The six legs dog

An oil corporation under the microscope: the Italian Goliath ENI

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SEVENTH FRAMEWORK PROGRAMME

CDCA

March - 2015

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This publication was developed as a part of the project Environmental Justice Organisations, Liabilities and Trade (EJOLT) (FP7-Science in Society-2010-1).

EJOLT aims to improve policy responses to and support collaborative research and action on environmental conflicts through capacity building of environmental justice groups around the world.

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This document should be cited as:

CDCA. 2015. The six legs dog. An oil corporation under the microscope: the Italian Goliath ENI. 157 p.

Abstract

The report presents the biggest oil company of Italy, ENI and reflects on how this oil corporation nature and structure covers economical, political and social power. It first reviews the company and then describes and analyses four cases of environmental conflicts in Italy where ENI is involved Porto Marghera, Gela, Val d'Agri and Taranto. The cases focus on oil exploration, extraction and transformation, approaching in particular ENI's corporate liability, the social and environmental conflicts generated and both institutional and civil society's reactions. The cases have been described by local activists and scholars of CDCA with the aim of both reporting the reality of everyday life in conflictive or potentially antagonistic contexts and offering the reader an accurate and detailed report on the state of the fact has been achieved by adopting an action research approach., core aim of the CDCA approach to environmental conflicts.This foresaw the integration of private companies provided data, scientific and official data provided by institutions, university institutes and civil society generated data.

Keywords

Environmental conflict

Petrochemical

Oil extraction

National Energy Strategy

Public | Private companies

Greenwashing

Industrialisation

Extraction frontiers

Hydrocarbon

Contents

Acronyms

AGIP	General Italian Oil Company
AIOC	Anglo-Iranian Oil Company
ANIC	Fuels' Hydrogenation National Company
ARPAB	Basilicata Regional Environmental Protection Agency
ARPA	Regional Agency for Environmental Protection
ASL	Local Health Services centres
Bcm	billion cubic meters
Bbl	barrel
BP	British Petroleum
BTEX	benzene, toluene, ethylbenezene and xylene
CDP	Cassa Depositi e Prestiti S.p.A. (joint stock company controlled by the Italian Ministry of Economy)
CLN	National Liberation Committee
CO	carbon monoxide
CO2	carbon dioxide
CTR	Regional Technical Committee
DC	Christian Democracy (italian party)
DICSA	Anonymous Italian Society for Combustible's Distillation
EIB	European Investment Bank
EITI	Extractive Industries Transparency Initiative
EJO	Environmental Justice Organisation
EMP	Environmental Management Plan
ENEL	National Italian Electric Energy company

ENI	National Italian Hydrocarbons Corporation
ETS	ENI Trading and Shipping
GJ	gigajoule
HCB	hexachlorobenzene
HSE	Health, Safety and Environment department (International Finance Corporation's)
IARC	International Agency for Research on Cancer
IGT	Geographical Indicator for Typical products
IP	Italian Petroleum Industry
IPA	polycyclic aromatic hydrocarbons
IPCC	Intergovernmental Panel con Climate Change
IROM	Refining Oil and Ore Industry
Mmt	Million Metric Tons
Mmtonnes	million tonnes
NIOC	National Iranian Oil Company
NOC	Libyan national oil company
NO	nitric oxide
NOx	nitrogen oxide
NOF	preliminary feasibility authorisation
NYSE	New York Stock Exchange
PCB	polychlorinated biphenyls
PCDD	polychlorinated dibenzodioxins
PCDF	polychlorinated dibenzofurans
PD	Italian Democratic Party
PIT	Combined Territorial Plan

POR	Operational Regional Program
Ppm	part per million
PSA	Product Sharing Agreements
PSI	Italian Socialist Party
PCB	Polychlorinated biphenyls
PVC	Polyvinyl chloride
QE	Energy Quote
RSU	unitarian trade unions representation
SAIPEM	Italian Anonymous Company for perforation and Assembling
SEN	National Energetic Strategy
SIN	Sites of National Interest
SIR	Sites of Regional Interest
SNAM	Methane Pipelines National Company
SO2	sulfur dioxide
UN	United Nations
USSR	Union of Soviet Socialist Republics
VCM	Vinyl Chloride Monomer
VIS	Health Impact Evaluation

Foreword

Conflicts over resource extraction or waste disposal increase in number as the world economy uses more materials and energy. Civil society organizations (CSOs) active in Environmental Justice issues focus on the link between the need for environmental security and the defence of basic human rights.

The EJOLT project (*Environmental Justice Organizations, Liabilities and Trade*, www.ejolt.org) is an FP7 Science in Society project that runs from 2011 to 2015. EJOLT brings together a consortium of 23 academic and civil society organizations across a range of fields to promote collaboration and mutual learning among stakeholders who research or use Sustainability Sciences, particularly on aspects of Ecological Distribution. One main goal is to empower environmental justice organizations (EJOs), and the communities they support that receive an unfair share of environmental burdens to defend or reclaim their rights. This will be done through a process of two-way knowledge transfer, encouraging participatory action research and the transfer of methodologies with which EJOs, communities and citizen movements can monitor and describe the state of their environment, and document its degradation, learning from other experiences and from academic research how to argue in order to avoid the growth of environmental liabilities or ecological debts. Thus EJOLT will increase EJOs' capacity in using scientific concepts and methods for the quantification of environmental and health impacts, increasing their knowledge of environmental risks and of legal mechanisms of redress. On the other hand, EJOLT will greatly enrich research in the Sustainability Sciences through mobilising the accumulated "activist knowledge" of the EJOs and making it available to the sustainability research community. Finally, EJOLT will help translate the findings of this mutual learning process into the policy arena, supporting the further development of evidence-based decision making and broadening its information base. We focus on the use of concepts such as ecological debt, environmental liabilities and ecologically unequal exchange, in science and in environmental activism and policy-making.

The overall **aim** of EJOLT is to improve policy responses to and support collaborative research on environmental conflicts through capacity building of environmental justice groups and multi-stakeholder problem solving. A key aspect is to show the links between increased metabolism of the economy (in terms of energy and materials), and resource extraction and waste disposal conflicts so as to answer the driving questions:

Which are the causes of increasing ecological distribution conflicts at different scales, and how to turn such conflicts into forces for environmental sustainability?

Introduction

Oil corporation and environmental conflicts

Oil-based societal model's environmental effects, inequalities, imbalances and injustices manifest themselves in the restriction of access to basic resources and in the further marginalizing process of those living in precarious conditions. Not only economic exclusion process is affecting civil society, it also suffered as a whole of being ostracised from natural resources management process.

In the global economy, as both economic and social arenas tend to be shaped by the dominant transnational production model, productive activities that take place in a specific territory are part of a global capital framework. But environmental and social costs of production are still standing at local level. Moreover, in the specific case of environmental damage, inequality stands at a societal level. Environmental and social costs are locally paid while advantages and gains are redistributed abroad in the transnational arena of capital and finance.

As production moved from being national to international, there has been a concurrent concentration of transnational economic powers and a disintegration of the cohesive structure standing between state and civil society. This process natural conclusion is one in which globalization necessarily fragments local relations of power and accountability. (Robinson, 2003) While the State has became a transmission belt for global capital, civil society has lost its privileged position as interlocutor with economic accumulators, in which its role was to ask for accountability.

Less visible and concealed, the economic power of big oil corporations over natural resources management jeopardizes democracy itself as keeping out civil society from decision making process regarding health and environmental protection. The economic capacities and the free character of oil corporations make them institutions with the potential for enormous harm, because economic maximisation of gains often implies social and environmental losses (Campbell, 2009). In this context, some societal groups and organisations tries to resist and influence the environmental behaviour of transnational corporations, by facing their economical and political power and trying to constitute a counter-hegemonic power seeking for health and environmental justice.

Investigation on corporate environmental responsibility is spurred on by considerations of the social costs of environmental damages, often caused by business activities. The costs of these damages are rarely passed on to the consumer in the final sale of products. To compound this structural inequality, the international system lacks a legally bounding framework regarding these business

practices, thus creating a legislative void regarding both environmental and social costs of oil related activities.

This is the context in which environmental conflicts born and arise. Environmental conflicts are the local main expression of the actual economic model and of its environmental and social consequences. Even if they are related to a local dimension, they show a global trend which surpass local boundaries. In practice, we can talk about environmental conflicts whenever a public or private forms of production, energy related activities, development facilities or national/supranational policies with high environmental impacts meet – or better, clash with – civil society opposition. To better understand, we use the term "environmental conflict" whenever there is:

- natural resources and common goods qualitative and/or quantitative reduction

- opposition and resistance organized by civil society (local communities involved, social or environmental organisations, local committees and other stakeholders' groups) in order to protect both lands and rights (CDCA, 2011)

By mobilizing, civil society seeks for accountability and for participation in territory's decision making process. For all this reason, environmental conflicts' mobilizations can be seen as the expression of a claim for environmental and social sustainable management of territories.

Methodological framework

In this work, we will present the biggest oil company of Italy, ENI, in order to reflect on how transnational oil corporation nature and structure cover both economical, political and social power.

As this report also want to provide greater understanding of oil conflicts and civil society responses in seeking environmental justice, this has been done by providing, first a review of the Italian oil giant ENI, then a description and analysis of four cases of environmental conflicts, Porto Margher, Gela, Val d'Agri and Taranto.

All the cases focus on oil exploration, extraction and transformation, approaching in particular ENI's corporate liability, the social and environmental conflicts generated and both institutional and civil society's reactions. The cases have been described by local activists and scholars of CDCA with the aim of both reporting the reality of everyday life in conflictive or potentially antagonistic contexts and offering the reader an accurate and detailed report on the state of the fact has been achieved by adopting an action research approach., core aim of the CDCA approach to environmental conflicts.

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Part A. WHO IS THE SIX LEGS' DOG?

1.1 Company's short history

From AGIP to ENI passing through Enrico Mattei

ENI - Ente Nazionale Idrocarburi/ National Hydrocarbons Agency – is a joint-stock company created by the Italian State in 1953 and subsequently privatized in five main phases, from 1995 to 2001. The controlling shareholder is the Italian State – which retains about 30,10% (ENI 2014a) - divided between the Ministry of Economy and Finance and the Cassa Depositi e Prestiti S. p. A., a joint-stock company under public control (Cassa Depositi e Prestiti, 2013).

The history of ENI can be traced back to 1860. In 1926, AGIP - Azienda Generale Italiana/ Petroli - General Italian Oil Company - was established by royal decree, which accorded the institution a monopoly in the exploration and production of hydrocarbons. AGIP was owned for 60% by the Ministry of Treasure, 20% by INA - insurance Italian public body - and 20% by INPS - the social security public body (Barca, 2010). The company was created by the fascist administration with the purpose of finding oil fields, acquiring and marketing petroleum and derivatives. In 1929, the company discovers an oilfield near Parma, in the centre/North of Italy, thus teeing off the mining activity of the company. Starting from 1936, AGIP focuses on refining and petrochemical business, and since 1941 took part in the new SNAM - Società Nazionale Metanodotti/ Methane Pipelines National Company - a natural gas' infrastructures company.

In 1943, AGIP is put under compulsory administration when in North Italy Benito Mussolini established the Italian Social Republic. In 1944, the company direction board is moved from Rome to Milan (Silj, 1994). In 1945, the last year of the IInd World War, an anti-fascist group decided to re-establish the company in Rome. In the same year, once Italy was freed from Fascism, the CLN - Comitato di Liberazione Nazionale/ National Liberation Committee (established in 1943) started to dismantle companies that were established during the regime. Following this practice, public, political and administrative roles were assigned to partisans in order to reward them of the effort done during the liberation process of the Resistance, thus ensuring that fascist entourage was beaten.

