentives to strike ETIs." Furthermore, an additional conclusion is that the attacks against ETIs have low intimidation effect and that's because these particular targets require skills and knowledge in order to be destroyed.

In addition, the research also showed that countries with internal instability and conflicts are more vulnerable to such type of attacks. This happens when in such regions, there are no exact incentives but a general warfare exists. This situation makes some groups want to destroy their enemies, by attacking to supply lines. As mentioned in the article by the writers, when this happens, the energy becomes a strategic goal.

Another conclusion, that comes as a consequence of the above, is that when new infrastructure routes are planned to be constructed, it is necessary to take into consideration the possibility that countries will suffer from a situation of internal instability. So we should take into account which countries will suffer more. The supply or the transit countries.

However, how can we be sure about how the international system will change? We should consider that the world is changing and the technology makes bigger and bigger steps. The recent incidents, show that such attacks

continue to exist. It would be possible that in the future such type of attacks will become more easy to be conducted.⁴³

We should also add that many other researchers and authors believe that terrorists are more interested in oil and gas infrastructures as the time goes by. According to START(Study of Terrorism and Responses to Terrorism), between 2010-2014, many attacks on energy infrastructures took place. For instance, in Pakistan, 439 attacks, in Yemen 170, in Columbia 161, in Iraq 146 , in Philippines 73 and in Nigeria 38.

For example Al Qaeda and its affiliates made attacks to both the facilities and personnel of oil companies in Iraq, Algeria, Kuwait, Pakistan, Saudi Arabia and Yemen. According to estimations by the UN, the income gained by ISIL(Islamic State of Iraq and the Levant), from oil in 2015, reached approximately the 400\$-500\$.

Most of the attacks in this period were bombings. Arson and sabotage tactics were also usual in facility and infrastructure attacks.

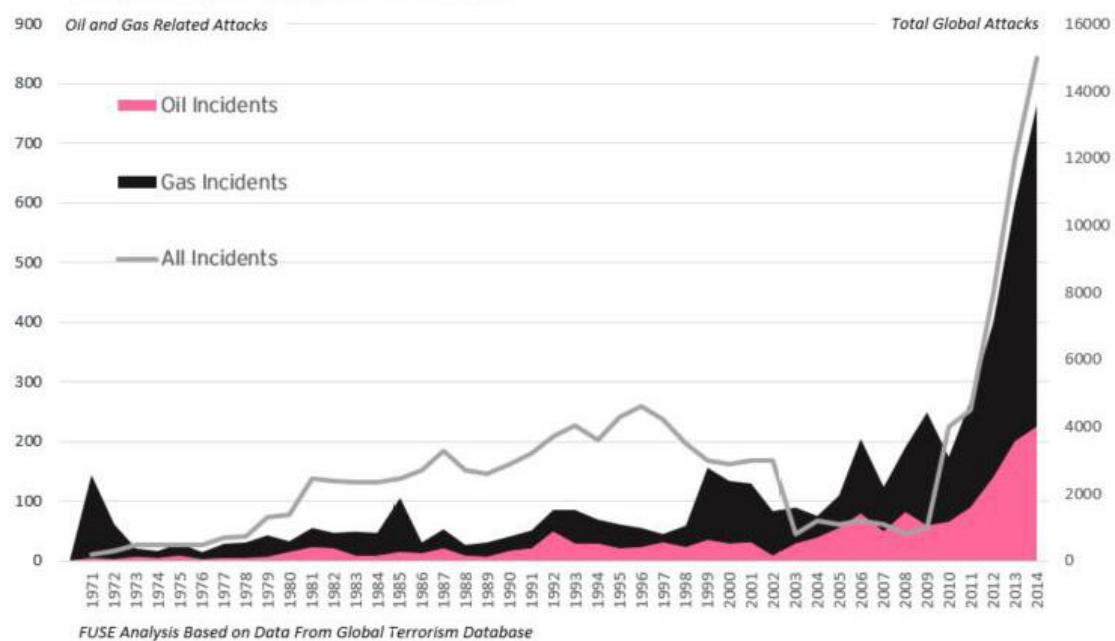


fig. 1 Global attacks on oil and gas infrastructure (source: Brookings).

⁴³ Peter Toft, Arash Duero, Arunas Bieliauskas, *Terrorist targeting and energy security*. Energy Policy 38 (2010) 4411-4424

6.2: Terrorist attacks against water supply infrastructures

On 22 November 2016, the Secretary-General informed the Security Council that ISIL has dams as targets for its attacks. So the ISIL did not restricted in the destroying of bridges or pipes and sanitation plants. It also proceeded in brutal and violent methods like polluting bodies of water, flooding whole towns or even destroying local economies by targeting electricity generation and agriculture. Estimations of Stratfor, showed that between 2013 and 2015 the ISIL conducted 20 major attacks against Syrian and Iraqi water infrastructure.

The control ISIL gained over dams and water resources, made more easy its control the supplies that were supporting electricity generation and also agriculture.⁴⁴

Chapter 7: TERRORISM IN NIGERIA

7.1: An introduction to the issue: How Islam is related?

Islam is a religion that theoretically has to do with peace. A peaceful relationship between man and Allah and between man and man. However, nowadays Islam has been transformed into a violent and aggressive religion that people link with terrorism. Such terrorist actions could be suicide bombings, the killing of innocent people, attacks to buildings with the purpose to cause economic destruction and thus problems to the government and kill the people in there. They also, usually make kidnappings. The importance of the holy war, named Jihad, is the motive in order to conduct terrorist actions. Jihad sometimes is the reason for terrorism but some others is only something that can cover other incentives or interests.

