



# **NINE YEARS AFTER THE DEEPWATER HORIZON OIL SPILL**

**EVALUATING CONSEQUENCES IN A STATE-  
CORPORATE CRIME FRAMEWORK**

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On April 20, 2010, the Deepwater Horizon oil platform exploded after a series of issues with the Macondo oil well, around the Louisiana coast, in the Gulf of Mexico, causing the death of 11 workers and wounding 17 others.

On April 22, the rig sank into the ocean.

Large quantities of oil have then poured into the Gulf waters for almost 3 months, causing the most serious oil spill in history.

The event is critically examined in relation to the State-corporate crime integrated theoretical model by Michalowski and Kramer (2006), in particular using the institutional level (the relationship between politics and economics) and the operationality of control catalyst (the presence or absence of social control). The results are presented with a deductive strategy. Furthermore, part of the long-term consequences on the environment will be presented, using a deductive thematic strategy. I believe, in order to comprehend the importance of this study field and the relevance of my work, it is necessary to fully analyse the long-term consequences of the DWH (Deepwater Horizon) oil spill in the Gulf of Mexico.

The analysis is developed within a case study, based on a literature review. Results show that not only the long-term consequences of the oil spill on the environment are devastating on almost all the elements studied, but that the role of the State in the accident was decisive, especially for the work culture which developed during the years, that led to the accident.

*Keywords:* Deepwater horizon, oil spill, state corporate crime, Michalowski & Kramer, environmental consequences

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# **INTRODUCTION**

The concept of environmental crime, instrumental to the purposes of this study, is particularly complex and is often used to generically indicate crimes related to biodiversity, fauna, animals, natural resources, hazardous waste, prohibited substances and environmental quality.

One of the classification criterion of environmental crimes is based on the elements it incorporates (Gibbs and Boratto 2017) such as, for example, the type of violation or the part of the environment against which it is perpetrated. Another criterion is the type of entity who commits the crime (Gibbs and Boratto 2017).

For the purpose of this study, I will consider environmental crimes: "... illegal acts that directly harm the environment and include illegal trade in wild animals; smuggling of ODS; illicit trade in hazardous waste; illegal logging and the related trade in stolen timber."(Banks et al. 2008).

One of the main problems of these crimes lies in the perception of the public, which considers them "victimless" and secondary: the response provided by governments and the police community to these crimes is often not sufficiently timely nor proportional to the offence.

The real picture seems to be very different: environmental crimes affect all of humanity and the whole world (Banks et al. 2008). They generates extremely large profits, are cross-border and involve significant criminal organizations, including international ones. In fact, globalization facilitates the commission and impunity of international environmental crimes (Banks et al. 2008).

Accidents involving oil spills are extremely important in the field of environmental criminology, and society as a whole, because of their scope and dramatic consequences for local populations and ecosystems. Increasingly deeper drilling increases the risks and consequences of accidents. Current experiences have shown that disasters involving offshore platforms are common to all regions of the world and to all communities and companies (Bradshaw 2012).

The international nature of offshore drilling activities requires international coordination for an effective regulatory framework which will also cover responsibilities and compensation in the event of these type of accidents (Rochette et al. 2015).

My analysis concerns both the environmental consequences of the Deepwater Horizon oil spill and the role of the State and its culpability (through a deductive analysis approach), in the context of a case study based on a literature review.

## **PREVIOUS RESEARCH**

### **Oil Industry and Oil Spills**

Aldrich and Pfeffer (1976) defined the general term of industry as "the set of companies operating in the same niche that compete for the same resources, which means that their customers/products can be considered interchangeable or equivalent" This definition is the one used through the paper.

In order to adequately represent a sector, it is necessary to evaluate the impact that the State, which has the role of creating laws and regulations that will influence relations within organizations and within the sector, will have.

Clinard and Yeager (2006) have extensively addressed corporate crime in the 1970s and have noted that some industrial sectors are more influenced by this phenomenon than others; among these, the oil industry also presents peculiar elements under an ethical profile - of particular importance is that of environmental pollution.

According to Clinard and Yeager (2006), the oil industry is the one that recorded the largest number of violations of federal laws and regulations, both in terms of total violations and those related to pollution, and indeed, the legislation on the matter, more than originating from environmental needs, has often been produced in response to specific environmental disasters (Davenport 2019).

The damage to the ecosystem and the difficulties for its restoration are the main criticalities resulting from oil pollution. Marine ecosystems are complexly structured, with many interacting species and an oil spill will have a different impact on each biosystem. Previous oil spills suggest several key variables: the chemical composition and quantity of oil to which organisms are exposed to, are fundamental factors to determine the way in which the natural habitat will respond (Chang et al. 2014). The possibilities and the degree of environmental recovery vary drastically depending on the characteristics of the spillage, the cleaning activity, the habitat and the biological species involved (Chang et al. 2014).

As for the term “offshore” industry, it indicates the location of the same outside of one's national boundaries, whether or not that location is land- or water-based (Hayes 2019).

### **The Events**

At around 10:00 pm on April 20, 2010, a series of events took place aboard the Deepwater Horizon oil rig, owned by British Petroleum (BP), which caused a cloud of gas to surround the rig and a subsequent series of explosions. Once an intense fire developed, the order to abandon the rig was given (Crandall et al. pt 1 2013).

The fire burned for more 36 hours, due to the continuous oil and gases rising from the well, beyond the BlowOut Preventer (BOP) and in the upright. The hydrocarbon mixture, once entered the plant, fueled an intense fire that could not be extinguished. It became then necessary to find a way to disconnect the fuel source, which was not difficult to locate, but which proved impossible to stop (Crandall et al. pt 1,2013; National Research Council 2012).

After 36 hours in flames, the Deepwater Horizon bent to one side and slipped into the sea. The waters of the Gulf of Mexico extinguished the fire, but crude oil started pouring into the Gulf and continued for 87 days (Crandall et al. part 3 2013). The cause of the disaster was identified in the deficiencies of the BOP and in the inadequate cementing process on the well casing that should have prevented accidental spills from the well (Pallardy 2019).

Once understood what did not work properly, it was important to understand whether mistakes were made in the sealing of the well or if the safety systems had been compromised by conscious negligence (Crandall et al. part 3 2013).

The explosion of the British Petroleum's offshore drilling rig, Deepwater Horizon, caused the death of 11 workers, injuries of 17 and the largest oil spill in history: during the next three months, about five million barrels of oil were dispersed at sea (Friedman & Tabuchi 2017).

This caused indescribable damage to marine and coastal ecosystems and generated serious economic difficulties for the local fishing and tourism industry (Crandall et al. part 3 2013).

### **Negligence and deviant behavior**

Within the offshore oil industry, both the government and multinationals had recognized the potential for a serious deep-water blowout (Bradshaw 2012). Nevertheless, the offshore industry has fought hard against US federal regulations, pursuing profits at the expense of safety. One of the most critical elements for the prevention of a deep-water blowout is the cementing process and the integrity of the cement work, which, at the time of the Deepwater Horizon (DWH) incident, were not controlled by federal regulation. The goal of reducing costs led BP to make critical decisions that favored the incident (Barstow et al. 2010).

Firstly, less drilling mud was used than normally expected (Bradshaw 2012). They therefore decided to use a long-string housing design instead of a safer alternative and used six instead of the twenty-three recommended centralizers. Finally, BP decided not to perform the test along the cement roof, which is considered the "gold standard" of integrity tests, in order to save money, time and not have to face the reality of a poor and critical job in the process cementation and save on the related costs (Bradshaw 2012; National Research Council 2012).

Despite the presence of these risky choices, MMS<sup>1</sup> (Minerals Management Services) staff examined and approved the process. The other two companies involved, Transocean and Halliburton, acted as silent accomplices: the pressure that BP had placed on them to finish quickly their parts in the process made it possible for the illegal activities to take place even within these two side companies. The role of Halliburton in particular was to ignore the failed tests that proved the cement to be unstable and not to report it to BP. The three companies quickly approved the cementation and ignored the critical issues that emerged from the pressure tests that highlighted the instability of the well (Bradshaw 2012; National Research Council 2012).