According to this practice, in 1945 the Central Commission for Economy of the CLN Milan's section decided to assign AGIP's administration to Enrico Mattei - a medium businessman of the centre of Italy, since 1944 member of the Christian Democracy Party, part of the Christian Resistance and deputy in the Parliament (Silj, 1994). Mattei was given the task of dismantling the Italian Petroleum Agency but he decided to go on with the explorative activity (Morandi, 2007). From 1945 to 1948 by a seismographic system, methane and oil were found in the Pianura Padana (North of Italy). After the first Republican Election of 1948, the Christian Democrats Marcello Boldrini became the president of AGIP, and Mattei vice-president. At that time, AGIP owned the total exclusive for exploration and extractive activity in the Pianura Padana area.

In 1952, according to the decision that public corporation shall handle natural resources, AGIP was absorbed by the new state monopoly ENI - Ente Nazionale Idrocarburi/ National Hydrocarbons Corporation - of which Enrico Mattei was nominated Provisional Administrator first and General Director then. According to him, it would have been deleterious to leave private monopolists the exploitation of a low cost and high efficiency type of energy as methane (Barca, 2010). The new body - composed by AGIP, ANIC - Agenzia Nazionale Idrogenazione Combustibili/ Fuels' Hydrogenation National Company - and SNAM - expanded the methane production and turned its business to the international market (Crainz, 2005). During the 1950-1960 decade, alliances for resources furniture were established with Egypt, Persia, USSR, Tunisia and Algeria.

The work plan was restructured in joint ventures (firstly constituted in Romania, Albania and Iraq and based on a new oil market conception - that will be then called the "Mattei formula"), which includes a reorganization of the relation between producers and oil companies. The idea was that of changing the benefits' sharing by contractual agreements with national governments that would grant to oil producing countries the 75% of profits (Agnoli, 2007). The first oil producing countries that benefited of these conditions were Egypt (1954) and Persia/Iran (1957). In Iran, Mattei establishes an agreement for the creation of the Iranian/Italian oil company - Sirip, responsible for exploration and extraction. Revenues would be shared 50% to AGIP and NIOC - National Iranian Oil Company - and 50% to Iranian State, thus according for the first time in oil's history 75% to a producing country (Accorinti, 2007). In 1960, ENI signs an agreement with USSR in order to guarantee advantageous prices for Russian oil supply. The internal structure and attitude of the company itself was changed: from 1953 the activity was extended to the engineering sector with the takeover of the Nuovo Pignone industry of Florence and in 1962 to the textile sector by the buyout of the Lanerossi company.

At the end of the 1950s, petrochemical industry was in expansion and the Italian Industry was preparing an Industrial Plan focused on the Petrochemical industries. By the use of ethylene - coming from oil cracking - several products could be created, thus serving the agricultural, the industrial and the domestic sectors. As consequence, several petrochemical fields were created in Porto Marghera, Mantova, Brindisi, Gela, Priolo and Milazzo, all connected by pipelines, thus creating an interconnected petrochemical network going from the North till the South of the country. ENI entered in the chemical sector during the Mattei direction not only because of a large amount of oil and methane derivates' availability, but also in order to create a operative area able to create employment. Since the beginning of ANIC activities, several big chemicals plants were build, the biggest was located in Ravenna. In Sicily, Priolo and Gela facilities were both converted to chemical plants because of the low quality of the oilfield - inappropriate for fuels - and to face occupational problems.

At the end of the 1950s, even if investments were done, ENI was highly in debt and it was put under pressure by the obstructive activities organized by the main world oil companies, which Enrico Mattei used to call "the Seven sisters" -

Standard Oil of New Jersey (which later became Esso/Exon), Royal Dutch Shell, Anglo-Persian Oil Company, (British Petroleum – BP), Standard Oil of New York (ExxonMobil), Texaco and Standard Oil of California (which both later became ChevronTexaco) GulfOil (mostly merged into Chevron). Those companies were trying to block the international activity of ENI while administrated by Enrico Mattei, who was in such way detaining a kind of supremacy in the relationship with producing countries. Beyond international interests, the “Seven sisters” were not in line with the new structure that Mattei gave to the company and were trying to put pressure on Italian businessmen and politicians.

ENI after Mattei

The 27th October of 1962, Enrico Mattei died during air crash in Bascapé, near Milan. In the biplane - which had took off from Catania and was directed to Milan - there were with Mattei, an American journalist and the pilot. Investigations about the nature of this accident are still on (Riannetti, 2006). In 1997, it was affirmed by the district attorney’s office of Pavia that the plane "was intentionally shot down" and that a bomb estimated of 150 grams of TNT was placed behind the dashboard of the appliance and set to explode during the initial phase of landing. No responsibility was identified.

After the death of the General Director, a political war for replacement took place. On paper, the role was given to Marcello Boldrini but de facto to Eugenio Cefis, who abandoned the “Mattei Formula” (Riannetti, 2006). ENI started then to concentrate its energy on the expansion of joint ventures activities all around the world by stipulating contracts without burdens for oil research and extraction and by coping with the till now avoided “Seven sisters”. At national level, the company develops its core business moving towards chemical industry by working with the Montecatini and Edison companies in Porto Marghera, Ferrandina, Gela and Manfredonia’s facilities.

After the oil crises of 1973, ENI is charged by the Italian Parliament to take over facilities of foreign companies who were leaving the country. The economic boom was over and all around Europe industries were facing energy crisis, due to higher prices of petroleum products and to the increased cost of energy and raw materials. In the period going from 1972 till 1975, ENI increased its oil reserves and developed its oil and gas infrastructures, thus importing in Italy from Netherlands, USSR and Algeria (ENI, 2010).

During the decade of 1980, presidency turns and ENI was highly influenced by the political leverage of parties such as the Christian Democracy - DC and the Italian Socialist Party - PSI. In 1983, the Transmed S.p.A. - a joint venture controlled by ENI and Sonatrach, the Algerian state oil company - unveils a pipeline connecting Italy with Algeria. Between 1984 and 1988, several oilfields are discovered in Egypt, Mexican Gulf and Congo. This last discovery will contribute to affirm the presence of ENI in Africa, thus giving an incentive to expand it. In 1988, other discovery took place in Italy, precisely in Basilicata, a region in the centre/South of Italy, nearby the Ionan Sea (ENI, 2010). Here, an oilfield was discovered in Val

d'Agri - in the Southern Apennines area of the region - and then developed by ENI who began production in 1996.

During the 1980s, ENI chemical sector grew substantially. In 1984, ENI created Enichem by the absorption of ANIC S.p.A.. By doing so, ENI diversified the chemical production, thus making the sector expand. In 1988, ENI tried to negotiate a partnership in the chemical sector by constituting a joint venture between EniChem - and Montedison (a private company created in 1966 by the fusion of Edison and Montecatini, both active in the chemical sector). The new company - a fusion between public (Enichem) and private (Montedison) was called Enimont and ENI and Montedison owned 40% share each, while 20% was left in order to be sold on market. The company dealt with industrial chemistry, petrochemical, plastics and techno fibres.

In 1990, the attempt of the Montedison General Director - Raul Gardini - of selling ENI shares on stock exchange without ENI approval provoked a rupture between the two companies that ended by the forced sell of Montedison shares to ENI, which became the only shareholder of Enimont. This sell was the beginning of one of the most popular scandals of "Mani Pulite" or "Tangentopoli", a big process on public corruption (Silj, 1994). After years of trial, it was proved that a part of the revenue of the Montedison sale was used to pay the political system in order to grant to Montedison a defiscalisation of capital gains arising from the allocation of part of the Montedison assets in Enimont.

Another protagonist of the bribery's scandals was Gabriele Cagliari, at that time president of ENI, accused of using money for corruption in order to assure to Nuovo Pignone - an ENI's affiliated company - a job order. Cagliari was also accused of being involved in a money flow going to Switzerland and recycled in Italy, the so-called "ENI's slush fund" (Corriere della Sera, 1993). Both Gardini and Cagliari will die as suicides but their deaths are still under investigation (Bocconi, Pollato, 1993). All those scandals emerged in few years and they partially result from a series of denounces and investigation that took place right after the death of Mattei.

ENI today

During the 90s, the company focused on oil and gas related activities and made them become its core business. In the 1992, ENI is transformed into a joint stock company and in 1996, it is indexed as society in the Milan stock exchange (member of the London Stock Exchange Group) and in the New York Stock Exchange (NYSE). Between 1990 and 2000, the company focused on the privatization process and on its growth by the development of extraction and production business and by the enlargement of its African fields of exploitation - for example, the development of explorative and drilling fields in Togo, Ghana, Mozambique, Liberia, Kenya (Greco, 2012). During the same period, the chemical sector of the company was restored under the direction of Vittorio Mincato, who

started to sell parts of business' sectors to private actors. According to this restoration process, in 1999 Enichem was transformed in a joint stock company and then divided between Polimeri Europa (now Versalis) and Enichem (now Syndial). From 1995, when the privatization process started, the name ENI, acronym for National Hydrocarbon Agency lost its original meaning but the denomination ENI was kept (ENI, 2014).

For almost a decade, from June 2005 to May 2014, ENI has been managed by Paolo Scaroni. Before arriving in ENI, Scaroni has been involved in a corruption scandal: in 1992 he was arrested with the accuse of having paid bribes to the Italian Socialist Party in order to obtain a contract for ENEL, the Electric Energy Italian company. After having bargaining a 1 year and 4 months penalty, in 2002 Scaroni is nominated by Berlusconi ENEL's managing director and in 2004 was awarded of the title of "Cavaliere del Lavoro", highest Italian honour for an industry manager. In 2005, Silvio Berlusconi nominated Paolo Scaroni ENI's managing director (Mondani, 2012). Since February 7th 2013, Milan prosecutors looking into the alleged payment of bribes to win contracts in North Africa are investigating Scaroni. Investigators are reported to be examining $ 11 billion of contracts won by oil services group Saipem, which is 43% owned by ENI, accused of paying bribes to a Hong Kong-based company to secure contracts with Algeria's state-owned energy group, Sonatrach (Wilson, 2013).

In May 2014 Paolo Scaroni left ENI's direction replaced by Claudio Descalzi who was appointed managing director by the new prime minister Matteo Renzi. Its appointment, occurred simultaneously with the re-designation of the Board of Directors, is part of the Italian Prime Minster's efforts to operate generational and gender transformations within top positions of industrial giants still mainly under the control of the Italian State.

Descalzi has been working for ENI since 1981 and knows perfectly the group's business. Since then, his career has been revolving almost entirely around oil extraction. His previous assignments had been mainly abroad: he worked as project manager for the development of industrial activities on foreign markets, at first on the North Sea, then in Libia, Nigeria and finally Congo. Before being appointed as managing director, he had worked as general director for the firm division Exploration & Production (E&P) (Telara, 2014).

Prime Minister Renzi's choice has aroused debates, especially in consideration of his choice to replace state industries managing directors. Descalzi, however, had already been identified by Scaroni as his ideal successor. Minister of Economy and Finance Padoan sent letters to ENI, ENEL and Finmeccanica, demanding the insertion of a requisite of integrity within the charter of these participated companies. Such a request was aimed at avoiding the appointment of people sentenced or under investigation. However, as a piece from the Italian newspaper "Il Fatto Quotidiano" published on March 29, 2014 has reminded, among expected violations, environmental disasters are not included (Il Fatto Quotidiano, 2014).

On September 2014 Descalzi was investigated by Milan District Attorney's office for international corruption together with his predecessor Paolo Scaroni. ENI is inquired for having bribed Nigerian politicians for 1 billion and 90 million dollars in April 2011, in order to obtain permissions for the exploration of an offshore oilfield in Abuja (Nigeria). By that time Scaroni was managing director of ENI and Descalzi was in charge of the division Oil & Gas (Ferrarella, Guastella, 2014).