The meaning of the Jihad, is not that easy. Jihad means a lot of things. Jihad means the support of a victim, a rise against tyranny or a war against an enemy who is attacking to one's country. So how such a religion can be connected with violent terrorist actions?

According to the holy Quar'an, which is different from the corrupted notion of holy war, a Muslim must get involved in armed struggle with non Muslim

⁴⁴ CTED (2017), *Physical protection of critical infrastructure against terrorist attacks*

population, until they accept Islam. In the Quar'an Allah says: The only reward of those, who wage war against Allah and His Messenger and strive to create disorder in the land, is that they be slain or crucified or their hands and feet be cut off on account of their enmity, or they be expelled from the land. (Quar' an, 5:33)

However, if we want to examine the action of Boko Haram in Nigeria, we will find that the incentives of the organization are political rather than religious. We can also observe other organizations such as MEND (Movement for the Emancipation of the Niger Delta), a group of militants that are targeted to oil production facilities.^{45 46}

7.2: The situation in Nigeria

In West Africa and the Sahel, the unlawful money, the arms and drugs are the cause for the criminalization of politics as well as for the growth of kidnapping market. This fact has as a result the fueling of Al Qaeda in the Islamic Maghreb (AQIM). In Nigeria there are two threats that put in danger the democracy and development in the region. The first threat is obvious in the south-east Nigeria where the oil stealing militancy exists. The second threat is the Boko Haram in the north of Nigeria, which is involved in numerous attacks. The effective way to understand the situation in Nigeria is to observe, peculiar and dangerous activities of the two groups in the area. We need to look closely and understand how Boko Haram and the Niger Delta Militancy, are involved in the politics, economics and what is the relation of the groups with the religion in Nigeria.

According to McNamara (1990 p. 17), "any society that seeks to achieve adequate security against the background of acute food shortage, population explosion, low level of productivity and per capita income, low technological development, inadequate and insufficient public utilities and chronic problems of unemployment (religious intolerance and criminal politicking) has a false sense of security".

In 1896, an incident that occurred in Nigeria, is said to have been one cause of the beginning of violent actions. Specifically, the death of Mr Dele Giwa by a "Letter Bomb", provoked many other violent actions and the use of

⁴⁵Abdulmajeed Hassan Bello, Boko Haram: *The greatest security threat to the sovereignty of Nigeria*, IJMSSR (2013), vol. 2 p. 66-72

⁴⁶Olu Awofeso, Kingsley Ogunne, *Resurgence in the Niger Delta and the discourse of terrorism in Nigeria*, Journal of Law, Policy and Globalization (2017), vol. 63 p. 165-170

Improvised Explosive Devices (IEDs). Afterwards, in 1993, the Movement for the Advancement of Democracy, hijacked a Nigerian Airways aircraft. Following to this, in 1994, a bomb explosion destroyed Shed 6 in Ilorin Stadium. Other similar incidents followed the next years. An example is a bomb attack on the car of Dr Omoshola, who was the Chief Security Officer of Federal Aviation Authority of Nigeria. Violent actions followed the years after 2000. Since 2004, several bombings and killings took place in Maiduguri. Later on, in 2010 and 2011 many bombings took place in Abuja, Bauchi and Zuba. Most of the bombings, are the result of actions of Boko Haram. More recently BokoHaram, is said to have been linked to international terror organizations in Somalia and North Africa. It also has linkages with the Al - Qaeda terrorist groups.⁴⁷

The existing instability that characterizes Nigeria, causes threats to the lives of people and off course causes problems to the country by downgrading it and that is an obstacle for the socioeconomic development of the region. This happens because both the local business activities and the foreign investments are discouraged.

As far as the economy in Nigeria is concerned, a great amount of national revenues come from the oil and gas industry. This makes the country really dependent from the energy production sector. Any problem in the petroleum production can affect the entire economy of the country. As a result any activity of armed groups in Nigeria, cause a feeling of terror.

This means that we should get interested in methods of armed groups in the region that have to do with kidnappings and hostage takings, blowing or shutting down oil installations or incidents like illegal oil bunkering.

7.3: Understanding terrorism in Nigeria

In order to understand terrorism in Nigeria we need to observe the more usual incidents so as to find the most frequent actors and their incentives. In Nigeria the majority of the perpetrators of the terrorist action, as well as the majority of victims, is young people. Examining terrorist incidents, leads to theories that have as a purpose to make these actions more understandable and thus counterterrorism actions are found more easily.

Firstly, there is a theory that links the violent actions, such as terrorist actions with the will of individuals to gain any sort of political economic or social

⁴⁷ Don John O. Omale, Terrorism and counter terrorism in Nigeria: theoretical paradigms and lessons for public policy, CSCANADA (2013), vol. 9:3 p. 96-103

benefits. Youth population is more easy to be recruited and as a result the costs of rebellion actions are lower. It is much more easy to have such actions to regions with poverty that are also characterized by illiteracy. Most of the times, regions with many lootable resources, are also vulnerable (Collier and Hoeffler, 2004). Off course the previous characteristics are apparent in Nigeria and this, can maybe explain why the majority of youth is recently getting involved in such actions.