The three companies were perfectly aware of the problems present in the outbreak prevention facilities and chose not to resolve them, opposed to what is required by federal law. These knowingly deviant and negligent behaviors caused a loss of hydraulic pressure, and a low battery of the BOP caused then the fire that ended up destroying the Deepwater Horizon (Crandall et al. pt 3 2013; Bradshaw 2012; Chang et al. 2014).

The close management of survivors and information made it possible for the three companies to unify their versions of the incident before it was made public. To achieve this, the companies had even banned the use of phones and internet for platforms across the Gulf of Mexico (Bradshaw 2012).

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<sup>1</sup> Agency of the United States Department of the Interior that managed the nation's natural gas, oil and other mineral resources on the outer continental shelf (OCS).

## **Lawsuits**

The geographical location of the Macondo well subjects the DWH to the American law under the "Outer Continental Shelf Lands Act - OCSLA" which provides the regulatory framework for the territories "outside the continental shelf". It is flanked by numerous legislative elements, a regulation about drilling and one for the safeguard of the populations and the environment (Barstow et al. 2010; National Research Council 2012)

Among the main elements emerging from the legislation were the principles of "gross negligence" and "intentional misconduct" (Cruden et al. 2016).

The disaster of the DWH was judged within this legal framework, and this determined a series of civil and penal responsibilities which strongly impacted BP and the other interested companies. The civil and criminal judicial proceedings that followed, saw all the major companies lose.

BP was forced to face not only the proceedings initiated by the federal and local authorities but also a very large number of private civil cases (around 400 thousand). A recent estimate of the total costs incurred by the British company indicates more than \$65 billion in fines, compensation and expenses (Degli Innocenti 2018; NBCNews 2014).

To a lesser extent, also Transocean and Halliburton have had to face sanctions of grave importance due to their attitudes when faced with the criminal negligence of BP (Appendix 1).

The Obama administration has since then created a new set of regulations on security and oil drilling, changes that have been reviewed by the Trump administration and replaced with more lenient laws (Lefevbre 2019).

## **Theoretical Framework**

In order to analyze the illegal or socially harmful actions that derive from the cooperation of one or more political and economic entities, an important research activity started in the 90s. This united two distinct categories of crimes of the powerful - state crime and corporate crime - which led to the definition "State-Corporate Crime" (Kramer & Michalowski 1991).

This was the first time the concept was ever used. From that moment on, it has been heavily discussed, due to its characteristics and limitations, and has been used to explain and interpret different types of organizational damage.

The integrated theoretical model of state-corporate crime uses three levels of analysis to understand organizational deviance: interactional, organization and institutional levels (Kramer & Michalowski 1990; Bradshaw 2012).

The latter are based on three corresponding theoretical perspectives: Sutherland's theory of differential associations, organizational theory and political economy. The three levels of analysis are also accompanied by three catalysts for action: the emphasis on motivation or performance, the structure of opportunities and the effectiveness of control (table 1) (Kramer and Michalowski 1990).

One of the advantages of theoretical integration is that different levels of social reality can be included in an analysis. Most conventional theories of traditional crime and white-collar workers tend to favor one level of analysis over others. With integrated theoretical models, however, an attempt is made to "cover all the bases" in order to highlight the multiple connections between individuals, organizations, structures and processes vital to the genesis and persistence of high-level deviance (Michalowski & Kramer 2006).

*Table 1 – Levels of analysis and catalysts of Michalowski and Kramer’s State-Corporate theoretical model*

Levels of Analysis	Theoretical Perspectives	Catalysts
<i>Interactional</i>	Differential Association Theory	Motivation
<i>Organizational</i>	Organizational Theory	Opportunity Structure
<i>Institutional</i>	Political Economy	Operationality of Control

*The interactional level:* differential association theory states that criminal behavior is learned in contact with individuals who define such behavior favorably and in isolation from other individuals who give an unfavorable definition (Sutherland and Cressey 1978).

The first catalyst for action, *motivation*, refers to the fact that increasing focus on achievement of goals could lead to organizational deviance (Michalowski & Kramer 2006).

*The organizational level:* this concerns the power and influence of organizations in society, which we need to know in order to understand behaviors that are considered as unacceptable within the society (Michalowski & Kramer 2006).

The second catalyst for action, *opportunity*, refers to the fact that organizational deviance tends to be more present with increasingly challenging objectives, because the tools made available to the company appear insufficient.

For time and length issues, I will, however, focus on the *institutional level*. This analyzes the relationship between politics and economics; which is where state-corporate offenses take place. It focuses on the relations that intervene between economic subjects and representatives of public functions (Michalowski & Kramer 2006).

This is a level that sees legitimately common interests overlap, such as economic development, employment and social responsibility. Antithetical interests and duties also coexist: such as profit maximization and industrial growth on the one hand, economic but also social protection and environmental safeguard on the other (Bradshaw 2012).

The third catalyst for action, the *operationality of control*, concerns the more or less extensive presence of social control. Organizations with high social control operations are more likely to develop organizational cultures that comply with laws and regulations than those that do not have sufficient controls. This level is particularly characteristic of the state-corporate Crime (Bradshaw 2012).

The operationality of control typically manifests itself through every form of legitimate or illegitimate pressure from economic subjects to public bodies in order to obtain undue advantages. These can manifest themselves within one's own industry (competitive advantages) or in opposition to social needs and therefore concern an entire industry or even the entire business sector. Using the words of Michalowski and Kramer (2006) "This framework is designed to indicate the key factors that will contribute or hinder organizational deviance for each combination of catalyst for action and level of analysis".

I will be focusing on the institutional level – and the operationality of control catalyst – in order to analyze the role of the State in the events leading to the Deepwater Horizon oil spill and its culpability.

## **AIM AND RESEARCH QUESTIONS**

This thesis was written with the aim of highlighting 1) the impact which can potentially be caused by oil spills, and 2) the importance of establishing culpability among not only private companies, but also public entities. I will try to do so by understanding the government and industrial relations that led to the Deepwater Horizon incident and the environmental consequences of the event through a short analysis of the history and work culture of the companies most directly involved in the disaster: BP, Transocean and Halliburton.

For this purpose, I will use the theoretical framework, by Kramer and Michaelowski (2006), of State Corporate crime: in particular focusing on the institutional level and the operationality of control catalyst.

Since environmental disasters are increasingly widespread throughout the world due to climate change, the importance and need to study causes and culprits of these events is increasingly fundamental. This is why I also chose to highlight the environmental consequences of this event years after it took place. I hope to contribute to highlighting how the DWH incident is the inevitable consequence of a negligent attitude of both the industrial and the public actors.

The goal of my dissertation is to highlight that catastrophic events, not generated by unforeseen and unpredictable situations, but by neglect, greed and incompetence, such as those of DWH, characterize a criminal aspect with dramatic consequences that often cannot even be adequately assessed due to the impacts on indirect and prolonged environment in time and space.

Furthermore, this thesis is relevant because the knowledge about the long-term consequences of oil spills, within current research, appears to be lacking, and considered the global importance of the topic, this needs to be drastically changed. By “long-term” consequences we define those persisting after a 12 months period of time.

Furthermore, the theoretical model by Kramer and Michalowski hasn't been tested on oil spills, with exception of Bradshaw, 2012, who used it to analyze the cover up efforts in the aftermath of the Deepwater Horizon oil spill.

My take, which focuses on the institutional level and the operationality of control, has not been previously tested.

I will focus on two aspects in particular:

1. Long-term biological consequences: after nine years since the DWH environmental disaster, which are the still relevant long-term consequences for the Gulf of Mexico environment?
2. How can this event be read in the key of the integrated theoretical model of state-corporate crime, in particular at the institutional level and in relation to the catalyst of operational control?