1.2 ENI, the Italian State and the public/private partnership

Privatization and new layout

The privatization of the company was based on three main activities: chemical sector's reshaping, staff reduction and opening to private investors. Since 1995, the ENI group realized a five steps privatization process, which began by the selling of 15% of the total share, for a total amount of around USD$ 5 billion (Martufi, Vasapollo, 2007). In 1996, right after the company indexation, the Government authorized a public global offer of 16% of ENI's sharing, thus giving a new impetus for privatization. In this offer, some placements were reserved for private investors from Italy (10%), United Kingdom (11%), Continental Europe and Rest of the World (10%), while a special public offer was reserved for the United States of America (13%). Among the most known international investors, Lehman Brothers, Goldman Sachs & Co., Morgan Stanley & Co., BNP Paribas. The total amount of the sell was around €4,75 billion (USD$ 8 billion). At the end of the operation, the Ministry of Treasure remains with 69,14% of ENI's total share (Ministero del Tesoro, del Bilancio e della Programmazione Economica, 2001).

In 1997, after a Council of Ministers' resolution, a third tranche of selling was authorized. The structure of the selling was the same of the previous one, except for the introduction of a private portion of sharing that was reserved for Canada. The operation concerned between 12,5% and 15% of ENI's joint stock and collected about €6,83 billion (USD$ 9 billion). The Ministry of Treasure remained with the 51% of the company's joint stock.

The fourth privatization tranche took place in June 1998 and was carried following the same logic of the previous with the difference that the international selling was minor (US 6,2% of sharing, UK and Ireland 5,4%, Rest of the World 1,7%). At the end of the selling, the Ministry of Treasure owned 36,33% of the company's capital.

The fifth – and last – step of the privatization process took in place in 2001 when, according to a Ministers' Committee's deliberation of 2000, a one day selling was organized. The selling get the Ministry of Treasure collect €2,72 billion (USD$ 3.6 billion) and get him detaining 30,33% of the total stock of the company (Ministero del Tesoro, del Bilancio e della Programmazione Economica, 2001). Presently, the public sharing of ENI amounts to 30,10% divided between Cassa Depositi e Prestiti S.p.A. (CDP) - a joint stock company controlled for 80,1% by the Ministry

of Economics and Finance - and the Ministry itself. Nowadays, CDP is the major public shareholder with the 25,76% of ENI's capital shares, while the Ministry directly owns the left over (4,34%) but at the same time it indirectly holds the CDP's part. Other shareholders collectively owns 59,3%. Among them there are Peoples Bank of China, China's central bank, that since March 2014 holds 2,102% shares (ENI, 2014a).

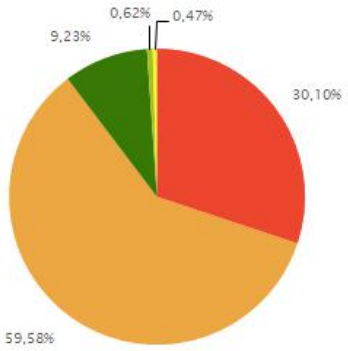
In the summer of 2014 Renzi's government has implemented a new privatization plan. The plan could also include the selling of ENI's shares on the market, and therefore shares held by the Italian Ministry of Economy could drop from 30,10% to 25,10%, collecting about five billion euro (Puato, 2014).

Fig. 1

ENI's shareholders composition, updated at august 2014

In orange institutional investors, in red italian public shareholders, in green retail investors, in light green own shareholds, in yellow nominative shareholds unavailable

Source: www.eni.com



The privatization process imposed a restoration of the company's layout. Becoming a joint stock company, ENI has given a governance structure similar to that of other private companies with a board of nine members and a CEO, thus reducing the influence of political power in the nominee of CEO's members. The appointing system, which is - in theory - open to all shareholders who alone or in group own at least 1% of total shares, seems de facto to be more endorsing the power of main shareholders (ENI, 2012c). Up to now, indeed, candidates put forward by the Ministry of Economy have been quite often privileged and appointed. Furthermore, the Ministry has the power, due to a rule called the "golden share provision", to appoint a director without voting rights (ENI, 2014b). Therefore, despite its share of capital's reduction, the Ministry of Economy still has, de facto, the power to appoint the majority of board members, thus conserving a considerable structural power.

The golden share provision

The golden share provision is a clause that concedes the power to introduce – during a privatization process - in the statute of a company some rules that grant special powers to the ceding national government. Those powers must be exercised in accordance with the Ministry of Economy and Finance. The golden share rules is provided for by the italian privatization law of 1994, which concerns companies that operate in the public services' industry as defence, transports, telecommunications and energy (Camera dei Deputati, 2005).

The golden share rules have been modified in 2003 after having being declared by the European Court of Justice in conflict with the provisions of the EC Treaty concerning the right of establishment (Article 43 EC Treaty), freedom to provide services (Article 49) and free movement of capital (Article 56). In 2004, with the Consolidated Law of Finance, a general revision of the guidelines was done.

After having being modified, the "golden share" rule guarantee the state : the power of appointment of the Ministry of Economy and Finance of a director without voting rights ; the right to oppose the acquisition of major holdings (more than 3% of the share capital) ; the power to veto the adoption of resolutions related to extraordinary transactions or otherwise of particular relevance (resolutions to dissolve the company, transfer, merger, divide, transfer the registered office abroad, change of business and resolutions to amend the statute, removing or modifying the special powers) . Such opposition must be motivated by the possibility of an actual harm caused to the vital interests of the State.

According to the new legislation, the circumstances in which public powers' exercise is admitted are those of danger and emergency in the areas specifically identified in the public interest, including energy. Furthermore, the Ministry of Economy and Finance should exercise those powers in understanding with the Ministry of Economic Development (ENI, 2014b).

The "golden share" rule has been applied in the ENI statute art.6.27 thus conferring special power to the Ministry of Economy. As consequence of all those elements, the ENI structure clearly represents a complicate public/private relational system, where nor public nor private want to seem as leading, thus making quite hard to ascribe any type of responsibility.

The concession system

According to the Italian law, hydrocarbons fields are public property of the State (art. 826 Civil Code). Besides this, the State is not directly engaged in oil research and exploitation, which are left in concession to private corporations. According to the concession system, mineral resources are owned by the state while the ownership of the plants is of the oil company, which is responsible for about 90% of production, net of royalties paid to the State. Unlike the contract system - where facilities are state-property and not of the oil company, in the concession system the control of production by the state is unlikely (Tabarelli et al., 2012). As explained by the Ministry of Economic Development, concessions holders are subject to respect work programs, to pay leases proportioned to the land covered by mining titles and under royalties' payment regime. Royalties are related to the hydrocarbons' quantity produced and are calculated on counter value – based on the oil and gas price defined by the electric energy and gas authority by an energy rate index, called QE – Energy Quote. The QE - which includes energy rate and the raw material rate – is expressed in Euro/GJ (Gigajoule) and is calculated every quarter of the year. Royalties for hydrocarbon production inshore are distributed between Regions (55%), State (30%) and Municipalities (15%). However, regions with ordinary autonomy (Sothern Italian regions, among them Basilicata, main

Italian oil producer) also receive State shares (30%). Royalties for offshore production are divided between State (45%) and the neighbouring region (55%) for productions obtained within a 12 miles zone, while beyond such distance royalties are entirely owned by the State (Ministero dello Sviluppo Economico, 2013).

By the end of the year, all Italian oil operators have to sell to the state a royalty amount that reflects the total value of each company production. In 2013, royalty revenues amounted to € 420,072,672. Of these, € 79,085,172 were collected directly by the State, € 228,316,766 distributed among Regions and Municipalities, € 93,224,035 deposited in the Fund for fuel-pump price reduction and € 19,445,698 destined to the Tax rate for the environment and security. Since the approval of the 2009 law n. 99 "Dispositions for firms development and the internationalization, as well as in the energy field", inland production royalty amount to 30% of the Fund for fuel-pump price reduction – institute used in order to reduce fuel prices in Regions where oil is extracted (Ministero dello Sviluppo Economico, 2009). In 2013, deposits on this Fund amounted to € 93,224,035, of which € 51,947,935 were deposited by ENI, based on its 2012 oil production (Ministero dello Sviluppo Economico 2013a).

By the end of the year, all Italian oil operators must cede to the State royalty amount reflecting the value of the total production of each company. In 2013, royalties total revenues amounted to € 420,072,672. Of these, € 79,085,172 were collected directly by the State, € 228,316,766 distributed among Regions and Municipalities, € 93,224,035 deposited in the Fund for fuel-pump price reduction and € 19,445,698 destined to the Tax rate for the environment and security. Since the approval of law n.99 of 2009 - "Provisions for the development and internationalization of enterprises, including the energy sector", land's production's royalties are charged of a 3% assigned to the Hydrocarbons' price reduction Fund, used in order to reduce gasoline's price in Region where oil is extracted (Ministero dello Sviluppo Economico, 2009). In 2013, deposits on this Fund amounted to € 93,224,035, of which € 51,947,935 were deposited by ENI, based on its 2012 oil production (Ministero dello Sviluppo Economico 2013a).

The Ministry of Economics is then charged of the distribution of the Fund, based on a prior estimate of the economic benefit for each region. When that benefit is more than €30 per year per person, the Ministry directly distributes a "hydrocarbon bonus" to citizens of the Region individuated as recipient. In 2012, Basilicata has been indicated as beneficiary of the bonus due to the development of oil extraction activity in the del Val d'Agri area. Here, ENI holds a 60.77% to a mining concession project, which is scheduled until 2019. In particular, in 2013 ENI deposited € 248,499,358 for production activities of the 3-year period 2011-2012-2013, ranking as first company for its royalty amount (Ministero dello Sviluppo Economico).

Italian royalties mechanism (onshore 10%, offshore 7%) is one of the paltriest of the world, where percentage are normally between 20-80%. After having being confirmed and relaunched by the actual technical government because of

economic crises, royalties are indirectly subsides to fossil energy's sector. Furthermore, as a response to the crisis, the Monti's government (in charge from 2011 to 2013) has relaunched the royalty system as an indirect incentive to fossil energy sector and re-opened authorization processes for prospection and exploration blocked after the 2010 Deepwater Horizon accident in the Mexican Gulf. Authorizations conditions in 2012 became favourable again to oil companies to the extent that foreign firms succeeded in appropriating them: indeed, of the 41 total authorizations, 38 were granted to foreign investors, two to ENI and one to ENEL. Such concessions were extremely low-priced: € 3,50/Kmq for prospection, € 16/Kmq for exploration authorizations and € 70/Kmq for the extraction (Tabarelli, 2012). With such tariffs, indirect subsides to fossil energy sector amounted to about 500 million euros. In Italy, the total amount of subsides for fossil sources – directly or indirectly deposited – is 12,1 billion euros. Such a sum is clearly against the Pittsburgh 2009 G20 initiative for the reduction of subsides for fossil resources in favour of clean energies (Legambiente, 2013a). In Autumn 2014, the Decree-Law "Sblocca Italia", which will be discussed later on in this report, has started the authorizations doubling for prospection, research, and cultivation activities of raw gas on dry land and in the sea. In some months, about more than 100 projects could be implemented, from North to South, and in other areas specifically selected by the Ministry of Economic Development (Dommarco, 2014). At international level, ENI operates through 24 concession systems in United Kingdom, Algeria, Egypt, Lybia and Tunisia (both offshore areas), Angola, Nigeria, Pakistan, United States (Gulf of Mexico, Alaska and Texas) and Australia (only in the cooperation area of East Timor) (ENI, 2011). In 2013 ENI has lost concession agreements in Mali, near the Touaudeni basin, considered one of the most promising area for oil extraction. The Government has decided to reclaim concessions because considered as non remunerative enough. ENI - that had abandoned the contract in 2010 - had concessions since 2006, but no wells were drilled (Alberizzi, 2013).