Another theory, explains terrorism in Nigeria as a result of a feeling of grievance of people because of the inequalities that exist. Some theorists link the armed violent actions such as terrorism with the feeling of exclusion. Some people in Nigeria, believe that the violent actions of Boko Haram, come as a result of grievance because of the fact that there are many job opportunities in Niger Delta militants in the Amnesty Program, whereas in the north part of the country there are many youth people. Another factor that could be linked with grievance feelings, is that in Nigeria, according to Federal Republic, "a person should be qualified for elections to the National Assembly if he has attained the ages of thirty five years (for the Senate) and thirty years for the House of Representative".

Furthermore, another theory that exists puts an emphasis on psychological reasons. According to Omale, " in the Nigerian context youths mirror their personality in the likeness of military rulers that dominated the political system of Nigeria until 1999." (Don John O. Omale, 2013)

Moreover, there exists an explanation of violent actions, that concerns the social or political exclusion and marginalization of youths. For instance, as we mentioned earlier, the fact that the resources are controlled by the elites, is a reason why young people turn to armed violence.⁴⁸

7.4: Foundation and action of Boko Haram

Boko Haram is officially named by its own members, Jama'atu Ahlis Sunna Lidda' awatiwal Jihad, which means "People committed to the Propagation of Prophet's Teaching and Jihad." This group is a Sunni group and is formed in Maiduguri, in 2002. Nigeria, after a long period of being a colony of England (1800-1960), gained its independence in 1960. During the period 1960 to 1966, elections were held in order to pose the bases for stability. However,

⁴⁸ Don John O. Omale, Terrorism and counter terrorism in Nigeria: theoretical paradigms and lessons for public policy, CSCANADA (2013), vol. 9:3 p. 96-103

tension was created among different ethnic and religious groups. From 1966 to 1999 the country had dictatorial regime.

The main reason for the appearance of Boko Haram, was the division of Nigeria in two parts. The Islamic North and the Christian South. After the restoration of the democratic institutions, in 1999, there was an informal agreement between the two parts in Nigeria. According to this agreement, there would be a switching in the government between the Islamic North and the Christian South. For example, if the president was a Christian, the vice president, would be an Islamist. However, this agreement was just an agreement between the elites.⁴⁹

A fraud that happened in the elections, during the period 1999-2011, underestimated the political institutions and as a result, instability occurred. More specifically, the fact that the agreement was not complied, helped in the appearance and success of Boko Haram. The underestimation of the political institutions, in combination with the low economic development of the northern part of Nigeria and the high birth rate are factors that contributed to the spread of Boko Haram in the territory.

The overpopulation in Nigeria is an impediment in the economic development of the country. This fact worsens the relations between the Islamists and the Christians. In 1950 Nigeria had population almost 33 millions. The population reached the 55 millions in 1971 and in 2000 Nigeria reached the 125 millions. The rate of the rapid augmentation accelerated and up to 2015 the population of Nigeria had reached the 188 millions.

The establishment of democracy in 1999, followed the diminishing of the military control in the territory and as a result the Islamist groups found the opportunity to strengthen their action and their efforts for propaganda in Nigeria. The tension between the Islamists and the Christians became more serious and in the northern part of the country, Islamists started terrorist actions against the Christians. In 2000 the new legal system of Sharia in the State of Canton, caused serious conflicts between the two groups that ended in 2000-5000 deaths from both communities. Deaths followed in 2001 and 2002.

In 2004, 78 Christians were slaughtered in the city of Gelba. The slaughter was the result of a sermon that focused on the jihad of Islamists against the Christians. Later on in the same year, Christians took their revenge and the result of the conflict was almost 700 deaths. In 2008 and later in 2010 many similar incidents occurred with hundreds of deaths.

⁴⁹John Cambell, Nigeria: Dancing on the Brink, Rowman, Lanham 2013

In 2002 Boko Haram made its first appearance as a result of a conflict between two Muslim groups in Nigeria. A moderate one and a radical one. The moderate organization had as a leader the sheikh Jafaar Adam while the radical organization had as a leader Mohammed Yusuf, the founder of the Boko Haram organization. Yusuf had inspirations from other organizations such as the Islamic organization "Muslim Brotherhood".

The behavior of Jusuf caused his expulsion from the mosque Commission in Maiduguri in 2002. Jusuf reacted by building an Islamic mosque in the northeastern Nigeria. The new mosque, quickly became a centre where radical Muslims of Nigeria were meeting. A serious subject of that group was the education and very soon, many Muslims in Nigeria abandoned the official educational system and entered into the organization of Yusuf. The ideology of that group was that the western education (boko) is forbidden (haram) for the Muslims. The result of this particular ideology is the name of the organization Boko Haram.

At first, Boko Haram did not make violent attacks as it had not the power yet. The organization acted mostly in remote areas, away from the mainland, in the northeastern Nigeria. The action of the organization was strengthened, because of the absence of governmental control.

This fact gave the organization strength and Boko Haram gained confidence. After an unsuccessful riot of Boko Haram in July 2009 and after the execution of Yusuf, leader of the organization became a man named Abu Bakr Shekau.

Under the new leadership, the organization regained its strength. However, internal disputes resulted in the division of the group in January 2012. The group that continued to have faith in Abu Bakr Shekau, had also faith in the Islamic State. Under the leadership of Shekau, Boko Haram consisted the major threat in Nigeria and the most violent organization globally.