## **METHODOLOGY**

The use of a case study based on a literature review, is what I consider the best approach to answer my research questions, because of the exemplary importance of the DWH oil spill. Analysis on this accident is lacking, despite this being such a fundamental field of studies for both green criminology and environmental studies.

I believe that the strength of this method, such as flexibility of analysis and the possibility to analyze the causal mechanisms of events.

Alternative methods common to qualitative studies, such as interviews, focus groups and ethnographic research, do not seem to fit the topic, research questions and aim of my paper, for strategical and content reasons.

### **Case study and Literature review**

To analyze these research questions, I chose to use a case study approach based on a literature review.

The case study method has four particular strengths:

- it allows a greater degree of conceptual validity;
- it gives the researcher the possibility of examining deviant or anomalous cases that can contribute to the development of new variables and hypotheses;
- it examines in detail the operation of causal mechanisms in individual cases.
- it offers a particular advantage in modeling and evaluating complex causal relationships (George & Bennett 2004).

Each of these strengths of the case study methodology makes it suitable for studying the complex social, political and economic forces that contributed to the oil spill in the Gulf of Mexico.

The main concerns of the method are reliability, validity and generalizability: case studies tend to lack rigor in the various phases of research, such as the collection, construction and analysis of empirical materials. The main problem of this method is the fundamental role of the subjectivity of the researcher (George & Bennett 2004).

Among the many ways to try to reduce the effects of this potential issues, I verified numerous sources of data which support our interpretations – triangulation – in order to make sure my findings were legitimate.

Furthermore, I checked for alternative explanations. Considering whether there might be other reasons than those studied, for the data obtained, helped me rule out alternative explanations.

Case studies are also very flexible, because they do not attempt to simplify phenomena that cannot be reduced and recognizes that there are no simple answers (George & Bennett 2004).

Literature reviews examine and evaluate the scholarly literature on a topic, and they are conducted as the beginning stage of the research, either as a single document or as a part of a bigger work (Ramdhani et al. 2014)

The purpose of using a literature review is to provide context for the analysis of the research paper, ensure that the research is original and will be a meaningful addition to the existing research, and highlight where the current research position itself within the body of literature described (Ramdhani et al. 2014). Furthermore, analyzing the existing research on a certain topic, also helps identifying the weaknesses and strength of the same, and is fundamental in order to make recommendations for future research (Ramdhani et al. 2014).

In order to fulfill these purposes, the literature review needs to be focused – include relevant facts with clear exclusion and inclusion criteria; analytical – focused on ideas and relationships among them, rather than on the work of singular authors -, critical – allows comparison within concepts and theories (Ramdhani et al. 2014).

### **Inclusion and Exclusion Criteria**

The main sources are State reports and investigations, journalistic and academic papers: using different sources of information helped me get accounts from all points of view and get a clearer view of events.

General inclusion criteria were the date of publication – I tried to find the most recent account of the ongoing events – and I also tried to take as much information as possible from official sources – such as National Committees and official reports.

As for academic sources, the inclusion criteria were those of transparency, validity and reliability – clear sources and data, methods and replicability of the study. I also took into consideration the political stand of the newspaper used. This is also part of the reasons why I used some Italian sources – which have less economic and political interests in the event and should therefore give a less biased account of the events.

The inclusion criteria based on contents were, for the studies answering the question of environmental consequences, that they focused on the latter, on flora and fauna, and the Gulf of Mexico's environmental state after 2009 and up to 2019. We did not exclude any source based on timeframe, but we preferred those as recent as possible. Furthermore, I did not focus on atmospheric consequences.

As for the research question related to State-Corporate crimes, we focused on content related to culpability and responsibility in the DWH oil spill, state-corporate cooperation for illegal or negligent acts, social and economic control of the oil industry towards State agencies in relation to the DWH oil spill. The

exclusion criteria are political and ideological biased sources, especially those extremely biased towards a political party.

In the event of a lack of sources on the events of the Deepwater Horizon oil spill, I have used sources referring to similar accidents or conditions.

### Data Materials

A significant part of the data concerns reports on the technical causes but also the context of the accident as well as its detected and potential environmental consequences.

In order to answer my research questions, I used the sources listed in table 2 and 3:

*Table 2 – Sources used to answer the first research question*

Research Questions	Type of Sources	References
1. Long-term biological consequences: after nine years since the DWH environmental disaster, which are the still relevant long-term consequences for the Gulf of Mexico environment?	Scientific Papers	Abbriano R (2011)
		Chang et al. (2014)
		Fisher C et al. (2014)
		Getter D et al. (1981)
		Haney J et al. (2014)
		Incardona J et al. (2014)
		Incardona J et al. (2013)
		Effects in Offshore and Coastal waters - ITOPF
		Liston B (2014)
		Lori H et al. (2014)
		Mager et al (2017)
		Ozhan K et al. (2015)
		Parsons et al. (2015)
		Rochette J Wright G (2015)
	Sammarco P et al. (2013)	
	Stacy N et al. (2017)	
	Newspapers	Il Post (2014)
NGOs and State Reports	National Research Council (2012)	
	Office of Response and Restoration, Natural Resource Damage Assessment	
	Cleaner Seas, ITOPF	

Table 3 – Sources used to answer the second research question

2. How can this event be read in the key of the integrated theoretical model of state-corporate crime, in particular at the institutional level and in relation to the catalyst of operational control?	Scientific Papers	Aldrich, H. and Pfeffer, J. (1976)
		Banks, D et al. (2008)
		Barstow et al.; (2010)
		Bradshaw, Elizabeth A. (2012)
		Clinard, Marshall and Peter Yeager (2006)
		Criden, J. C., et al; (2016)
		Gibbs and Boratto, R. (2017)
		Kramer, Ronald and Michalowski, Raymond; (1990)
		Kramer, R. C. and Michalowski, R. J. (1991)
		Kramer, R. C., Michalowski, R. J. and Kauzlarich, D. (2002)
		Michalowski, R. J., Kramer R. C., (2006)
		Mills, R. W., Koliba C. J. (2015)
	Newspapers	Wade, T. (2014)
		Whitton, H.; (2001)
		Usborne D. (2010)
		Urbina, I. (2010)
		Reidel J. (2014)
		NBCNews, (2014)
		Davenport, C. (2019)
		Friedman, L., Tabuchi H., (2017)
Kunzelman, M (2010)		
Lefebvre, B., Wolf, E. (2019)		
NGOs and State Reports	National Research Council (2012)	

For the preparation of this research document, I analyzed different types of sources, all available to the public through the Internet. They are all readily available and therefore allow specific in-depth studies.

I researched the sources through three main databases: the online library of the University of Malmo, the online library of the University of Milan Bicocca, and the University of North Carolina Greensboro (three databases to which I have access because I am/was a student at the Institution).

Other than the three University databases, I used google.com – specially to find newspaper sources.

The main keywords I used are presented in table 4.

Table 4 – Keywords used to answer the research questions

<i>Keywords for Long-term Environmental Consequences</i>	<i>Keywords for State-Corporate crime theory testing</i>
“deepwater horizon environmental consequences”	“Michaelowski Kramer state corporate”
“deepwater horizon long-term consequences	“Michaelowski Kramer Deepwater Horizon”
“oil spill environmental consequences	“state role Deepwater Horizon”
“deepwater horizon plankton”	“Deepwater Horizon government”
“deepwater horizon sea birds”	“Deepwater Horizon lawsuits”
“deepwater horizon fish”	“BP Deepwater Horizon lawsuits”
“deepwater horizon marine mammals”	“Deepwater Horizon National Committee”
“deepwater horizon marine reptiles”	“Deepwater Horizon Government culpability”
“deepwater horizon salt marsh”	
“deepwater horizon coral reef”	
“deepwater horizon mangroves”	

A primary source of data is represented by materials relating to the US National Commission for Presidential nomination on BP Deepwater Horizon Oil Spill and Offshore Drilling's (also known as "National Commission") investigations into the spill. These investigations are the "official" reports of the federal government on the causes of the spill, so they are fundamental to the purpose of the research.