As we can notice, concessions are mostly used in North and Sub-Saharan Africa areas, from which the 51% of oil total production come from. A part from Italy and United Kingdom, in fact, in Europe, ENI does not operate with concessions' system, but more by investments, shareholding, joint venture. On the contrary, concessions and Product Sharing Agreements (PSA) are mostly applied in those countries that ex Director Paolo Scaroni itself defined as "with less resources to invest (…) countries often complicated, difficult, which are living a difficult stages of their development (...)" (Scaroni, 2007). In PSA contract, Government and the company divides profits while only the oil company bears the mineral and financial risk of the initiative and explores, develops and ultimately exploits the field as required. When successful, the company is permitted to use the money from produced oil to recover capital and operational expenditures, known as "cost-oil". The remaining money, known as "profit oil", is split between the government and the company, typically at a rate of about 80% for the government, 20% for the company. In some production sharing agreements, changes in international oil prices or production rate can affect the company's share of production.

When ENI is asked to justify the discrepancy of contractual forms among different countries, it answers by defining such a practice as a “normal measure in the oil sector” used by companies in order to protect themselves from commercial risks.

1.3 Economic situation and balance sheets

According to the 2013 Annual Financial Relation published online by ENI, the company’s operating profit ratio equals € 12,62 billions. Total capital amounts to € 4.005 billions. In 2013, the company has invested € 12,75 billions, of which 85% abroad. The production amounts to 1,619 Mboe/d (million oil barrels per day) – which equals more or less the daily waste registered in 2013 in some European countries (es. Grance 1,603 Mboe/d, United Kingdom 1,503 Mboe/d, Italy 1.308 Mboe/d) (BP Statistical Review of World Energy, 2014). It can be noticed that ENI’s total production, if not sold, could satisfy the daily Italian national request. But only a part of the total production is composed of oil from Italy, while the majority of it is imported from East Europe and both East and West Africa. The firm refines 27,3 Mton (million tons) per day, a quantity that equals the daily consumption registered in 2013 by countries such as Turkey (33,1 Mton), Belgium (31,0 Mton) and South Africa (27,2 Mton) (BP Statistical Review of World Energy, 2014). Oil stock amounts to 6,535 Mboe. Besides, in 2013 ENI registered a selling of 93 billion cubic meters of gases and 35 terawatt per hour of electric energy, equalling the annual total consumption of Bangladesh (World Bank, 2013).

ENI holds about 6,400 oil stations, 4.762 in Italy and 1.624 abroad. The firm supplies about 10 million clients in Europe, 8 millions of which in Italy (ENI, 2013d). According the company’s 2013 balance report, in Italy 991 chief executives, 7,664 supervisors, 13,973 employees and 4,154 workers are employed (ENI, 2013e). Thanks to a particular praxis, executives and managers benefited of an incentive plan through the division of ENI shares until 2009. These plans provided the free assignment of purchase rights of ENI’s stocks for executives from ENI and its controlled companies directly responsible of business results or of strategic interest. This incentive mechanism, even if still existing, is in a final phase and the company has decided not to generate new ones (ENI, 2011a). At the moment, the firm lacks a monitoring system of its managers, whose professional performance is limited to the only economic rule of loss/profit calculation. Managers are therefore bound to the firm economic and financial trend, which makes economic growth the only assessment criterion of ENI’s administrative framework.

1.4 Position as multinational company

Economic ranks

According to the relation of corporate governance, presented by ENI in 2013, the firm works in 85 countries in four continents with 82.289 employees, of which 26.782 in Italy and 55.507 abroad (ENI, 2014a). With a € 63,4 billion capital, it is the first Italian society on the Stock Exchange list. According to Forbes index

"Global 2000 Leading Companies", ENI is the tenth oil group and the thirtieth business group of the world, with a market value of $ 86.29 million dollars and a year profit of about 10 million dollars (Forbes, 2013). In 2012 ENI has been ranked in the FT Global 500, the Financial Times annual index which proves an annual snapshot of the world's largest companies. According to this index, ENI is at the 14th position in the European market and at the 58th in the global rank. This position is very high considering that the ranks include all companies of any sector. In the FT Global 500 ranks divided for sector, ENI is included in the "oil and gas producers" and stands at the 11th position in the global rank and at the 5th position at the European rank, with a market value esteemed around 93,819.8 million dollars (Financial Times, 2012).

In 2013 ENI's exploration activity has led to the discovery of 53 new wells and has completed the construction of 463 new development oil wells. In 2013, 53 new exploration wells were ultimated, 27,8 of which being ENI's pro rata share. Currently, drilling activities concerns 129 development wells. According to ENI's 2013 financial review, the exploration activity was positive for the firm with the availability of new resources equalling about 1,8 billions barrels of oil equivalent at the competitive unit cost of $ 1,2 per barrel, the year elapsed net profit equals $ 5,16 billions with an 23% increase compared 2012 (ENI, 2013d).

Global "cooperative" role

As multinational company, ENI presents itself as very engaged in questions like environment, territory and technological innovation. In ENI website, in its section "International Institutions and bodies", it is said that the company "joined inter-institutional working groups and service conferences with the italian government and local authorities", while its cooperation is mostly limited to the UN sector. In the list of programmes and organizations with which ENI has cooperated, in fact, we find World Food Programme, United Nations Development Programme, World Health Organization and the International Labour Organization. The role of the company is that of being sponsor for some country's projects, as was the case for the reforestation programme in the Kirthar area in Pakistan, a country in which ENI was present since 2000 and where it had significant participating interest in other offshore blocks such as Indus Block C (ENI 60%) and Block N (ENI 70%). For the UNDP programme, ENI contributed as cooperant with the UNDPS Earth in order to reforests and restore biodiversity. The programme started in 2004 and ended in 2008. Some years later, in 2012, ENI signed a joint venture agreement for the acquisition of a new exploration block offshore of 7,500 km² located in Pakistan's Indus Basin (ENI, 2012e). The exploration licence concern an ultra deep water of an under explored area where biodiversity would be put in danger.

More example could be done in order to show how conflictual could be the international cooperation of a multinational company as ENI S.p.A. that is part of the UN Global Compact, a policy initiative that should get business companies to align their activities to human rights, work and environmental principles. Besides the good aim of the UN project, several international and local NGO have criticized the purely illusory nature of this mechanism.

ENI S.p.A. has also joined the Extractive Industries Transparency Initiative - EITI, a two-years Global Conference of different king of stakeholders: companies, countries, civil society, institutional investors and partners. Besides presenting itself as a platform to create a global standard "ensuring transparency of payments from natural resources for those many that are not seeing results from extraction of their natural resources", the EITI is more oriented in establishing methodologies that countries – and not companies - need to follow to become "fully compliant".

International environmental damages

In Africa, the most controversial case is that of Niger Delta in Nigeria1, where ENI operates since the 1960s. The multinational oil company has been accused of gas flaring (illegal since 2005) and low standard of both social and environmental responsibility. Local communities are struggling and claim for compensation and for human rights protection. Some local groups also arose against the company and used attacks to facilities and kidnappings to press ENI to leave the country. International and national institutional and Environmental Justice Organisations - EJOs, like UNDP, Ejolt EJO partner Environmental Rights Action-FoE Nigeria and Friends of the Earth International promote actions and campaigns and denounce the situation while ENI does not provide information on incidents, compensation or clean ups.

In Mozambique, ENI is involved in oil and gas prospecting and exploration in the Rovuma Basin of Cabo Delgado. They are accused of transporting and dumping large amounts of waste as well as threatening both the environment and the health of the communities in the affected region (Thomas Küchenmeister, 2012).

In Congo, ENI produces oil from tar-sands and bio-fuel from palm oil on a large territory of almost 70.000 hectares. This activity implies the resettlement of communities and puts primary forests and biodiversity at risk in the whole Congo Basin (LIBRE, 2009).

In Latin America, at the beginning of 2000s, ENI was involved in the construction of the OCP oil pipeline, a 503Km pipeline going from Amazonia till Pacific Ocean, built in constorium with several oil companies (Alberta, Kerr McGee, Occidental Petroleum, Repsol-YPF, Perez Company, Techint). The pipeline, inaugurated in 2003, crosses forests, Andean mountains and several natural reserves. Due to the high environmental impacts of the project, Acciòn Ecològica (Ecuadorian EJO, partner of Ejolt) denounced the consortium toward World Bank for breaking environmental protection previewed by the Constitution. In 2002, social movements at the World Social Forum of Porto Alegre launched an international campaign.

1 See Ejolt report n. 9, Digging deep corporate liability. Environmental Justice strategies in the world of oil.

1.5 Worldwide activities and investments

Starting from the privatization process in the mid 1990s, the articulation of the company was gradually reduced, thus becoming divided in four main business' sectors (Exploration & Production, Gas & Power, Refining and Marketing, Chemicals) and two additional ones (Engineering & Construction and Trading).

Exploration and Production

ENI conducts hydrocarbons research and production in several countries. Since 1998, when the restoration of the company started, the company strategy focused on empowering exploration and production in order to become the mayor player in the EU market. To do so, the capital involved in non-core business has been gradually reduced, thus enforcing a cost cut and strict financial criteria's approach (Mincato, 2002). The business plan presented in February 2014 from managing director Paolo Scaroni during the shareholders assembly held in London and later reaffirmed in July of the same year during the strategy update illustrated by the current managing director Claudio Descalzi, has confirmed this tendency. Besides, Descalzi has relaunched ENI's role in gas distribution, underlining the importance of developing a more incisive restoration of gas activities and refinery. Growth strategy in the mid term, envisages the prompt realization of 15 new projects in the two-year period 2014-2015 that will contribute to more 70% of the new productions awaited for 2017; the fast development of recent oil discoveries in Congo, Egypt and Nigeria; the creation of an exploration value and assets' valorization. ENI's main exploration areas are Mozambico and Kenya in East Africa, Congo, Angola and Gabon in West Africa, the Pacific Basin, the Barents Sea and Cyprus (ENI, 2014b).

Table 1

Countries with exploration, development and exploration activities

*(b) kbbl/d = kilobarrel/day; ** (c)mmcf/d = million cubic feet/day

Source: www.eni.com

Area	Country	Liquid (b)*	Gas (c)**	Liquid (b)*	Gas (c)**
Africa	Tunisia	13	28.6	84	2.79
	Algeria	69	19	1,892	82.67
	Angola	95	34.7	1,372	0.75
	Republic of the Congo	87	119.1	20	0,01
	Egypt	91	800.7	692	59.41
	Libya	36	423.2	485	3.99
	Nigeria	96	354.2	2,591	34.99

	100	13	28.6	84	2.79
Countries with only exploration: Mozambique, Mali, Ghana, Gabon					
Americas	United States	48	277.3	8,109	637.72
	Trinidad & Tobago		56.7	140	42.73
	Ecuador	7		497	0.58
	Venezuela	9		2,714	28.44
Countries with only exploration: Brazil					
Asia and Oceania	Kazakhstan	64	231	1,645	29.52
	Turkmenistan	11		218	52.80
	Pakistan	1	321.2	65	31.70
	China	7	5	4,117	102.90
	Indonesia	2	84.3	933	95.41
	Australia	11	97.8	434	59.05
Countries with only exploration: India					
Europe	Norway	80	284	2,039	107.89
	United Kingdom	40	224	1,114	48.55
	Croatia		29.9	18	2.27
	Italy	64	674.3	114	8.25
Countries with only exploration: Russian Federation, Ireland					

Middle East	Iran	6	4,122	150.29
	Iraq	7	2,742	5.15
Countries with only exploration: Saudi Arabia				

Gas and Power

ENI is involved in natural gas supply, transport, regassification, distribution and selling. Its affiliate company EniPower produces electric energy in Italy, mainly near sites of Ferrera, Erbognone, Ravenna, Livorno, Taranto, Mantova, Brindisi, Ferrara and Bolgiano. Since 2002, by the strengthening of the new business strategy, ENI focused on the growth in electricity market, leveraging on gas availability and ENI's refinery and petrochemical sites (ENI World Oil and Gas Review, 2012). Through SNAM Rete Gas, ENI operates the only regasification terminal operating in Italy at Panigaglia (Liguria). Gas volumes supplied outside Italy (78.52 billion cubic meters - bcm), imported in Italy, represented approximately 92% of total supplies. The majority is bought by Russia (34.5%) and by the Netherlands (15.2%), but also by Algeria (10.9%) despite a recent reduction of supplied amount registered, and by Norway. A traditional gas supplier for ENI is Libya.