The other part that destructed was under the leadership of Abu Usmatul al-Ansari and had similar ideology with that of Al Qaeda. This group made numerous kidnappings of Western people that were working in Nigeria. The attacks were a result of the military French presence in Mali and as an action of revenge because of the abolition of burgas in France.

Another group, that destructed was the group named as Yusufiya Islamic Movement (YIM), which was also really close to Al Qaeda and its ideology.

These two groups were opposite to attacking to the population of the country and acted under the control of Al Qaeda.⁵⁰

7.4.1: The ideology of Boko Haram

Boko Haram, means that "the western education is forbidden (for the faithful Muslims)". Boko Haram believes that, the fact that the western culture and education have been accepted, caused the destruction of the Islamic political and legal order in Nigeria. According to the organization, the north Nigeria faces a lot of economic problems, exactly because of the adoption of the western culture in this region.

The unequal development of the southern Nigeria in contrast to the economic disabled north, is the reason for the easy recruitment of poor population (shepherds or farmers) of the north, in Boko Haram. Boko Haram was created as a result of the lack of effectiveness of the government and aims at creating a new order focused on the north of Nigeria where the majority of population was poor. According to the organization, the way to destroy the political, economic or social life existing in Nigeria, is to implement the Islamic law of Sharia. Sharia will manage to bring the social and economic stability needed, by diminishing the inequalities among people. The targets of the organization are schools, government buildings, churches and prisons or even mosques.

Boko Haram and many other organizations with international action, such as Al Qaeda, belong to Salafism. More specifically, Boko Haram is included in Salafist Jihadism.⁵¹

The ideology of Boko Haram, is based on two main characteristics. The first one concerns the local level, which means that it has to do with the political and social situation inland. Boko Haram, in this level, acts as an avenger, because of all the military operations of the government of Nigeria against Boko Haram. This fact, in combination with the will of economic and social situation of poor population, makes the recruitment of such population in the organization, having as a result its strengthening.

The second, equally important characteristic, of the ideology of Boko Haram, is its regional character, which means the South Africa and off course its international character that has to do with the ideology of Jihadism. This

⁵⁰Ηλέκτρα Γ. Αντωνάτου (2017), Γεωπολιτικη αναλυση του Ισλαμικου δρωντος της ΜπόκοΧαράμ στο σύμπλοκο της Αφρικής (Νιγηρία-Καμερούν-Νίγηρας-Τσαντ) (Master's thesis).

⁵¹Ιωάννης Θ. Μάζης (επιμ.), *Γεωπολιτική και γεωστρατηγικές της συριακής κρίσεως*, Λειμών, Αθήνα 2016

international character gave the chance to the organization, to be recruited by members that were educated from Al Qaeda in Magreb. The targets were obviously the West and the United States. Many of the members who were more interested to this dimension of the ideology, became members of Ansaru, another organization that was more focused on the battle of Muslims against the Western culture.⁵²

The organizations recruits and uses, most of the times, children and especially girls, in the suicide bombing attacks. Hundreds of children have been used in bombing attacks in Nigeria and Chad in Niger and Cameroon. The guerilla of Boko Haram and the expeditions against the organization in the North Nigeria, have caused millions of deaths.

The targets of Boko Haram are usually schools and the members focus on kidnapping kids mainly girls. Many of these girls are forced to marry a member of the organization. Other girls are used as suicide kamikaze and they must blow their selves up, in crowded places.

7.4.2: Boko Haram blocks oil exploration in Northeast Nigeria

As we mentioned before, Nigeria is the largest oil producing nation in Africa and is producing almost 2 million barrels per day. The revenues from oil are the 70 percent of the Nigeria's income and can also provide the 90 per cent of its foreign exchange.

As a result the oil in Nigeria is extremely important. Until now the production had its basis mainly in the Niger Delta. However, there was always a hope that great amounts of oil exist also in the northeast Nigeria and in the Lake Chad basin. This would be really helpful for the economy of this poor and devastated by the Boko Haram region.

In Nigeria the oil production and exploration belong to the Nigerian National Oil Corporation and also to private companies. But how Boko Haram is linked to this? Boko Haram believes that the state of Nigeria is evil because according to the organization it is anti-Islamic. As a result Boko Haram could become the major attacker to oil production sector. However, the oil industry in Nigeria is far away from the region where Boko Haram operates.

Later on though, in Nigerian media there was the new that Boko Haram attacked an armed convoy of oil workers. A firefight followed, with many

⁵²Jacob Zenn, AttaBarkindo (2013), *The ideological evolution of Boko Haram in Nigeria*, The Rusi Journal 158:4, 46-53

victims including soldiers and members of the Civilian Joint Task Force. Boko Haram eventually kidnapped four oil workers. From them the one died and there is a video of the other three. This is the way many militants in the Niger Delta act. Boko Haram seems to imitate the example as she knows that this way can easily offer revenues to the group.

In this incident it seemed that Boko Haram managed to accomplish its target. To stop the oil exploration in the Lake Chad basin, as the minister of state for petroleum resources Emmanuel Ibe Kachikwu had announced, until there is the appropriate security again. (John Cambell, August 1 2017)⁵³

7.4.3: Violent actions of Boko Haram in Cameroon, Chad and Niger.