One of the documents that helped me most to write this research document is a dissertation from Western Michigan University, written by Bradshaw Elizabeth " Deepwater, Deep Ties, Deep Trouble: Analysis of the Environmental Business Crime of the Gulf of Mexico State 2010 ", which analyzes the state-corporate cover-up which took place after the events, and applies to this the Michalowski and Kramer theoretical model of State-corporate crime.

## **ANALYTICAL STRATEGY**

### **Environmental Consequences**

In order to present the results of the long-term (persisting one year after the accident) environmental consequences caused by the Deepwater Horizon Spill, I will use a primarily deductive thematic analysis, based on a model by ITOPF – a nonprofit organization that responds to oil spills in order to minimize their consequences.

In deductive thematic analysis, a structure or predetermined framework is used to analyze data. This approach is particularly useful when the research questions identify the main themes used to group the data or when using a pre-existing model, and then look for similarities and differences. Given that this approach is relatively quicker and easier to perform, it is also particularly useful when time and resources are limited. However, using a predetermine thematic framework can determine a loss in terms of flexibility of analysis (Ltd 2019)

## The role of the Public Administration, regulatory and control function

For the part of this research concerning the role of the public administration, I decided to utilize a deductive hypothesis testing approach, which is concerned with “developing a hypothesis (or hypotheses) based on existing theory, and then designing a research strategy to test the hypothesis” (Wilson 2010).

Deductive means reasoning from the particular to the general. If a causal relationship or link seems to be implied by a particular theory or case example, it needs to be highlighted by the use of this method. These hypotheses are themselves derived from the theory and their interpretation through the research question. The deduction starts with an expected pattern, tested against observation (Gulati 2009).

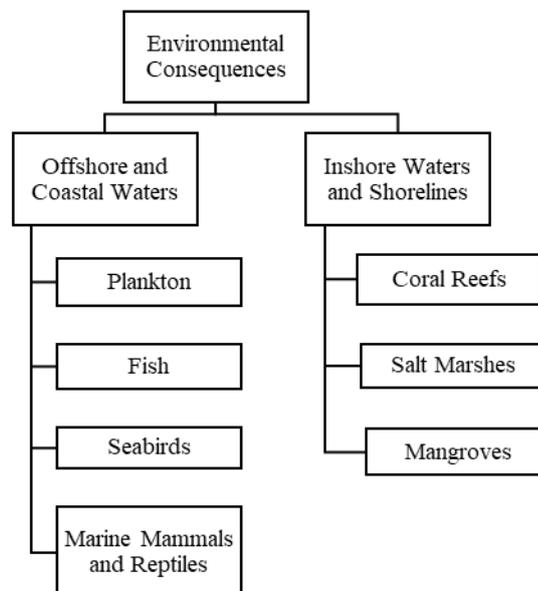
The purpose of deductive approach is to explain causal relationships between concepts and variables, and to generalize research findings to a certain extent (Snieder & Larner 2009).

## RESULTS

### Consequences of the Deepwater Horizon Oil Spill

The environmental effects on the environment will be measured as follows: effects on offshore and coastal waters – comprising plankton, fish, sea birds and sea mammals; effects on shallow inshore waters and shorelines – comprising coral reefs, salt marshes and mangroves.

Figure 1 – Environmental consequences themes as analyzed in the results section



The consequences of oil spills depend on a series of factors, such as the location of the spill, the type of oil, the season, and the duration of the release. Furthermore, the consequences of inshore shallow waters and shorelines, and offshore and coastal waters are also very different (ITOPF – Promoting Effective Spill Response) According to the Office of Response and Restoration, in order to

assess the damages caused by an oil spill, it is necessary to study three elements: 1. Flora, 2. Fauna, 3 Affected Populations (Office of Response and Restoration).

It is generally accepted that recovery is reached when communities of plants and animals characteristic of that habitat are established and functioning normally, and when the human activities related to oceans (fishing, tourism, etc) are back to usual rates (Cleaner Seas, ITOPF).

### *Effects on Offshore and Coastal Waters*

Most types of oil float on the sea surface, where they are spread around by currents, winds and waves. Depending on the type of oil, this could disperse in the first few meters under water, while few can be observed in the sea bed (ITOPF, Effects in Offshore and Coastal waters).

For this reason, the types of organisms that are most likely to be affected by an open sea spill are plankton, fish, seabirds and marine mammals (ITOPF, Effects in Offshore and Coastal waters).

### **Plankton**

Studies of phytoplankton responses to the Macondo (Deepwater Horizon) oil spill show that the phytoplankton could have been stimulated by the oil spill. For example, a few studies suggest that the oil spill was toxic to some phytoplankton species, whereas others indicate that the degree of tolerance to the oil or to dispersants differs among species. These results are generally in line with findings of previous research, but a lack of published field data analyses prevents further assessment of the impacts of the Deepwater Horizon oil spill on phytoplankton population dynamics (Ozhan et al. 2015, Sammarco et al. 2013).

Furthermore, an early study presented in the Official Magazine of the Oceanography Society shows that the planktonic community exhibits an encouraging level of resilience and that they may be predisposed to respond to and even exploit a seemingly catastrophic event such as the DWH oil spill (Abbriano et al. 2011).

However, findings comparing the available baseline phytoplankton data from coastal waters west of the Mississippi River, and samples collected monthly from the same sampling stations, during and after the oil spill (May–October, 2010) indicate that overall, the phytoplankton abundance was 85% lower in 2010 versus the baseline. The results of this study reaffirm the view that phytoplankton responses will vary by the seasonal timing of the oil spill and the specific composition of the spilled oil (Parsons et al. 2015).

### **Fish**

NOAA scientists and researchers from Stanford University and the University of Miami conducted studies on heart damage and fish development abnormalities in DWH-polluted areas. They compared the effects of the Exxon Valdez and Deepwater Horizon crude oils - particularly on zebra fish - by detecting almost identical defects in contraction and heart formation.

This appears to be the main threat to the survival of fish species in the spill area (Incardona et al. 2013).

Likewise, concentrations of crude oil appear to cause the familiar heart deformities in blue, yellow and mahi mahi tuna (Incardona et al. 2014).

On the other hand, even embryos of fish subject to pollution, even if lived in clean water, show subtle disturbances of heartbeat with permanent changes in the shape of their hearts, which negatively affect swimming performances and other critical behavior for the survival of the fish (Mager et al. 2014; Liston 2014).

### **Sea Birds**

The sampling analyses carried out on carcasses of birds recovered during the spill period indicate that 600/800,000 birds died due to the DWH accident, with a particular impact on smaller size sea birds and especially on 4 species (Haney et al. 2014).

The National Audubon Society has detected a reduction of approximately 60% of seagulls in the area for the period 2010/2013. The strong reduction of apical predators also has consequences on the species downstream of their food chain that should be studied and investigated (Haney et al. 2014).

### **Marine Mammals and Reptiles**

The Gulf of northern Mexico is home to 22 species of marine mammals and significant turtle colonies.

These species can be exposed to oil by inhalation, aspiration, ingestion of contaminated sediments, water or prey or by absorbing contaminants through the skin (Schwacke et al. 2014).

To assess the potential sub-lethal effects on dolphins, health assessments were conducted in Barataria Bay, Louisiana, a highly-impacted area, and a landmark site free of pollutants. The dolphins were temporarily captured, received a veterinary examination and were then released. Those of Barataria showed evidence of hypoadrenocorticism, typical of oil exposure. They also presented a 5-fold greater probability of contracting moderate-severe lung diseases among others (Schwacke et al. 2014).

Further studies on whales and dolphins, analysis of stranded carcasses, historical data as well as toxicity tests, have concluded that exposure to oil has caused serious and diversified health damage, including significant, marked reproductive failure. Animals killed by these adverse effects contributed to the largest and longest event of unusual mortality in marine mammals ever recorded in the Gulf of Mexico (Takeshita et al. 2017).