Re-opened in October 2011, this pipeline is part of the Western Lybia Gas Project, managed by ENI in partnership with NOC - the Libyan national oil company. ENI operates in order to link four oil poles - Gela and Mellitah through underwater pipeline, Bahr Essalam and Wefa by a surface pipeline. This project annual production of gas is about 10 bcm per year, of which 2 are intended to local market and 8 to export.

Another big infrastructure projects of the company is the Transmed pipeline, which connects Algeria with North of Italy through a 380 km underwater structure, 370 km crossing the desert and 1470 km in Italy, for a total of 100 thousands tons of steel to be used for the project. Gas trade on the Italian market amounts to 35.86 bcm, while in 2013, gas trade on the international market amounted to 42.68 bcm for Europe and 7.35 bcm for Extra European Countries, for a total global trade of 93.17 bcm (ENI, 2014c). Since 2002, ENI's strategy has moved towards the will to transform Italy in the European gas hub. To do so, at the end of 2012 the company focused on developing business relations with both Algeria and Russia by entering in contractual agreement with Sonatrach and Gazprom (Scaroni, 2012).

A controversial question is that of "Take or Pay" contract, a rule structuring negotiations on stocks between companies and their suppliers. By this contractual condition, the company either takes the product from the supplier or pays the supplier a penalty. For any product the company takes, they agree to pay the supplier a certain price. Furthermore, up to an agreed-upon ceiling, the company has to pay the supplier even for products they do not take. This "penalty" price is lower. This rule has been applied to natural gas, according to which the purchaser is required to pay, however, wholly or partly, the contract price in a minimum

amount of gas required by the contract, even in the event that fails to collect the gas. In 2011, ENI expressed the will of restructuring this type of contractual conditions, considering them too onerous for the company. Presenting the “Take or Pay” model as a “common good” for the whole society - because seeing as assuring energy security - the company has threaten to retire them if the State would not permit the company to get the costs be paid by consumers (Dommarco, 2012). Besides having been contested, the Italian Minister of Economic Development, Corrado Passera, affirmed that he stands up for changing the rule, thus discharging of any responsibility companies that entered in a Take or Pay contractual agreement (Dommarco, 2012). The gas and power sector's reform - central in ENI's 2012-2015 business strategy - has been integrated in one of the seven main point of the Minister Passera's Energy Strategy - presented at the end of 2012. ENI, since the hydrocarbons' market recession, has shown a great attention to the development of a gas sector's renovation which would includes both high social, economical and environmental costs for citizens.

Refining and Marketing

ENI is the first operator in Italy in the refinery sector with a total expense of 619 million euro of which 444 millions for the refining, supply and logistics, 444 millions for improving the flexibility of both profits and plants and 175 millions for marketing and the reconstruction of oil products distribution nets. In Italy, ENI holds 5 refineries (Sannazaro, Livorno, Porto Marghera, Taranto. Gela) mainly used as stocking centres from which oil is sold and distributed. About 26% of raw oil bought in 2013 comes from Russia, 19% from West Africa, 14% from the Nothern Sea, 6% from Midle East, 12% from Nothern Africa. Only 6% comes from Italy and 17% from other areas (ENI, 2014d).

In 2013, the ENI production of crude oil in Italy amounted to 3.69 mmt (Million Metric Tons) while its production abroad amount to 22.46 mmt (ENI, 2014d). In order to better understand how oil supplies work, one needs to think that in Italy, oil daily consumption in 2010 was of 71,1 million tons, while in 1998 national consumption was of 94.7 million tons, a good example of the decreasing oil consumption trend (BP Statistical Review of World Oil, 2012).

ENI participates in refinery activities in Europe through the participation to actions of local oil companies, as for example in Germany with a daily production of 60 thousand barrels per day and a market quota of 8,3% or in Czech Republic with a daily production of 53 thousand barrels per day and a market quota of 32.4% (ENI, 2014e). From 2002, ENI has focused international refinery activities in areas where the firm can enjoy advantages in supplies in particular in countries where its brand is well known or where it had long period of activities in loco (Mincato, 2002).

Between 2008 and 2012, the refinery sector has been through a major crisis caused by the reduction of the request in oil products and to the consequent accumulated surplus. This has imposed to the company a rethinking of its own investments and production. Gela’s refinery has been blocked for 12 months and

during this period ENI has formulated a new strategic plan. In July 2013, ENI has announced a restoration and relaunch process of Gela's refinery, with an investment of 700 million euro, in order to make the plant more competitive according to the changing market conditions. Meanwhile ENI aims at rationalizing logistics, reducing fixed costs and synergies with trading in order to enjoy the benefits from price differential among different quantities of crude oil (ENI, 2014b).

Chemicals

Initially ENI played a chemical role through Polimeri Europa, the first chemical company of Italy, rebranded in 2011 in "Versalis", a joint stock company with a unique shareholder and under the control and administration on ENI S.p.A.. Versalis deals with production and marketing of chemical products and it works principally in joint venture with Novamont (thus creating Matrica S.p.A.) for the production of bio-chemicals (bio-plastics, bio-lubricants and bio-additives for elastomers) (ENI, 2011b). Basic chemistry is one of the load-bearing axes of Versalis. Products are mostly fitted for industrial use. Polyethylene and such as polypropylene, polystyrene and PVC, are among most common plastic materials. Those goods are also processed by petrochemical process in order to re-produce several different stocks as, for example, plastics, rubbers, fibres, solvents and lubricants. Production plants are located in Priolo, Gela, Porto Torres, Brindisi, Ravenna, Mantova and Sarroch - in Italy - and in Dunkerque – in France. Versalis developed also several research poles, in Porto Marghera, Mantova, Novara. In 2012, Matrica inaugurated a new biochemistry research centre in Porto Torres. There, since 2011, Matrica focuses on building a "bio-based" chemical complex made of seven new plants for the production of bio-plastics (ENI, 2012h).

By the renaming of the Polimeri Europa and by promoting the "green chemistry" project, ENI looked for a strategy to relaunched the chemical sector, by presenting it as based on technological innovation and sustainability and as a source of employment in the local area.

Engineering and Construction

ENI operates in engineering, construction and perforation both offshore and onshore for oil and gas extraction through SAIPEM - Italian Anonymous Company for perforation and Assembling, a subsidiary listed in the Stock Exchange (ENI holds 43% of total shares). In 2013 investments amounted to 902 million euro and included in the engineering and construction offshore sector the finalization of preparation works of a new naval vehicle for laying undersea conducts, the continuation of constructing activities of a new base in Brazil; in the sector of engineering and construction onshore, the purchase of equipment and structure for a basis in Canada; in the sector of offshore drilling interventions concerning class reinstatement works of semi-submersible platforms with perforation for plants Scarabeo 5 and Sacarabeo 7 and of Perro Negro jack-up 3; in the onshore drilling sector the preparation of four new plants destinated to operate in Saudi Arabia, as well as to improve naval construction and drilling vehicles (2013d).

Most important contractors' areas are the Middle East (22%) and West and Central Africa (19%) (SAIPEM, 2012). In September 2012, the company owned 92 rigs (in addition to 2 rigs under completion) located as follows: 28 in Venezuela, 19 in Peru, 11 in Saudi Arabia, 7 in Colombia, 7 in Algeria, 5 in Kazakhstan, 4 in Bolivia, 3 in Brazil, 3 in Ecuador, 2 in Congo, 1 in Italy, 1 in Ukraine and 1 rig being transferred from Colombia to Saudi Arabia. In addition, 6 third-party rigs were deployed in Peru, 2 third-party rigs in Kazakhstan by the joint-venture company SaiPar and 1 third-party rig was deployed in Congo (SAIPEM, 2012). In 2011 Saipem has been investigated for international corruption because of contracts obtained in Algeria for the construction of GK3 project, a 350 km gas line that would have contribute in the developing of another big project, the GALSI pipeline, going from Algeria to Tuscany, passing through Sardinia (Simonelli, 2011). Furthermore, since 2012 SAIPEM is involved in investigations concerning exploration's contracts of two oilfields, one in Zubair (Iraq) and another in Karachaganak (Kazakistan). According to inquiring authorities, SAIPEM would have favour ENI by inflating and masking functionary's payments (Randacio, 2012).

Trading

Trading sector is defined by ENI itself as the an internal business unit responsible for the integrated management of commodity and asset-backed securities trading risks (ENI, 2012i). It operates through its subsidiary ENI Trading and Shipping (ETS), created in late 2007 as an independent legal entity - 100% owned by ENI - and has offices in London, Rome, Milan, Houston, Amsterdam, Bruxelles and Singapore. It operated by trading crude, refined products, natural gas, power and environmental products, leveraging ENI's existing strengths and networks (ENI, 2012i).

1.6 ENI and the Energy National Strategy

The National Energets Strategy (SEN) presented in October 2012 by the Ministry of Economic Development of Mario Monti's technical government, has been the first one after 24 years of total absence of energy strategy plan in the country. Besides the fact that the government who has proposed it was a technical govern, making the strategy lacking in political accountability, the plan is curiously more in line with the ENI business strategy than with European effort towards renewable energy. The strategy, in fact, is practically based on oil and gas development, market rules, centralization of resources' management and lack of environmental controls.

The plan was presented by a technical government six months before the end of its mandate and of political elections, giving no guarantee regarding its implementation. Still at political level, the strategy proposed implies a reform of the Italian Constitution, Title V, which regulates the coordination authority of natural resources management, till now divided between the central State and the Regions. The reform would make resources' administration return back to central power, thus depriving region and local entities of authority on their territories (De Santoli, 2012). This model would be against a real innovative resources

management that should favour small facilities locally managed. The model that the SEN outlined is the traditional one, where big companies - as ENI - could prime and where local communities have no power at all, the same model that is responsible of supplying imbalances and prices' markup.

Moving to the energy strategy itself, it is presented as developing towards four main imperatives: becoming competitive in the energy market, reaching European quality and environmental standards, reducing energetic dependence from external supplier and using energy development in order to reach a sustainable growth paradigm. In order to reach these objectives, hydrocarbons are the cornerstone of the plan with on one hand the provision a huge development of national oil production - made by industrial reorganization of former facilities – and on the other hand the transformation of Italy into a European hub of gas. This two provisions imply a huge renovation work of oil existent facilities and an extension work of gas pipelines. Economic and environmental impacts are evident. On the contrary, advantages of such strategy are disputable. According to the estimation published by the Ministry of Economic Development itself, the total onshore Italian oil stock could meet the national consumption needs only for 13 months, while almost 10 Mtons of oil situated in the sea would grant only 8 weeks of national supply needs - 59 million tons of oil were consumed in Italy in 2013 (Energia Felice, 2012). Worse than this, consumers would not have any advantages in terms of prices because both gas and oil still be sold at a market price, that is to say at the same price than oil and gas coming from other countries (Energia Felice 2012). If there is no national advantage, there is a corporative one: in recession time, when the hydrocarbons' entire system is put into question, a national strategy based on fossil energy would allow a public/private energy giant not only to survive, but almost to spring up again. That would be the case for ENI that not for coincidence has based its strategic plan on the relaunching of refining-marketing and gas-power sectors.