INCIDENTS IN NIGERIA (July 22-July 28, 2017)

July 22: The Nigerian army killed three suicide bombers in Konduga, Borno. Boko Haram was suspected.

July 23: Three suicide bombers killed themselves and four others at two IDP camps in Maiduguri, Borno. Boko Haram was suspected.

July 23: Police killed three Boko Haram militants in Ungogo, Kano

July 24: A suicide bomber was killed in a failed attack on UNIMAID in Maiduguri, Borno. Boko Haram was suspected.

July 25: Police killed five kidnapers in Obafemi Owode, Ogun.

July 25: Boko Haram killed nine soldiers, one civilian and abducted ten Nigerian National Petroleum Corporation (NNPC) officials/UNIMAID staff in Magumeri, Borno.

July 26: In a rescue mission, some of the kidnapped NNPC/UNIMAID staff were rescued, but ten soldiers, thirty-three CJTF, and sixteen civilians were killed in the process in Magumeri, Borno.

July 26: Boko Haram killed ten soldiers in Gwoza, Borno

July 26: Three suicide bombers were killed in a foiled attack in Konduga,

July 27: Boko Haram killed five in Damboa, Borno.

⁵³John Cambell (2017), Boko Haram blocks oil exploration in Nigeria. Retrieved from: <https://www.cfr.org/blog/boko-haram-blocks-oil-exploration-northeast-nigeria> (accessed 25 July, 2019)

July 28: Suspected cultists killed eight in Emuoha, Rivers. Boko Haram was suspected.⁵⁴

7.4.4: Boko Haram and the Islamic State

The link between Boko Haram and Islamic State comes from the fact that Boko Haram joined the Islamic State, for strategic and also ideological reasons. "The two movements have common intellectual roots: Yusuf 's debt to Abu Muhammad al-Maqdisi helps contextualize Boko Haram's later affiliation to the Islamic State. Al-Maqdisi mentored Abu Mus'abal-Zarqawi, who founded al-Qaida in Iraq, the Islamic State's predecessor organization. Although al-Maqdisi broke with al-Zarqawi and later denounced the Islamic State, it is unsurprising that Boko Haram would find much in common, theologically and politically, with the Islamic State."(Alex Thurston, 2016)

Boko Haram was affiliated in the Islamic State after having territorial losses. This affiliation would offer to Salafi - jihadism the appropriate global legitimacy.

Between these two groups there exist differences, concerning the fact that Boko Haram is less military than the Islamic State. However Boko Haram is harsher against other Muslims, than the Islamic State is. The Islamic State, apart from violent behavior and actions, has conducted some alliances, such as this with Sunni in Syria or Iraq. In contrary, Boko Haram seems to be extremely cruel.⁵⁵

Boko Haram, caused instability in the Lake Chad Basin. The organization provoked starvation, put in danger the education and some health services and became a threat as, according to C. Felter she "undercut government authority in Nigeria and abroad".

Added to these, the whole terrifying situation in the region scared the international investors. As we previously mentioned Nigeria had always been an oil producer region and thus a destination for investors in the energy sector. The fear of these investors, has to do with the fact that all this insurgency of Boko Haram, creates a wave of many other groups that are focused on attacks against oil infrastructures in the Niger Delta. The foreign

⁵⁴John Cambell (2017), Nigeria security tracker weekly update: July 22-July 28. Retrieved from: <https://www.cfr.org/blog/nigeria-security-tracker-weekly-update-july-22-july-28> (accessed 25 July, 2019)

⁵⁵ Alex Thurston, "The disease is unbelief": *Boko Haram;s religious and political worldview*, Brookings (2016) p. 1-30

direct investment inflows have fallen since 2011, from almost \$9 billion to \$3,5 billion in 2017.

According to Thurston: " Boko Haram represents an ugly paradox: its ideas have limited appeal but significant staying power. The group can be crushed militarily, yet state violence fuels its narrative of victimhood"(Claire Felter, 2018)⁵⁶

7.5: The region of Niger Delta

According to studies, focused on Nigeria, the country is extremely based on the oil and gas as sources of revenues and economic activity. Any incident that may happen in the oil production sector, is possible to affect the economy of the country and the society in general. Oil is essential for the country. More specifically, in the early 1990's the petroleum was the 25% of GDP, the oil exports consisted the 95% of total exports. So the petroleum is the most important source of economic development of the country.

In the region of Niger Delta, the existence and action of some militant groups cause problems both to the ones who form the policy in the country and also to the scholars that are focused on the research in the country. Some studies that concern the Niger Delta crisis, make a reference to "agitation for self-determination", "pirate activities", "insurgency", "armed rebellion" or "militancy", in order to explain the phenomenon. (Olu Awofeso, Kingsley Ogunne , 2017).The most usual methods the groups use are kidnappings, hostage takings, blowing or shutting down oil installations and facilities, bombing cars or making illegal oil bunkering.

There are changes in Nigeria that can cause problems in the country in the socioeconomic sector. "These developmental challenges have for so long been identified as, high rate of unemployment, inadequate physical and social infrastructure, debilitating youth unemployment, unstable and deteriorating exchange rate, high inflation rate, low industrial output, endemic rural and urban poverty, very large domestic debt, and rising stock of external debt among others."(Olu Awofeso, Kingsley Ogunne, 2017)

⁵⁶Claire Felter (2018), Nigeria' s battle with Boko Haram. Retrieved from : <https://www.cfr.org/background/nigerias-battle-boko-haram> (accessed 26 July, 2019)

7.5.1: History of the Niger Delta crisis

The Niger Delta has always been a territory prone to protests and chaos. There are examples of the resistance to exploitation and imperialism in Nigeria, such as that of Jaja of Opodo or that of Nana of Itsekiri. The exploitation and marginalization were always apparent during the colonial and post-colonial period, in Nigeria.