Turtles, an endangered species, also live there permanently, and they appear to be particularly affected by the general pollution of the seas: specifically a strong increase in mortality in the area has been detected since 2011 (Stacy et al. 2017).

### ***Effects on Shallow Inshore Waters and Shorelines***

The impacts of oil spills in shallow coastal waters and on the coasts are difficult to predict due to the wide variety of flora and fauna present. Many of the species are inherently hard and resistant as they have evolved to survive in a highly dynamic environment, and this adaptive capacity allows many of them to survive even devastating events such as an oil spill (Cleaner Seas, ITOPF).

On the other hand, ecologically important habitats in the coastal environment are particularly sensitive to oil pollution; such as coral reefs, salt marshes and

mangroves. All three appear fundamental to provide coastal protection and nursery for many species of fish and invertebrates.

These ecosystems are normally found near the coastal strip and, therefore, are particularly exposed to oil spill pollution (Cleaner Seas, ITOPF).

### **Coral Reefs**

Some abnormal dark-colored formations have been observed on certain coral colonies up to 22 kilometers from the Macondo well – the site of the DWH accident - and up to a depth of 1,800 meters. These are produced by the corals themselves as a form of protection from a harmful external agent and are interpreted as a signal of contamination of the entire marine ecosystem (Il Post 2014).

The coral communities are among the most biologically diverse and productive species on the planet and their destruction would greatly damage the biodiversity and productivity of the oceans. Moreover, being among the oldest living beings on Earth, corals represent a fundamental indicator of human impact on marine ecosystems (Il Post 2014; Fisher et al. 2014).

### **Salt Marsh**

The coastal marshes of the northern part of the Gulf have been reached by different quantities of oil but the relative impact was not immediately and adequately evaluated also due to lack of sufficient information. Subsequently, in a study by Summer Engel et al. (2017), the marsh vegetation of 11 sites in southern Louisiana before the oil spill was compared with that resampled three to four times in 38 months after the spill. Hydrocarbon biomarkers indicated that oil replaced the original natural organic matter (NOM) in the first 4 months after the spill. Only two years later, hydrocarbon levels began to decrease but the composition of bacterial communities was different from the original one, with a greater presence of alpha-proteobacteria (rhizobial), chloroflexes (deocrociidi) and planctomycetes (Summers et al. 2017).

Although, these results indicate that persistent hydrocarbon exposure is only part of the reasons for bacterial changes in salt marshes (Summers et al. 2017).

## **The role of the Public Administration, regulatory and control function**

### *Summary of findings*

The U.S. Government has had a decisive role in the DWH accident, and on the events that led to it. Our findings show that the relations which developed between the corporate and State world did not always work in favor of public interest, but favoring the economic interests of the oil industry. The control function of the competent agencies was insufficient, there was a lack of a fully implemented process-oriented regulatory regime, lack of professional experience at the MMS to fully manage a process-oriented regime and excessive reliance on shareholder responsibility. Lack of funding and close personal relationships among operators of the two interested parties caused a non-compliance to safety standards and the perseverance of negligent behavior. All these elements are interpreted as lack of social control.

### **Hypothesis A:**

My first hypothesis is that the presence of the State in offshore drilling from the oil industry has historically, and within the Deepwater Horizon accident, been insufficient in two of its applications: regulatory and control.

In order to confirm or reject the institutional level, I looked at the interactions between State and Corporate (as organizations, but also with employees as single units) and verify the lawfulness of the same. If these have been illegally beneficial to one side or both – through corruption, nepotism and negligence.

Oil and its derivatives have been the engine of development of western economies, expanding their strategic role in the energy field and, therefore, the geopolitical one, since before the Second World War. The scarcity of energy resources in general and oil in particular, and its location, concentrated in some areas of the world, have made (and still make it) one of the "natural" resources of greatest political value. In this sense, in the United States the oil industry has never been just an economic entity (Bradshaw, 2012).

This aspect represents a perfect example of corporate and state interaction, as described by the institutional level (Michalowski & Kramer 2006).

In the United States, the administrative dichotomy between the jurisdiction of local states around wells and federal authorities has been placed since the first offshore activities (Bradshaw 2012).

The former are more attentive to a logic of global security, the latter more oriented towards an economic and strategic vision. The financial role of royalties/taxes requested by oil companies operating off-shore is not secondary and is a formidable incentive/disincentive tool. Even though this interaction happens between two State organs – local states and federal authorities – it still represents a diversion of interests between the two, identifiable by the contrast of safety and environmental protection, and economic interests (Bradshaw 2012).

At the time of the Deepwater Horizon explosion, regulation of the offshore industry had deteriorated to little more than a formality. The control function of the competent Federal Agency - Mineral Management Service (MMS) - seemed to be completely insufficient even for inappropriate behavior rooted in the fundamental organizational dynamics of the Agency (Mills & Koliba 2015).

This lack of regulation represents the lack of State control and regulation functions, as expected by the theoretical model of state-corporate crime, in which the State works in favor of private companies, instead of in the best interests of the general population and the environment (Mills & Koliba 2015; Michalowski & Kramer 2006).

After all, what really elevates this disaster from an act of serious criminal negligence to a model of "state crime" is the enormous lack of government regulations and the substantial absence of effective controls, which allowed all the DWH deficiencies to not be detected and corrected.

Relations between the State and the corporate level indicate the presence of overlapping economic interests. All these factors contributed to the Deepwater Horizon disaster much more than the specific independent professional responsibilities in the decision-making processes of BP, Transocean and

Halliburton (Mills & Koliba 2015). These elements of culpability and responsibility are those which define the elements of a State-corporate crime, especially connected to the institutional level (Michalowski & Kramer 2006).

As described by Gormley, (1986) these processes have become increasingly complex, therefore agencies often rely on the professional skills of industry, while decision-making processes become similar to those undertaken within the "boardrooms", often without the necessary skills to managing process-oriented regimes (Mills & Koliba 2015).

The private sector has such an informational advantage over regulatory authorities that governments are often left to guess what is happening in the private sector. This is a great advantage that private companies have over government managers who lack the professional capacity to regulate effectively (Koliba & Mills 2015).

This represent another decisive element in Michalowski and Kramer's theory. The lack of knowledge – which is not an equivalent of lack of culpability – derives from lack of resources just as much as from the existence of inappropriate relations between the members and institution of the industry and those of the State, such as extreme trust and a “turn a blind eye” attitude.

Simply put, the federal agency that was supposed to regulate the oil industry had conflicting goals. They were in charge of promoting economic development and of guaranteeing public safety and environmental security, so that borders become blurred and interests intertwined.

This attitude is typical of state-corporate criminals, whose interests rely both on the state and corporate realms, and whose lack of objectivity is fundamental for the perpetration of the crime (Michalowski & Kramer 1991; Michalowski & Kramer 2006)

### **Hypothesis B**

My second hypothesis is that the cooperation between State and corporate is what made this crime possible, along with the absence of social control.

In order to confirm or reject the operationality of control catalyst, I looked at the presence or absence of social control on the oil industry and in particular on the companies involved in the DWH accident. The Michalowski and Kramer theory states that Companies which are subjected to higher levels of social control tend to “play by the rules”, therefore lack of State Control would be one of the factors of the alleged misbehaviors and negligent actions from the part of BP.

According to Koliba and Mills (2015), a reduction in funding and resources is the main reason for a greater collaboration between government, private sector industry and non-profit organizations. The alternatives to this approach, known as process-oriented regulation, focus on the collaboration between the regulated company and the regulatory agency (US government) based on a set of commonly agreed standards and voluntary disclosure (Reidel 2014).