Furthermore, the SEN proposes to simply licence procedures for off-shore hydrocarbons' extraction by creating a unique authorization for both exploration and production. This close attention to offshore extraction confirmed a previously shown inclination of the government towards the development of this sector as tool for the economic development of the country. As mentioned earlier, in 2012 the government reopened authorization processes that were closed after the Deep Horizon accident, thus relaunching negotiations for former offshore drilling licences. According to the Minister of Economic Development in January 2013, ENI owned 59 licences for offshore drilling in Italian marine subsoil, for a total amount of 7,491.84 Km². In 2012, the World Wildlife Fund (WWF) spoked out against the “drilling Far West”, that is to say an increasing of offshore licences' concession. In its report, WWF denounced environmental impacts of offshore drilling that is poisoning the Mediterranean sea, where is concentrated 25% of worldwide oil trading. According to WWF, the Mediterranean Sea boasts the record of coal tar's concentration (WWF, 2012). Despite that, the Italian National Strategy, prompting national hydrocarbons production, characterized the development of offshore production as essential (Governo Italiano, 2012).

Big absents of the strategy are renewable energies, a path that several local entities started to follow years ago. Despite positive results - only from January till October 2012, wind and sun power exceeded of 11% national energy production (Governo Italiano, 2012) - renewable resources are only nominated and promoting as instruments to energy efficiency, but no tools to urge the development of this sector are explained. In the text of the strategy, two Ministerial Decrees for renewable sources' incentives are presented as the tool to prompt both photovoltaic and other electric renewable energy, but there is no mention to end fossil subsidies, a cornerstone of the energy reconversion. This uncertainty of rules and incentives is causing a dramatic stop investment and is going in a wrong direction, totally ignoring the importance of direct measures on families, incentives' costs and energy's self-production (Legambiente, 2012a).

As already mentioned, despite G20 Pittsburgh commitment of reducing fossil sources' subsides, the new national strategy seems to ignore the European Road map 2050 or, at least, to have not a clear action plan. Renewable resources are mentioned only as integrative measures to a fossil system, even if in the text is declared that the commitment is that of “achieve and overtake European 20:20:20 target” (Governo Italiano, 2012). By the actual system, not only those objectives are impossible to be achieved, but fossil sector prevail on that of renewable energies. This - while being clearly against European commitments - perfectly matches with oil giant's business needs: in Italy, ENI has always based its strategy plan on petrochemical activities because of low prices of fossil energy. Today those prices are no more affordable, petrochemical and refinery are in crises (Caffese, 2012). Since the fact that there not yet a renewable strategy proposed by the multinational company, a relaunch of fossil energy seems to be a compromise to get the corporations prime on Italian territory.

Last but not least, the idea of transforming Italy in a European gas hub would not help consumers savings: as the actual distribution net is not made of facilities that can carry liquified gas, stocking and exchange would not be possible without supply contracts and new gas pipelines. New contracts and facilities would be charged on consumer's (Meregalli, 2012).

In conclusion, the Italian National Energy Strategy results not in line with the European Recommendations on "Making the internal energy market work” in order to achieve the 100% use of renewable energies expressed in the Road Map 2050. But not only, the Strategy is unclear on renewable energies but also deep-seated on hydrocarbons that it could be defined as an “strategy for big lobbies that enchains us on the past” (Agostinelli, 2012).

“Sblocca-Italia” decree and offshore extractions

In the autumn of 2014 Renzi’s government has enacted the Decree n. 133 of 12th September 2014 “Sblocca-Italia” (Unlock Italy), an extended and complex measure, composed of 45 articles, aimed at “unlocking” Italy - through urgent

measures to open new construction sites, realize public works, for national digitalization, bureaucratic simplification, hydro-ecological disruption and recovery of production activities, etc. Among the most urgent measures individuated by Renzi in order to guarantee energy supply and favour the valorisation of national energetic resources there is the status attribution to all hydrocarbon prospection, research and extraction projects both afloat and on solid ground – as well as to infrastructures destined to gas transport, regassification and underground stocking, scheduled in Italy, included those useful to Europe which would cross our country – of "strategic interest […] of public utility, urgent and not deferrable" (Gazzetta Ufficiale, 2014).

Such a decree is aimed in part at simplifying procedures for obtaining research concessions and crude oil extraction, and favour activities of oil companies, including the Italian giant ENI, through articles 36,37 and 38 of cape IX concerning "Urgent measures concerning energy" . More than many other norms, it has been written in a stringent manner in order to favour the hydrocarbon sector (Dommarco, 2014a). It aims to double national hydrocarbons extractions, implementing indications established by National Energetic Strategy promulgated by Monti's government and from the modification of article 117 of the Italian Constitution (included in Titolo V), and promoting a strong centralization of decisional powers and concessions in regard to extraction activities controlled by Ministries, which are taken away from local authorities, i.e. regions (Di Pierri, 2014).

The "Sblocca Italia" decree could have immediate repercussions on extraction projects under evaluation by regions, both onshore and offshore. Currently there are about one hundred projects awaiting for examination for research, concessions and stockings permits. Should they all be approved, the land and sea of Italian regions could see an increase of oil activities with worrisome percentages: Basilicata would move from 35% of land interested in oil related activities to 64%, Abruzzo from 26% to 86%, Emilia Romagna from 44% to 70%, just to mention the most significant. In terms of land use we could translate this percentages increase in a jump from more than 43 thousand km2 of dry land, to almost 80 thousand km2 – 37 thousand extra km2. As for the sea we could reach 70.000 km2, and more (Dommarco, 2014a).

Concerning exploration and offshore extraction activities, article 38 brings environmental authorizations under the competence of specific Ministries authorities, while for onshore activities, only generic agreements lies in the interested Regions' authorities, and the decisional power lies within a single concessionary title, instead of two distinct titles (research permission and concession for the exploitation of hydrocarbons), conceded by the Ministry of Economic Development.

The legislation concerning offshore particularly interests ENI, considering that it is among the companies extracting major quantities of crude oil in Italian seas, also proved by ENI's 2013 technical investments in the engineering and construction sector concentrated in upgrading naval fleet for construction and perforation (ENI,

2014f). The Dossier “Per qualche tanica in più” (for some few more barrels) published by Legambiente on July 2014 reports that in Italy there are 9,778 million tons of oil hidden undersea while 59 million tons of oil were consumed in Italy in 2013. Similar data seem to prove the absurdity of the energetic choice carried out by the Italian Government and nullify the theory according to which crude oil exploration in the Italian seas is a crucial element in the debate over international energy. It rather appears as the umpteenth gift to oil companies (Legambiente 2014a). According to the same dossier there are 29,209.6 km2 of marine areas involved in oil research activities (5,000 km2 more compared to 2013). Among the areas more involved in oil extractions there is the Adriatic Sea that has granted 11,944 km2 to oil companies (2 concessions requests, 17 research requests and 7 permits already released for the exploration of sea beds). There is then the Sicilian Channel, where the 5 active platforms have been extracting (by late 2013) more than 301,471 crude oil tons (42% of the national production afloat) and there are also 3 concessions requests and 10 more research instances. Finally, the Ionian sea, where nowadays there is no oil extraction activity, but there are several requests for crude oil research in the Gulf of Taranto. Oil exploration activities have been forbidden in this maritime area until July 2011, when an amendment to the European directive on environmental violations has reopened this sea stretch to oil extractions: last year has seen requests doubling from 8 to 16, for a total area of 10,311 km2. To these numbers, other 76,419 km2 for 7 requests for prospection activities must be added: 3 concern the Adriatc Sea, one the Ioninan Sea, two the Sicilia Channel and the Balearic Islands which only recently has been reopened to oil activities, formally instituted as an August 2013 norm.

The quantity of oil extracted on Italian seas in 2013 amounts to more than 724 tons from six extraction sites in place, (53% increase compared to 2012 production) which include 13 platforms and 69 wells. Companies extracting the major quantity of oil in 2013 are ENI and Edison which together hold the major number of Italian offshore extraction titles. ENI holds, directly or indirectly, 5 titles for10 platforms and 66 wells which in 2013 have produced more than 457 crude oil tons (Legambiente 2014a).

The Law Decree presents several measures that on the one hand will facilitate timing and development opportunities of extractive projects for oil companies, but on the other hand provoked strong criticism. One of these is the institution of a “single concessionary title”, for onshore and offshore activities, which will notably reduce times for obtaining final authorization for the extraction, while compatibility doubts arises with the legislation of the European Union, not only in relation to concurrency norms, but also in relation to the fact that the European Union normative holds two distinct titles for research permits and exploitation concession (Di Salvatore, 2014). Besides, it ratifies the centralization of decisional powers to the Ministry of Economic Development thus excluding local authorities from the administrative proceeding which leads to the release of the concessionary title preventing citizens, Regions and Municipalities to actuate over decisions regarding the future of economic and environmental development of their territories.

1.7 ENI's approach to sustainability: how to make greenwashing a business

Syndial: a misleading plan of reconversion

In 1998, the Italian Parliament promulgated the "New measure on Environment field" law (n.426/1998) in order to list lands that were pinpointed as primary for ecological recovery: Sites of National Interest - SIN. Among them, Venezia Porto Marghera, Gela/Priolo, Taranto where ENI was operative in the field of chemicals and refinery since the 1950s (Ministero dell'Ambiente e della Tutela del Territorio, 1998). The law was putted in effect by a decree - issued in 2001 by the Ministry of the Environment - called "National program of environmental remediation and restoration" (Ministero dell'Ambiente e della Tutela del Territorio, 2002). With the plan, the Italian Government intended to organize, logistically and financially, restoration and remediation of territories.

Over the two-year period between the law and the national programme, ENI transformed a part of EniChem (which was - already specified – passing through a restoration process) in a new joint-stock company, called Syndial. The company was given the task of environmental reclamation. In 2002, the Italian Government ruled on financial mechanism in order to relieve institutions from the economic obligation of land restoration, it opened the sector to private actors. By issuing the n.138 law on "Environmental Provision", the Government entrusted to private parties remediation and redevelopment of polluted areas. According to this law, by tender notice mechanism private companies could award land remediation.

Today Syndial works in more than 50 sites, 17 of those listed as of national priority area for ecological remediation (ENI, Syndial, 2013). In charge of integrated services in the field of environmental remediation and of the Green Remediation Projects organized by the company, Syndial - that was formerly charged of the chemical sector of ENI, by the name of EniChem - has been under investigation for environmental pollution of EniChem plants. In 2008, the Torino's court of law sentenced Syndial to pay €1,9 billion for DDT pollution of Maggiore Lake, due to the activity of the Pieve Vergonte's plant, placed in the North of Italy (Iezzi, 2008). Local social movement answer to the tribunal that the payment was due, but that the further necessary step should have been that of land restoration, still waited by Pieve Vergonte's inhabitants (Legambiente Verbano, 2008).

After years awaiting, a project for the decontamination of the area covering a 12-year period for and estimated cost of almost 160 million Euros was presented. Some unsolved questions still remain, starting from the decontamination of the area of the still active chlorine-soda plants, which utilize a prehistoric and highly polluting technologies such as mercury cells, plants that should have been reconverted already years ago. Unfortunately, the area is still at risk of an environmental disaster related to building collapse that could free more than 80 tons of mercury present in the plant (Legambiente, 2014).

A similar case is that of Crotone, in the South of Calabria region, were Syndial is charged of the rest of Armerina landfill and the area of Petrusolo Sud, polluted by years of chemical activity. Despite the fact that a legal proceeding for environmental damage was started at the Court of Milan - Syndial has not been sentenced to pay. Syndial spokespersons affirmed that the company was not accountable for what happened outside the plant area (referring especially to the sea). The Region and the Province have been called to pay a total amount of € 800 million (Il Crotonese, 2008). In October 2011, during an audit of the Parliamentary Commission of inquiry on illegal activities related to waste cycle, a Democratic Party (PD) deputy asked to Syndial president - Leonardo Bellodi - to explain the economic role of the company in the region, "considering that there is a lot of money behind ecological remediation and that the business becomes tenting for criminal infiltration" (Il Crotonese, 2011). The aim of the question was to understand why, besides the presence of an approved plan for Crotone's restoration plan, no project had started.