In order to improve the situation in Niger Delta, many trials were made and these trials are connected with the name of Boro. Isaac Boro founded the Niger Delta Volunteer Service in 1966, with the purpose to deal with the problems in the regions. Problems concerning both people and also infrastructure development. Boro wanted self-determination for the country, as the government had not adequate and effective action after the independence. Finally in 23 February of 1966, Boro and the Niger Delta Volunteer service declared a Niger Delta Republic.

We could say that the oil discovery would help the bad social, political and economic situation of the region. However, that did not happen. On the contrary, the oil discovery made the situation worse as the demand was getting higher and higher.

"The picture of boroism is a clear indication that the region had for long been politically, socially and economically marginalized and deprived, and the discovery of oil had only aggravated their demands. The state of marginalization even before oil discovery can be traced to a clearer scenario where the Willinks Commission(Minorities Commission) of 1957 reported that:

The needs of those who live in the creeks and swamps of the Niger Delta are very different from those of the interior... it is not easy for a government or legislature operating from the inland to concern itself or even fully understand the problems of the territory where communications are so difficult, building so difficult, building so expensive and education so scanty in a country which is unlikely ever to be developed (Etemike, 2009: 154 - 155)." (Olu Awofeso, Kingsley Ogunne, 2017)

The exploration of oil caused environmental degradation and made the situation of the region even worse. During the 1990s and while the situation was not at all better, another revolutionary movement appeared named Movement for the survival of Ogoni People under the leadership of Ken Saro - Wiwa. Unlike the movement of Boro, this movement was more peaceful, focused on the dialogue and was protesting against the exploitation of Ogoni land by Shell and by government of Nigeria.

The Ogoni people aimed at gaining political self determination as well as the right to control and benefit from their economic resources. They also asked for payment for reparations by the Nigerian government and petrol-businesses, compensations for the environmental destruction. Lastly they asked the right to protect their land from further degradation and pollution.

However, the government not only ignored the demands of these people but also they acted violently against this group. The government proceeded in the execution of the leader of the group Ken Saro-Wiwa and of some other Ogoni men. The government also invaded in communities such as Odi, Odioma, Ayakoroma, Oporoza and others and destroyed the lives of innocent people.

The grievance caused by this position of the government, led the left youths of the region to militarize their effort. In 2006 the Movement for the Emancipation of Niger Delta made its appearance. The MEND group along with other groups, such as Niger Delta People's Volunteer Force (NDPVF) or the Coalition for Militant Action in the Niger Delta (COMA), proceeded in attacks against oil infrastructures and facilities in general. These and other similar groups had the sympathy of the locals and thus the groups had the secrecy needed. So the result of all these was the destruction of oil production facilities all over the country. "And even the Nigerian military has found it difficult to achieve a decisive advantage over them due to the guerrilla tactics they adopt, the terrain of the swamps where the militia camps are located, and the dispersed infrastructure of oil pipelines and production facilities in the delta." (Olu Awofeso, Kingsley Ogunne, 2017)

These groups managed to get evolved and transform into specialists that could "tap refined petroleum products and crude with the aid of sophisticated communications equipment and transportation means across creeks, rivers and rivulets" (Olu Awofeso, Kingsley Ogunne, 2017)

The MEND group has conducted repeated attacks, approximately 60-70 annually, on energy infrastructures since 2006. The result of these attacks was the cutting of the production by 20%-25%, which means almost 600.000 per day.⁵⁷

Things became better when the president Yar'Adua offered amnesty as well as vocational training and monthly cash payments to almost 30.000 militants. As a result the exports of petroleum were increased and reached the 2.4 million barrels per day in 2011. This program of amnesty, was programmed to end by 2015. However, in 2017 the program was extended by the president Buhari.

⁵⁷ Jennifer Giroux , *Targeting energy infrastructure: examining the terrorist threat in North Africa and its broader implications*, ARI (2009) p. 1-10

7.5.2: Niger Delta Avengers (NDA)

In 2016, another militant group made its appearance in the Niger Delta region, which called itself "Niger Delta Avengers". The group started collaborating with other already existing militant groups like Red Egbesu, Water Lions, Joint Niger Delta Liberation Force, Niger Delta Red Square or Niger Delta Greenland Justice Mandate. According to a document retrieved in 17/11/2016: "The NDA have attacked oil producing facilities in the Delta, causing the shutdown of oil terminals and fall in Nigeria's oil production to its lowest level in Twenty years. The attacks caused Nigeria to fall behind Angola as Africa's largest oil producer. The reduced oil output has hampered the Nigerian economy and destroyed its budget."⁵⁸

7.5.3: To sum up

Nigeria has producing capacity approximately 3,2 million barrels per day. However, the current production is lower than that. This is happening because of the countries disruptions in the energy sector. Pipeline vandalism, acts of sabotage, or theft cause a great amount of the oil produced to get lost. This means that we should take into consideration the crisis of the Niger Delta.