This system makes it extremely difficult to guarantee accountability at a time when elected officials, light on funding, increasingly choose to rely on the experience of the private sector to develop their own compliance standards. This new collaborative responsibility towards process-oriented regulation is based less on formal controls and more on informal elements such as trust, repeated

interaction, practical experience and other mechanisms to ensure that the private sector is effectively regulated on its own

The criticism of the approach is that when regulators and regulating industries have close relationships of trust, the ability to verify that the correct compliance is respected could be blurred (Whitton 2001).

The enormous preponderance of economic interest has contributed to favoring a series of serious accidents, among which the impact of the Union Oil off Santa Barbara (1969), that of Chevron (02/1970) and Shell (12/1970), which produced serious damage to the environment. These construct a pattern of negligent behavior of the companies (Bradshaw 2012)

Furthermore, the analysis of the literature highlighted several inadequate and dangerous behaviors of the federal regulators responsible for the surveillance of the drilling in the Gulf of Mexico, a limitative example is that of having allowed the officials to compile their own inspection reports in pencil - and then delivered them to the regulators, who tracked them in pen before submitting reports to the agency (Kunzelman 2010).

More indications are contained in the report that the Inspector General, Mrs. Kendall, transmitted to the United States Attorney for the western district of Louisiana, which - however - refused to proceed (Urbina 2010).

Over time the regulatory processes have appeared to be particularly unruly, with restrictions following serious episodes of pollution which were then followed by periods of easing of regulations to favor industrial development. In this context, there have been significant changes to the control structures which, however, have appeared progressively less effective and efficient for a serious compromise with the industry (Usborne 2010).

## **DISCUSSION**

### **Research Question 1: Long-term Environmental Consequences**

The long-term consequences of an oil spill in open waters can be analyzed through a series of factors: plankton, fish, sea birds and sea mammals offshore, mangroves, salt marsh and coral reefs inshore. The results I found show that not only the DWH accident caused numerous damages to almost every element mentioned, but that many of these are still changing and developing, hence the real impact of the DWH accident will be only understood years from now, if ever. In fact, if it is true that many consequences cannot be directly linked to the accident, it is also true that many others haven't been predicted and haven't still manifested (Dicks 1998).

Furthermore, to understand the mechanics of State-corporate crimes means analyzing a big portion of environmental crimes (which are usually committed in the framework of state-corporate criminality), this is why it becomes extremely important, for the whole field of criminology, to address the question of culpability and State-corporate relations.

These results support previous research, which demonstrate that oil spills have devastating consequences on ecosystems, which vary on the latter's type.

Furthermore, it is acknowledged by many that the true effects of the Deepwater Horizon oil spill won't ever be completely measurable and are still manifesting in unexpected (and expected) ways (Dicks 1998).

Knowledge gaps exist throughout the field: more recent studies on the effects of oil on the Gulf of Mexico's environment should be undertaken, as well as State-corporate crimes in the context of environmental criminality.

### **Research Question 2: State-Corporate Relations and Culpability**

In the State Corporate crime model by Michalowski and Kramer, the third level is analysis is the institutional one, which focuses on the relation between politics and economics (Bradshaw 2012).

In the case of the Deepwater Horizon the two are represented by the federal State of the United States and the private companies involved in the accidents: BP, Transocean and Halliburton among others. The relationships among the former and the latter have maintained a standard of unlawful and negligent cooperation throughout decades, as demonstrated by numerous investigations post-oil spill.

The causes which led to the oil spill have been demonstrated to at least partially point back to State organs and committees, which did not fulfill their role of regulators and controllers. Even though their sanctioning function could be considered fulfilled, it appears evermore necessary to strengthen the State regulatory and control functions in order to avoid future disasters of the sort.

The operationality of control, catalyst of the institutional level of the State Corporate model by Michalowski and Kramer, manifests itself through legitimate or illegitimate pressure from economic subjects to public bodies in order to obtain undue advantages (Kramer & Michalowski 1991).

In the DWH case, the lack of sectorial knowledge of the controlling State agents, the existence of previous personal relations between employees of industry and State, and the presence of corruption, all exist within this theoretical framework. Even though this theory test hasn't been applied to the causes that led to the Deepwater Horizon's oil spill, a similar study by Bradshaw (2012) has been conducted on the cover-up that followed the spill, and the State-corporate role in the events. Similar results brought to the same discouraging news about unlawful and negligent cooperation of State and the corporate world (Wade 2014; NBCNews 2014).

These relations are of vital importance in the field of environmental studies and green criminology, considered that most of the pollution caused by human kind comes from Companies and that much of that happens within an illegal framework.

### **Strength and Weaknesses**

The use of a pre-existing model of categorization of indexes for environmental consequences of oil spills at sea, is a strength of the study, because it allows for replicability and transparency. The same, could also be said about the use of a pre-existent theoretical model tested throughout the thesis and concerning the role of State-corporate relations in the accident. Moreover, the use of multiple sources and sources types allowed for verification of the information, making the study more reliable. Together with the use of a deductive approach, all these elements allowed me to minimize the bias of my own personal opinions and positions on the topic (Ltd 2019).

At the same time, information about plankton were partially inconclusive and those about mangroves were missing (Ozhan et al. 2015; Sammarco et al. 2013; Abbriano et al. 2011; Parsons et al. 2015). To my knowledge, no specific study has been conducted on the effects of the DWH spill on the Gulf of Mexico mangroves. However, previous research has shown that the degree of exposure to waves and currents and the geomorphic characteristics of the environment greatly influence the distribution and persistence of oil within mangrove forests (Getter et al. 1981).

Furthermore, it is impossible to establish with certainty all the effects on the environment caused by the accident.

A similar pattern can be found in the results concerning State and corporate's culpability: even though many reports have highlighted negligent acts and illegal behaviors of the companies, none of them can legally be considered as one of the factors leading to the events.

Lack of time and resources could have potentially affected the results in several ways: a deeper analysis on both phenomena studied will be necessary for further conclusions. I decided, for example, to exclude the effects of the oil spill on human health, local populations (socially, economically, psychologically) and on a broader spectrum, on people of the States involved, or of the Continent.

Finally, the sample of sources analyzed concerning State responsibility and culpability, are only a partial one of those available, and this literature review is surely not exhaustive and further resources and time would be needed for a more complete view of events.

### **Future Research and Policy Implications**

I recommend that future research focuses on the role of the State and its relations with the Industry and the Corporate world, which will be necessary in order to understand the culpability of the State in other environmental accidents and disasters. Furthermore, the consequences of this specific event on the Gulf of Mexico should be further studied and should be updated – even widening the spectrum of elements studied, such as weather changes, water temperature, or water rise.

In the 1980s, BP CEO John Browne adopted a rapid growth policy accompanied by decision-making decentralization, but despite the sanctions received, BP did not change its attitude until it reached to the "Blow out" of Macondo (Il post 2014)

Post DWH investigations have shown that the oil industry has maintained risky approaches for decades, with reckless and harmful actions, and that the blowout of the Macondo well is a direct consequence of the same and does not represent an unfortunate accident (Il post 2014). It therefore appears evident that these corporations have not developed an adequate "environmental awareness" and that the "short-term" vision aimed at maximizing profit is often a target element of corporate strategies (Il post 2014).

All of this goes into demonstrating that policies based on sanctions are not sufficiently effective, and that the State also has to fulfill its control and regulatory roles.

On the other hand, it should not be underestimated that the same public bodies - even if subjected to a powerful lobbying activity - are subject to a political verification and, therefore, to a social control of their activities. For this reason, in the final analysis, the social conscience can be the only engine that will have to push both companies and the related Public Bodies towards "virtuous" behaviors - absolutely essential for safeguarding - with increasing strength and effectiveness, directly and indirectly, such an already compromised environment.

Ultimately, we could say that if we desire a better place, or even a place, to live into, we must have a vigilant and actively critical attitude about activities that represent a danger to our natural habitat.