In 2004 the law changed again, thus charging the Italian Government of ruling on waste management and land restoration. In the same year, by a reform on the norm, the principle of risk evaluation was included as main criteria for responsibility's assignment. Even if provided by law, this principle seems to be not followed by the ENI subsidiaries. A good example of this misapplication is the case of Porto Marghera where the Region and the Municipality elaborated a Master Plan for the 42% of the industrial area's restoration (Comune di Venezia, 2010). The Plan involved 17 corporations of the 35 indicated by the Minister of Environment, among them Syndial - for the petrochemical site - and ENI Refinery and Marketing Division - for the refinery (Legambiente, 2005). Between 2010 and 2012, in order to move on by reconversion of the petrochemical' facilities, the Region and the Municipality signed an agreement with the Minister of Environment in order to create an Eco District - a centre for energetic efficiency and renewable sources.

Despite the good appearance, local committees accuse corporations involved in the plan of using the area as a green marketing strategy with no concretes results in term of reconversion. In April 2012, in fact, the Minister of the Environment and the local Municipality of Venice signed an agreement for land restoration. In May 2012, Corrado Clini, the Ministry of Environment agreed with ENI's former executive director Paolo Scaroni and the Syndial President on the assignment of the Porto Marghera area to local Municipality and Region. The area - 110 hectares of industrial disused facilities - has not been restored yet by ENI and by this handover the energy company is would be discharged of any responsibility and placing the area in the hand of local administration (Regione Veneto, 2012). Even if the proposed aim of the agreement should be that of simplifying reconversion process of the industrial area by making it saleable to private investors which propose "sustainable" development projects, the willing of the company to donate unrestored areas has the consequence of complicating the accountability system. In January 2013, Syndial, the Ministry, the Region and the Municipality negotiated on the value of 19 areas that would then put in the market by the new hybrid body composed - indeed - by public local bodies and ENI itself (La Nuova Venezia, 2013a).

By confusing reconversion plan and restoration and by complicating the governance structure, the transparence of the agreement can be put into discussion, as well as the importance accorded to restoration. In the new rules accorded between the Ministry and Syndial, in fact, some obligations included in the nature of being site of national interest have been erased by changing the juridic nature of the area and by placing in on market. Among them: risk evaluation as tool for responsibility's assignment, procedure of projects' authorizations and the obligation for societies of having financial guarantees in order to assure land recovery feasibility (Venice On Air, 2013).

In March 2014, a decision-making Service Conference for the site decontamination approved the project concerning the safety measure of ENI's areas, included in the perimeter of the National Interest Site of Porto Marghera (Ministero dell'Ambiente e della Tutela del Territorio e del Mare, 2014). Three months after the conclusion of the preliminary procedure for the approval of decontamination project, the city of Venice has seen a series of arrests and investigations for the corruption system that revolved around the realization of Mose (a moving dams system for the harbour aiming to prevent Venice and its lagoon from increasing sea level) which has convicted or led to house arrests some of the most important institutional actors – from the ex Minister of the Environment, Corrado Clini, to the commissioner for the reconversion and restoration of Porto Marghera – which are managing the long-awaited and complex decontamination and reconversion operation of Porto Marghera, an area now abandoned by many industries and left alone with long-disused industrial areas filled with toxic waste (La Nuova Venezia, 2014).

"Green Refinery": an unsustainable reconversion strategy

ENI focuses in the promotion of biofuel energy plant and promotes it as an opportunity for the whole country to acquire a worldwide leading position in the chemical sector. Bio-refinery is seen as a regeneration strategy according to the company plan for 2012-2015, and for this reason, it has been proposed as a reconversion plan both for Porto Maghera petrochemical sector with an investment of about 200 million Euros, and for Porto Torres plant with an expected investment of 500 million Euros, of which 180 already invested (ENI, 2014g). Even if ENI's 2013 business strategy is mainly focused on the production and extraction of oil, the company is insisting in presenting "green chemistry" and "bio-products" as its own brand. The expression "green chemistry" is generally intended as a kind of chemistry which aims to minimize the use and generation of hazardous substances, while maximizing efficiency of any chemical process (United States Environmental Protection Agency, 2013).

However, looking at ENI's 2012-2015 and 2014-2017 strategy plans, the attention is focused on what is called "green-refinery", an activity that – differing from bio-fuels – wants to be developed inside refineries, in order to maintain them (Faraci, Baldiraghi, 2008). Research and development focused on "green diesel",

presented as a “hydro treating of the renewable components (vegetable oil, used oils, animal fats, etc.) to obtain a product with characteristics superior to conventional biodiesel” (ENI, 2012j). In September 2012, civil society proposed a parliamentary point of order to the Environment Venice Assessor - Gianfranco Bettin - in order to expose reasons why green refinery would not be sustainable (Gavagnin, 2012). According to this analysis, the “green refinery” project goes against European Directive 2009/30/CE - “Changing the regulations on fossil fuels, aimed at reducing emissions of greenhouse gases” (European Parliament and European Council, 2009). According to this legislation, the European Parliament imposed to reduce of 35% green house's emissions by the use of biofuels, while limiting at 5% the use of those coming from food (European Parliament and European Council, 2009).

Those percentages are not respected by the “Green Refinery” projects for which “green diesel” is based on “low cost vegetal oil”. Notably, the use of palm oil coming from Malaysia and Indonesia is hard to be defined as a “sustainable” practice: first, palm oil transport would increase the passage of big vessel in the port of Marghera, thus threatening local biodiversity; secondly, as sustained by the WWF, oil palm plantation - often planted illegally or exploited by the minimum environmental standards - causes habitat loss, erosion and soil degradation, water chemical pollution and pesticides dispersion that reach up to marine ecosystems - the expansion of palm oil plantation is the primary cause of deforestation in Indonesia, Malaysia, West Africa and Latin America (WWF, 2012a); finally, CO2 emissions' level of transporting palm oil from Indonesia, Malaysia, Congo, Brazil would be very high and adverse to European Directive goals of reduction. This problem is not only palm-oil related, but emerges as regarding the all “green refinery” project in which is proposed to build an off-shore port 8 miles away from Porto Marghera, thus altering hydro biological local equilibrium and increasing CO2 emissions as well (Gavagnin, 2012).

But with the project of “green refinery”, ENI has been able to restore it business portfolio and to assure the ownership of the refinery of Marghera, by staking over on land recovery.

In addition, ENI promotes two more “green” projects: in Livorno where work started for the construction of a water reuse plant that should reduce the need for external water in the cooling circuit of the refinery; and the creation pilot plant for gasification of industrial mud - Zero Waste project - at Centro Sviluppo Materiali in Rome – Materials Development Centre (ENI, 2013c).

The company tries to sponsor itself as involved in environmental and health protection, thus promoting refining activity as attempts to reach “operating excellence with particular attention paid to safety and health in its activities and the protection of the environment and strong relations with the people and the areas where it operates”. In spite of that attempt, ENI refining activities have been - and still are - strongly criticized by civil society’s organizations because of toxins

emissions and for the lack of installations' security, which not only increases the release of pollutants, but also exposes local people to health hazards. In march 2012, former managing director Paolo Scaroni, while illustrating the 2012-2015 business plan of the company, presented the EST project applied to the refinery of Sannazzaro. That technology, as presented in ENI brochure, is proposed as "zero fuel oil" and as "able to produce gasoline and diesel fuel without generating coke or fuel oil - where the market is increasingly declining - and is based on a hydro-conversion process employing a special catalyst and a stream of hydrogen self starting from natural gas" (ENI, 2011c). This example can be added to the list plans that ENI promotes as environmental friendly, but that are, in reality, a part of a business strategy that is trying to find a new brand for the company in a period of oil market crises.

Sustainability as a brand for advertising

In 2004 ENI has been excluded from FTSE4GOOD index, a rank that measures the performance of companies that meet globally recognised corporate responsibility standards (FTSE4GOOD, 2010). According to the index, eligible companies must meet criteria requirements in five areas: environmental sustainability, positive relationships with stakeholders, universal human rights support, ensuring good supply chain labour standards and countering bribery. In particular, ENI has been excluded because was not fulfilling human rights compliance's criteria. Besides having being reintroduced in the Index in 2007, in the same year ENI's extraction activities are suspended in Kazakistan for a three months period. The Kazakh government affirmed that emissions resulting from petroleum desulphurisation and storage of sulphur could cause irreparable damage to the environment. (RSINews, 2007). Two years later, in 2009, the german Green Party foundation Heinrich Böll criticized ENI's activities in Congo both for tar sand extraction and palm oil plantation.

ENI was criticized because of having made arrangements with Congolese government without consulting local population and of having denied to carry on activities in pluvial forests' areas (while 70% of the land used by ENI is made of forests). Furthermore, ENI was involved in a huge bribery case when, with other companies, it was accused of having corrupted both Nigerian government and Nigerian National Petroleum Corporation's officers between 1995 and 2000. After a long plea bargaining, in 2010 ENI admitted that it paid to get concession – as consortium – of nigerian gas liquefaction plants and that $ 180 million were given to two intermediary companies to assure the transactions and to avoid controls (RSINews, 2010).

In order to avoid hindrance from not being included in sustainable development labelling - as was the case for the index cited above - ENI promotes itself as taking part to global governance's initiative: in 2012 the "Sustainable Energy for All" was launched in order to build common actions within the Global Compact (the UN initiative which brings together companies, institutions and civil society

organizations) so that “goals, such as universal access to energy, too complex to be reached individually, will become a reality” (ENI, 2012k). Furthermore, the company created a mechanism of self-award: “The ENI Award” presented in its website as a tool to “develop innovative ideas for a better use of energy sources, promote environmental research and to support new generations of researchers” (ENI, 202l). The award is launched annually and ENI itself presents it as a programme with the ambition to become “a sort of Nobel Prize for Energy”.

A good example of self-certification is that of the establishment of the Health, Safety and Environment department (HSE), an internal branch that corporations and government agencies can creates according to guidelines drew up in 1998 by the International Finance Corporation. According to these guidelines, corporations could award a prize for “Business Excellence through HSE Management” (International Finance Corporation, 2013). This reveals the particular economic and financial aim of this tool that, besides being presented as environmental standard evaluation system, remain in the field of economic efficiency certification system.

1.8 Highlights and development of critical reasoning

The analysis of ENI S.p.A. contributes to the reflection on social justice development by giving an example of how big corporations' structure - for the fact of being huge, complicated and intricate – undermines control and balance system. As a consequence, the democratic capability of both institutions and civil society to control and determine private initiatives becomes weak. As reminded above, the situation is worsened by the fact that, in the case of oil and gas extraction, being a matter of private appropriation of public resources contributes to the deterioration of public policy conditions, undermines public goods and decreases people's capabilities' and rights. The case of ENI is emblematic to show how public/private partnerships in the management of local resources mystify the role given to politics in defence of social justice, while revealing how this paradigm relies on a productivity oriented to the appropriation of nature by the capital.

In this specific case, two levels of criticality can be identified: matters related to transparency and accountability and sustainability issues. For what concerns transparency and accountability, the structure of the company, its hybrid nature of public/private entity, reinforced by the golden share provisions, implies an inability to attribute concrete social and environmental responsibilities. On the other side, the royalty system, as indirect form of subventions to the hydrocarbon sector and to the national energy strategy, demonstrates a high level of admixture between private interests and political outlooks. Furthermore, transparence and accountability are at stake as ENI, acting by subsidiaries, joint ventures and by owning quotas of other nations oil companies, is very hard to call a single actor to account for both social and environmental responsibility.