A government's measure is "the allocation of 13% of the national oil revenue which is paid back to the oil producing countries."(Olu Awofesco, Kingsley Ogunne, 2017). This leads us to the conclusion, that maybe Niger Delta is the region the most vulnerable in Nigeria and the one that causes the biggest problems as it is responsible for the appearance of catastrophic terrorist group, such as Boko Haram. Eventually Boko Haram generates more instability and tension in the country that has as an impact, the creation of other armed groups.⁵⁹

⁵⁸Niworu, Slihu Mohammed, *The Niger Delta Avengers, Autonomous Ethnic Clans and common claim over oil wells: the paradox of resource control*, An international multi-disciplinary journal, Ethiopia. *Affrev* 11: 2 (2017) 42-56

⁵⁹Olu Awofeso, Kingsley Ogunne, *Resurgence in the Niger Delta and the discourse of terrorism in Nigeria*, *Journal of Law, Policy and Globalization* (2017), vol. 63 p. 165-170



fig.2 Boko Haram attack on oil exploration workers(2017)

Source : <https://www.sunnewsonline.com/boko-haram-attack-on-oil-exploration-workers/>

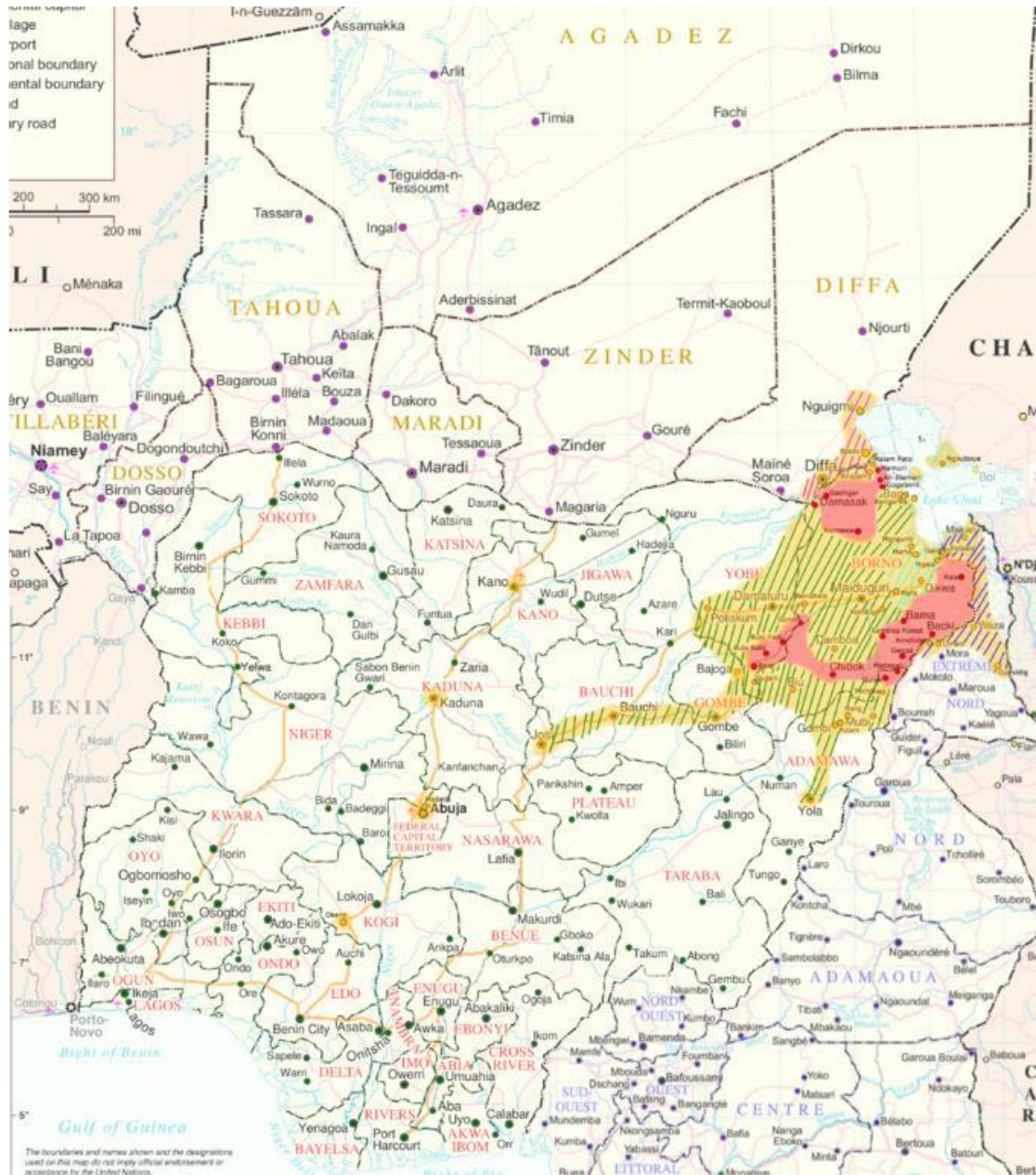


fig.3Boko Haram in Lake Chad Region , February 2015. Source: https://en.wikipedia.org/wiki/File:Boko_Haram_in_Lake_Chad_Region.png



fig. 4 Nigerian militants attack oil pipeline, September 2016.