## **CONCLUSIONS**

Many of the studies analyzed confirm our research questions: the environmental consequences derived from the DWH, even though unique to the gulf of Mexico's ecosystem, follow the pattern of effects of previous oil spills. The harsh consequences of these events highlight the absolute need of prevention of accidents within the oil industry. This is why I studied the role the State had in the accident: it becomes fundamental to establish who is responsible for the events which led to the DWH oilspill, and to assign culpability to the interested parties. Understanding the decisive role that State and absence of social control have played in the events, will be our first step, as criminologists, policy makers and as a society, to prevent similar future events.

## REFERENCES

- Abbriano R M, (2011) Deepwater Horizon Oil Spill. A Review of the Planktonic Response, *The Official Magazine of the Oceanography Society*
- Aldrich H, Pfeffer J, (1976) Environments of Organizations. *Annual Review of Sociology*, 2, pp.79-105.
- Banks D, Davies C, Gosling J, Newman J, Rice M, Wadley J, Walravens F, (2008) *Environmental Crime. A threat to our future*. Environmental Investigation Agency, London, UK
- Barstow et al., (2010) *Regulators Failed to Address Risks in Oil Rig Fail-Safe Device* (online), New York; New York Times
- Bradshaw E A, (2012) Deepwater, Deep Ties, Deep Trouble: A State Corporate Environmental Crime Analysis of the 2010 Gulf of Mexico Oil Spill, *Western Michigan University*
- Chang S E, Stone J, Demes K, Piscitelli M, (2014) Consequences of oil spills: a review and framework for informing planning, *University of British Columbia, Simon Fraser University*
- Cleaner Seas, *ITOPF – Promoting Effective Response And Technical Services to Marine Spills*, [www.cleanerseas.com](http://www.cleanerseas.com) < HTML
- Clinard M, Yeager P, (2006) *Corporate Crime*. New Brunswick: Transaction Publishers
- Crandall W, Parnell J, Spillan J, (2016) *The BP Gulf of Mexico Oil Spill: Part 1*, London, Sage
- Crandall W, Parnell J, Spillan J, (2016) *The BP Gulf of Mexico Oil Spill: Part 3*, London, Sage
- Cruden J C, et al., (2016) The Deepwater Horizon Oil Spill Litigation: Proof of Concept for the Manual for Complex Litigation and the 2015 Amendments to the Federal Rules of Civil Procedure, *Michigan Journal of Environmental & Administrative Law*
- Davenport C, (2019) *Interior Dept. Loosens Offshore Drilling Safety Rules Dating From Deepwater Horizon* (online), New York: New York Times
- Degano E, (2017) *Deepwater Horizon, sette anni dopo: un disastro da 17 miliardi di dollari*, > [www.oggi scienza.it](http://www.oggi scienza.it) < HTML
- Degli Innocenti N, (2018) *”BP, sale a 65 miliardi di dollari il conto per Deepwater Horizon”*, Milan: Il Sole 24Ore
- Dicks B, (1998) *The Environmental Impact of Marine Oil Spills, Effects, Recovery and Compensation*, [www.itopf.org](http://www.itopf.org) < PDF

Fisher C R et al., (2014) Footprint of Deepwater Horizon blowout impact to deep-water coral communities, *Proceedings of the National Academy of Sciences of the United States of America*

Friedman L, Tabuchi H, (2017) *U.S. to Roll Back Safety Rules Created After Deepwater Horizon Spill*, New York: The New York Times

George A L, Bennett A, (2004) Case Studies and Theory Development in the Social Sciences, *MIT Press Cambridge, Massachusetts* London, England

Getter D C, Scott G I, Michel J, (1981) The Effects of Oil Spills on Mangrove Forests: A Comparison of Five Oil Spills Sites in the Gulf of Mexico and the Caribbean Sea, *International Oil Spill Conference Proceedings*

Gibbs C, Boratto R, (2017) *Environmental Crime* [online] Oxford Research Encyclopedias

Gulati P M, (2009), *Research Management: Fundamental and Applied Research*, Singapore: Global India Publications, p.42

Haney J C, Geiger H J, Short J W, (2014) Bird mortality from the Deepwater Horizon oil spill. II. Carcass sampling and exposure probability in the coastal Gulf of Mexico. *Marine Ecology Progress Series*

Hayes, A.; (2019) "Offshore", > [www.investopedia.com](http://www.investopedia.com) < HTML

Il Post, (2014) *Il Golfo del Messico, 4 anni dopo il disastro*, Milan: Il Post

Incardona J P, et al., (2013) Exxon Valdez to Deepwater Horizon: comparable toxicity of both crude oils to fish early life stages. *Aquatic Toxicology*, 142-143:303-316. October 15.

Incardona J P, et al., (2014) Deepwater Horizon crude oil impacts the developing hearts of large predatory pelagic fish, *Proceedings of the National Academy of Sciences*, March 24.

ITOPF, *Effects in Offshore and Coastal waters*, [www.itopf.org](http://www.itopf.org) < HTML

Kramer R, Michalowski R, (1990) "Toward an Integrated Theory of State Corporate Crime". Baltimore, MD

Kramer R and Michalowski R, (1991) State-Corporate Crime, *American Society of Criminology Meeting*, Baltimore, Maryland

Kunzelman M, (2010) *Deepwater Horizon Inspections: MMS Skipped Monthly Inspections On Doomed Rig*, New York: Huffington Post

Lefebvre B, Wolf E, (2019) *Trump erases offshore drilling rules enacted after BP oil spill*, > [www.politico.com](http://www.politico.com)< HTML

Liston B, (2014) Research shows Gulf of Mexico oil spill caused lesions in fish: scientists, >[www.reuters.com](http://www.reuters.com)< HTML

- Ltd (2019). *Qualitative analysis*, > [www.resourcecentre.foodrisc.org](http://www.resourcecentre.foodrisc.org) < HTML
- Mager E M, et al. (2014) Acute Embryonic or Juvenile Exposure to Deepwater Horizon Crude Oil Impairs the Swimming Performance of Mahi-Mahi (*Coryphaena hippurus*). *Environmental Science and Technology*.
- Michalowski R J, Kramer R C, (2006) *State-Corporate Crime Wrongdoing at the Intersection of Business and Government*, Rutger University Press
- Mills R W, Koliba C J, (2015) The challenge of accountability in complex regulatory networks: The case of the Deepwater Horizon oil spill, *Regulation & Governance, Volume 9, Issue 1*
- National Research Council (2012). *Committee on the Analysis of Causes of the Deepwater Horizon Explosion, Fire, and Oil Spill to Identify Measures to Prevent Similar Accidents in the Future. Macondo well Deepwater Horizon blowout : lessons for improving offshore drilling safety*, Washington, D.C. National Academies Press
- NBCNews, (2014) *BP Found Guilty, Grossly Negligent for Gulf Oil Spill*, >[www.nbcnews.com](http://www.nbcnews.com)< HTML
- Office of Response and Restoration, *Natural Resource Damage Assessment*, retrieved >[www.response.restoration.noaa.gov.com](http://www.response.restoration.noaa.gov.com)< HTML
- Ozhan K, Parsons M, Bargu S, (2015) How Were Phytoplankton Affected by the Deepwater Horizon Oil Spill? *BioScience*
- Pallardy R, (2019) *Deepwater Horizon oil spill | Summary & Facts*, >[Britannica.com](http://Britannica.com)< HTML
- Parsons M L et al. (2015) Phytoplankton and the Macondo oil spill: A comparison of the 2010 phytoplankton assemblage to baseline conditions on the Louisiana shelf, Vol 207, *Environmental Pollution*
- Ramdhani A, Ramdhani M A, (2014) Writing a Literature Review Research Paper: A step-by-step approach, *International Journal of Basics and Applied Sciences*
- Reidel J, (2014) “*New study examines role of government in Deepwater Horizon oil spill*”, >[www.phys.org](http://www.phys.org)< HTML
- Rochette J, Wright G, (2015) *Advancing marine biodiversity protection through regional fisheries management: A review of bottom fisheries closures in areas beyond national jurisdiction* >[www.iddri.org](http://www.iddri.org)< HTML
- Sammarco P W, et al., (2013) Distribution and concentrations of petroleum hydrocarbons associated with the BP/Deepwater Horizon Oil Spill, Gulf of Mexico, *Marine Pollution Bulletin*

- Schwacke, L (2014) Health of Common Bottlenose Dolphins (*Tursiops truncatus*) in Barataria Bay, Louisiana, Following the Deepwater Horizon Oil Spill *Environmental Science & Technology*
- Snieder R, & Larner K, (2009) *The Art of Being a Scientist: A Guide for Graduate Students and their Mentors*, Cambridge University Press, p.16
- Spoltore N, (2018) *Il Costo di un Incidente a Largo Indennizzo Per i Dani nel Golfo del Messico Causati dalla Piattaforma Deepwater Horizon*, >www.isavemyplanet.com< PDF
- Stacy N I, et al., (2017) Clinicopathological findings in sea turtles assessed during the Deepwater Horizon oil spill response, *Endangered Species Research, Vol 23*
- Summers E A, et al., (2017) Salt Marsh Bacterial Communities before and after the Deep Water Horizon Oil Spill, *Applied and Environmental Microbiology*
- Sutherland E H, Cressey, D R (1978) *Criminology* (10th ed.). Philadelphia: Lippincott.
- Takeshita R, et al., (2017) The Deepwater Horizon oil spill marine mammal injury assessment, *Endangered Species Research*
- Urbina I, (2010) *Inspector General's Inquiry Faults Regulators*, New York: New York Times
- Usborne D, (2010) "'Cosy relationship' revealed between government office and oil industry", London: Independent
- Wade T, (2014) BP Found "Grossly Negligent" in 2010 Spill", >www.scientificamerican.com< HTML
- Whitton H, (2001) 'Implementing effective ethics standards in government and the civil service', Transparency International
- Wilson J, (2010) *Essentials of Business Research: A Guide to Doing Your Research Project*, London: SAGE Publications, p.7

## **APPENDIX**

### **Judicial proceedings**

Because the Macondo well was about 50 miles offshore, it was subject to the Outer Continental Shelf Lands Act (OCSLA), which establishes the federal regulatory framework for offshore drilling and extends US jurisdiction to the subsoil and seabed on the outer continental shore in order to control the exploitation of natural resources.

The ocean energy management office within the interior department regulates the operations of tenants of ocean blocks and is responsible for overseeing the rules governing offshore drilling (Bradshaw 2012).

Some of these concern the general prohibitions of polluting activities; particularly relevant is the Clean Water Law - (CWA) of 1972, the federal law for the protection of water and the law on oil pollution (OPA) of 1990, in particular on oil spills. The latter establishes a federal framework for liability management and compensation for oil spills.

"Any responsible party of a ship or a structure from which the oil is unloaded... in or on navigable waters or nearby coasts or the exclusive economic zone, is responsible for the costs of removal and damages... consequent to such accident" (Cruden et al. 2016).

In the event of a spill from an installation on the external continental shelf, the United States can recover all the removal costs from the "owner or operator of such a plant or ship" (Cruden et al. 2016).

The parties involved are jointly and severally liable for all removal and damage costs resulting from the spill and the United States can take action to recover the removal costs at any time after incurring in such costs (Cruden et al. 2016).

Federal law limits the amount of damages that responsible parties must pay, unless the accident is caused by:

- gross negligence or intentional misconduct;
- the violation of a federal regulation on security, both directly by the operators and by the related parties.

In such cases the penalties become particularly onerous; In fact, the law on clean water specifies eight sanctioning factors that the judge should take into consideration to determine the amount of the fines to be paid, including the gravity of the violation and the economic impact of the sanction for the offender (Cruden et al. 2016).

The oil pollution law - in addition - identifies six categories of recoverable damages, including those for natural resources, which include damage due to injury, destruction, loss of use of natural resources, including "reasonable costs for assessing the damage." Other categories of damages include economic loss from destruction of property, loss of subsistence use of natural resources, net loss of taxes, royalties and fees recoverable from the United States or from a state, and loss of profits or earning capacity (Cruden et al. 2016).

In June 2010, a formal and criminal investigation into the DWH disaster was initiated by the United States Department of Justice (DOJ) (Cruden et al. 2016). In view of the enormous gravity of the event and the great complexity of the procedure, in August of that year the district judge of Louisiana, Carl Barbier, was charged with overseeing the proceeding relating to the spill.

The criminal investigation was conducted by the Deepwater Horizon Task Force, which included the criminal division and the department of justice and natural resources, several US law offices and several federal investigative agencies such as the Federal Bureau of Investigation and Agency environmental protection (Pallardy 2019).

The DOJ cited BP, Halliburton, Transocean and 6 other companies that had played a less significant role in the disaster for CWA and OPA violations. One of the issues that the prosecutor's office has faced is whether BP's conduct constituted "gross misconduct or misconduct" resulting in the application of sanctions supplements (Pallardy 2019).

The prosecution showed that the inability to correctly interpret the negative pressure tests that occurred before the explosion was a gross negligence and that the inadequacy of the organizational structure and decision-making processes of BP resulted in the inability to avoid the explosion. In short, the United States provided the testimony of experts who confirmed the negligent approach that BP had regarding the well (Pallardy 2019).

The Investigation Commission, charged by the Bank to investigate the disaster, reported that "British Petroleum did not have a system of adequate checks to make sure that the key decisions taken in the months before the explosion were safe from a point of view of engineering" (Pallardy 2019).

### **British Petroleum (BP)**

In July 2015 British Petroleum, at the end of a very long legal battle, reached an agreement with the US authorities for a compensation of 18.7 billion dollars payable over a period of 18 years. According to the US Department of Justice this is the largest agreement ever made by the US with a single company.

The agreement also involved Texas Florida, Alabama, Mississippi and Louisiana and another 400 local government agencies.

The fine includes \$ 5.5 billion in civil penalties, \$ 7.1 billion paid to the Federal State and to the States for environmental damage, \$ 4.9 billion to offset the negative economic consequences of the oil spill and 1 billion more to meet the demands of local authorities (Spoltore 2018).

The quantification of the "economic value" of the environmental damage was defined by a group of scientists who officially indicated the damage to natural resources, completing an analysis lasting six years and commissioned by the

NOAA (National Oceanic and Atmospheric Administration), based on the technique of contingent valuations (Degano 2017; Spoltore 2018). The latter proposes a series of simulated markets in which, through sample surveys (surveys) based on interviews, the parameters on which to quantify the damage are defined (Degano 2017).

The judicial consequences for the British oil company are not, however, concluded as there are still numerous disputes pending with the American courts even though the main ones have been defined. The CEO of BP again in January 2018 indicated that 99% of the more than 390,000 civil cases were closed, showing optimism about the arrangement, shortly, of the remaining, with the definitive closure of the painful Deepwater Horizon chapter (Degli Innocenti 2018).

Estimates dating back to January 2018 indicate the total cost to the company due to the Macondo disaster at over 65 billion dollars; only in 2015 The Wall Street Journal estimated a total BP expenditure of \$ 53.8 billion.

The most bitter consideration is that the whole affair developed to save BOP maintenance time, which would have brought the platform to a standstill with a daily cost of \$ 500,000, for a total cost of about \$ 75 million (Degli Innocenti 2018).

In January 2013, Transocean accepted a \$1 billion penalty under the CWA. About \$ 800 million of this amount was allocated for restoration projects in the Gulf, and the rest was paid to the federal government. The company has also pleaded guilty to CWA criminal violations, resulting in a \$ 400 million criminal conviction. In May 2015 Transocean resolved the requests made by the plaintiffs' steering committee for about \$ 211.7 million (Degli Innocenti 2018).

In July 2013, Halliburton agreed to pay a fine of \$ 200,000 after pleading guilty to criminal charges that his employees had destroyed the evidence relating to the spill (Pallardy, 2019).