Source: <https://www.sowetanlive.co.za/news/africa/2016-09-30-nigerian-militants-attack-oil-pipeline/>

Chapter 8: CONCLUSION

This project tried to make a reference to as many threats as possible, that concern the energy sector, in order to understand better how the current changes, changes of every kind, affect the international scenery.

The energy resources are numerous. However, they are unevenly distributed and this causes instability. The interests of the states, can lead them to behaviors that are capable of causing trouble to other states. Current developments can transform the energy importing countries into energy exporters, something that can destabilize the existing relation between supply and demand, something that can also cause conflicts in the international foreground.

Nowadays there is a growing demand of energy but at the same time a growing need to reduce the CO₂emissions, so as to prevent the environmental degradation. This combination created the need to invest in the nuclear and renewable energy. However, such kind of energy, also entails many threats. For instance, nuclear energy has been the cause of environmental problems

and the cause of nuclear accidents. The nuclear weapons consist also a threat. Although there is the view that nuclear weapons are a major threat, there are also those researchers that focus on the balance of terror. Which means that the nuclear weapons can become a way, in order to avoid violent actions between states. As far as the renewable energy is concerned, it also entails some economic, political, technological and environmental dangers. All these, are related to the climate change, the air pollution or the water contamination.

Moving on, the project focused most of the interest in terrorism and examined it as a major threat. The complexity of the phenomenon is apparent if we try to define terrorism. There are many definitions, many causes and different methods and targets of terrorism. However, the terrorist groups are similar, concerning the internal structure, as each one of them feels like he belongs somewhere and the feeling of solidarity exists in the group. Although the recent years we observe incidents with protagonists "lonely wolves", we should not ignore that behind this person there are more people and behind these people many more causes and interests.

The project referred to the weapons terrorist use, weapons such as chemical, biological, radiological, nuclear weapons or antipersonnel Land Mines. However, more recently another form of terrorism is on the forefront and that is the cyber terrorism. The evolution of technology has given the possibility, to conduct attacks against critical infrastructures through the internet.

Continuing, the project tried to relate the concept of terrorism with that of energy security. In this point we have to clarify that there are different existing views as far as the attacks against energy infrastructures is concerned. Surveys have been conducted, focusing on groups like Al Qaeda and the Islamic State, that act internationally. According to a survey conducted for the years 1998-2007 and 2004-2008, the terrorist attacks against such infrastructures were not that important in number, compared to any other terrorist attack and that is because this type of attack requires knowledge and skills, otherwise it is not that easy to destroy an energy infrastructure. However, as a lot of changes take place, such type of terrorism becomes more often, as both the incentives and the technology change, altering the targets of terrorists, as they gain more and more the appropriate knowledge to attack energy infrastructures. For example, according to another research, between the years 2010-2014, many attacks on energy infrastructures took place. This fact shows that the nature of terrorism is maybe changing along with the current developments.

In the last part of the project, there has been an effort to focus in the region of Nigeria and Niger Delta, and look more closely the terrorist groups that act in there. Even if the purpose of a Muslim faithful to the Quar'an, is to spread

Islam with the holy war of Jihad, we examined organizations such as Boko Haram or MEND , that have more political incentives rather than religious, even if they are included in Islamist groups.

Nigeria is a country that suffers from instability and inadequate governance. That's why terrorist groups made their appearance in Nigeria and Niger Delta. Both Nigeria and Niger Delta base a great part of their economy on the oil production.

We examined Boko Haram alone, as it is the terrorist group that is responsible for the instability in Nigeria. That's why we examined thoroughly how it emerged and what its ideology is. Boko Haram appeared as a result of the inadequacy of the government and targeted in creating a new order in Nigeria by ameliorating the situation existed in the north Nigeria, where poverty was the basic characteristic. The lack of effectiveness of the government along with its attacks against Boko Haram, helped in the violent appearance of this terrorist group and started acting like an avenger which means that its targets had a retaliation effect. Nigeria's oil and gas production belong to the Nigerian National Oil Corporation. Boko Haram believes that the state of Nigeria is evil because it is anti-Islamic, as the organization claims. As a result, even if the oil industry is far from the part of Nigeria where Boko Haram acts, the organization managed attacks that focused on blocking the oil exploration. At the same time we could reach to a result that has to do with the affiliation of Boko Haram in the Islamic State. The Islamic State, has conducted attacks on energy infrastructures and maybe this could become an example for the Boko Haram, to act in the same way. The situation both in Nigeria and Niger Delta, creates fear in the international investors that could be many, as the regions would be the perfect places to make energy investments.

More specifically, the Niger Delta region has a history of crisis. From this crisis, one group that made its appearance was that, named MEND(Movement for the Emancipation of Niger Delta), which has conducted numerous attacks on energy infrastructures since 2006. Later on many other groups appeared in the Niger Delta, one of them called " Niger Delta Avengers" appeared in 2016 and it was focused on attacks like shutdowns of oil terminals, that caused the fall in Nigeria's oil production.

The order goes like this. The lack of effectiveness of the governments and the instability existing, create disappointed groups of people. Such groups can turn into violent groups such as Boko Haram, and can make attacks centralized on oil production(ex. pipeline vandalism). The instability created by the most violent group in Nigeria, forces the appearance of other armed groups that focus on attacks on energy infrastructures, devastating Nigeria and Niger Delta, and deprive them from the advantage of being strong

economies, based on oil production and exploration, diminishing that way the investments in the regions.

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