About sustainability, as explained above, the case of reconversion of industrial sites in “green refinery” is emblematic to understand how the use of “renewable resources” has been exploited by ENI to circumvent the requirement for reclamation imposed by Italian law and also to implement a huge boost to its image as an “environmentally-friendly” company.

In this intricate scenario of public and private's interests commixture, to pursue environmental and social justice a possible path could be that of sharing and diffusing testimonies of people and realities who directly subjected to natural resources grabbing. This is why, in the second part of this report, we will propose several case studies of ENI’s activity in Italy. The cases will demonstrate how the company does not meet the criteria in matters of environmental and social responsibility, criteria which the company itself pretends to convey.

PART B. ITALIAN ENVIRONMENTAL CONFLICTS GENERATED BY ENI

2. The Gela case: an Italian "excellence"

2.1 Physiognomy of an area of high environmental risk: landscape, plants and landfills around Gela

The territory of Gela: a natural heritage

The Municipality of Gela is part of the Province of Caltanissetta in Sicily. With its 77,035 inhabitants it is the largest municipality in the province and the sixth largest in the region in terms of population. Located in the Plain of Gela, between the territories of Butera, Mazzarino, Niscemi and Acate, it stands on three high hill formations overlooking the wider Gulf of Sicily on the southern coast, called the Gulf of Gela (ISTAT, 2011).

The low sandy coast is punctuated by limestone and clay rock walls. The area has various distinct environs: ponds surrounded by reeds and dunes, eucalyptus groves, the Rabbito river lagoon, the Capo Soprano archaeological park as well as bathing and residential areas.

The once navigable Plain of Gela is crisscrossed by the Gela river and several other water courses, in particular fast flowing streams. Here the Dirillo river and the Valletorta Monacella stream feed Lake Biviere, a nature reserve established in 1997 by LIPU (Italian League for the Protection of Birds). This area has been declared a site of international importance by the Ramsar Convention on Wetlands. Its resulting micro-climate, protected by dunes and immersed in Mediterranean vegetation, hosts over 200 species of birds - many rare and endangered species - migrating between Europe and Africa. The Manfria hill, not far from the mouth of the river Comunelli, is both morphologically and climatically noted. Here, in 2007, the University of Catania's Department of Botany, discovered a species of plant found no where else on the planet.

The industrial hub

The landscape has been radically altered as a result of chaotic, largely abusive urban expansion, and the establishment of many, initially petrochemical, industrial plants. The area hosts a vast industrial complex, which has progressively contaminated the environment, with extremely high levels of chemical pollutants characterised by toxicity, longevity and bioaccumulation.

The industrial area, active since 1962, is located near the town of Gela and is composed of several chemical production plants, a thermal power plant and ENI petrol refinery. When the wind blows towards the west anyone can experience the extent of environmental degradation to which the population have been subjected over years of industrial emissions. In short, the air is unbreathable. This industrialisation has brought with it the abusive dumping of various waste products.

For these reasons, the municipalities of Gela, Butera and Niscemi have since 1990 been declared as an "area at high risk of environmental crisis" by the World Health Organization. The same area includes the Site of National Interest (SIN) for the clean-up of Gela. In Gela area, there are ENI Mediterranea's main offshore and onshore oilfields. ENI Mediterranea Idrocarburi (EniMed) is controlled by ENI S.p.A., and since January 1st 2005 has been developing hydrocarbon prospection and production activities in Sicily. EniMed produces in 14 extraction sites about 6.4 million liquid and gassy hydrocarbon barrels every year, through 137 wells (11 of which offshore) on 3 platforms, linked to 8 oil and gas treatment plants (Assomineria, 2014).

The production complex: storage, pet-coke, desalination

The Gela refinery and other industries are located in the Piana del Signore, part of Gela's municipality, and occupy an area of 5 million square meters divided in tracts known as "islands". According to ENI, this site deals with over 5 million tons of crude oil a year, with a primary refining capacity averaging 100 thousand barrels a day, with a 142% conversion rate. For this reason it is considered one of the largest refinery complex in Europe. The first production plants became operational in 1962, with a 3 tons per year crude oil production capacity. From 1992 to 2002, the Gela refinery became part of the Agip Petroli network, representing a precious and consolidated economic asset. On December 2002 Agip Petroli handed its refinery business, from mineral oil deposit and Liquified Petroleum Gas (LPG) storage to the company Raffineria di Gela Srl, which in turn became Raffineria di Gela S.p.A. on April 1st 2003 (Eni, 2014j).

The refinery is designed to move raw materials and finished products by sea. The transformation of materials are realised via plants typical of the crude oil refining process - distillation, thermal and catalytic cracking and reforming, etc.. - including: storage facilities for mineral oils and LPG; plants producing electricity; propylene purification and ethylene production plants; utility plants as well as ecological treatment services and an internal national deposit with LPG bottling plants. All this allows for a storage capacity of approximately 1.2 million m3 - of

which 0.4 m3 is for raw materials, spread over more than 120 tanks and domes (ENI, 2007).

Functionality of the industrial complex

The Gela refinery includes a 262 MW thermal power plant that burns a variety of fuels, including - unique to Italy - pet-coke (a coal obtained from the residues of refined crude oil) to produce electricity. The main plant has a smoke removal system for removing sulphur oxides (Sox2), nitrogen oxides (NO x) and powders, the so-called SNOx2 process.

The industrial complex uses 20 million cubic meters of drinking water, in part from a desalination plant built in 1974 with funding from the Cassa per il Mezzogiorno and operated by AGIP. It is the largest desalination plant in Europe, designed to deliver 9 million litres of drinking water to towns along the southern coast of Sicily in the provinces of Agrigento and Caltanissetta. The waters are treated in a purification plant, while a biological plant treats oil refinery waste water and municipal wastewater.

So, in addition to producing oil products – liquefied petroleum gas, petrol, diesel, etc.., the main Gela refinery also (ENI, 2007):

- produces and exports electricity up to a maximum of 100 megawatts - enough to power a city like Gela;
- produces up to 2,000 m 3 / h of desalinated water that is distributed to the public water supply and feeds the provinces of Agrigento and Caltanissetta, including the city of Gela;
- reats wastewater from the city of Gela;
- manages the dam on the river Dirillio, which water is used by the refinery and agriculture.

Over the years, the plant structure has undergone a continual process of technological upgrades. ENI promotes the Gela refinery as among the most complex and advanced structures in Europe. With 1,354 employees - 75% of them coming from the city of Gela - and numerous third party contracts, it has a significant economic impact on the territory.

Over the years criminal investigations relating to pollution levels have been launched, often ending with judgments against senior company officials. As early as the 1990s available data concluded that "the plant is the source of an impact on air quality, with particular reference to annual emissions of sulphur dioxide, as well as nitrogen oxides and particles». Furthermore, for a long time 56% of industrial waste was "dumped directly into the sea, while the rest was almost entirely

discharged into the Gela river" (Presidenza della Repubblica, 1995).

2.2 From the economic boom to the crisis and the new ENI development programme for Gela

The beginnings of industrialization of Gela

Between 1952 and 1955, Gela begins to undergo a transformation that will shape the city during the economic boom. The first signs of urbanization affecting the area are the construction of the new city hall, modern housing areas and some infrastructure. During this period, contractors start the process of recruiting local manpower for building public works as well as training specialist workers and craftsmen.

In 1956, Agip Mining, an ENI company, discovers mineral deposits at a depth of 3,400 meters. The depth of the oil-rich layers, the excessive density of crude oil and its poor quality was treated sceptically, even by politicians. Costs are seen as prohibitively high, compounded by the geographical location of the site and its lack of infrastructure. Enrico Mattei, President of ENI, is personally committed to the construction of a refinery at Gela, creating a media campaign, and delivering lot of speeches in which he promises work in this still underdeveloped land. In 1960, and against Government advice, work begins. The ANIC Gela S.p.A. company is founded out of a merger between ANIC and SOFID companies – both controlled by ENI - in December 1959, in order to concentrate on the processing of petroleum and its derivatives.

By the end of 1960, due to the lack of specific skill sets only 800 local workers are directly employed by ANIC, a considerable minority when compared to the total number of workers needed to construct a petrochemical plant. These locals are used only when needed, and are commanded by specialist team leaders from northern Italy, Catania, and Syracuse.

The assembly phase of petrochemical plants begins in mid 1962. Employment peaks at about 7,000 workers, of whom 3,000 are local. As a result, the countryside lost many workers, causing a crisis in the estate based rural economy. Landowners, after years resisting the demands of the farmers' movement - and in collusion with the Sicilian mafia organization Cosa Nostra - are now forced to sell land to ENI in the Gela area. The city almost reached full employment and the population steadily grows, rising rapidly from 20,000 to the 80,000 current residents. However, in 1963, when the complex goes into production despite not being completed, about 2000 workers lose their jobs. A specialist staff is needed to correctly operate the refinery and this is brought in from Northern Italy. Many workers had to return to agriculture. In addition, the small nearby harbour, part of an overall lack of transport infrastructure and proper costing of such a deep mining operation, cannot handle the volume of materials being extracted. (Saitta and Pellizzoni, 2009)

Since the death of Enrico Mattei to the 1980s

Enrico Mattei died on the 27th of October, 1963 while he was making his way back from Galliano in Sicily, where ENI had discovered a methane deposit. Today, many hypotheses regarding its death consider causes might come from Gela. Senator of the DC party Verzotto Graziano, who accompanied Mattei in his last days, declared to the judges of the case in Pavia: "To understand the death of Mattei one needs to understand the operation of ANIC in Gela, the birthplace of this petrochemical complex [...] during the period of Silvio Milazzo's regional government". (Antimafia Duemila, 2011).

Marcello Boldrini, in his 1965 opening speech addressing the Gela refinery, recalls of his predecessor Mattei: "No-one would use ore deposits of such poor quality anywhere in the industrialised world. Mattei sensed an opportunity, and changed the fortunes of Gela forever". Yet, at the same time, 650 mechanical workers and 1000 building workers were dismissed Many of these labourers, driven by new employment opportunities to become construction workers, emigrated" (Bascietto, 2009).

Throughout the 1970s and 1980s, Gela witnessed a process of downsizing that carried on further this period, with serious implications for employment in the area. Today there are some 2,000 employees - including many workers dependent on non-local contractors or foreign firms, compared to about 8,000 at the end of the '70s.

From the 1990's to the new century: the environmental issue

In the early 1990s, the environmental and health impacts of the refinery become ever more apparent. In 1990, the south Sicily area, including the towns of Gela, Niscemi and Butera, is declared "an area at high risk of environmental crisis" (Gazzetta Ufficiale Regione Sicilia, 2005). A Presidential Decree of 17 January 1995 launches an environmental action plan for the territory reclamation. A few years later, Law 426/98 places Gela among the top fifteen Sites of National Interest for the National Reclamation Plan. An area of 4.7 km 2, including the industrial and oil storage centres as well as landfill waste sites, is targeted in January 2000 by an Environmental Act of the Ministry (Gazzetta Ufficiale, 2000).

The so-called 'Pet-coke revolt' is worth noting as an expression of the conflicts surrounding Gela, and the critical issues relating to relationships between the plant, the local economy and residents. In 2002, the factory is impounded by order of the judiciary following an investigation that, in accordance with the provisions of the Ronchi Decree - DL 22/1997, leads to the definition of pet-coke as industrial waste, therefore making its use as fuel for the refinery power supply unlawful, due to the high content of sulphur, heavy metals and polycyclic hydrocarbons. The reaction of the population is large and unexpected. Around twenty thousand residents demonstrate against the order of seizure, closing the gates to the city and engaging in clashes with the police. Following similar protest actions James

Ventura, local senator for the Forza Italia party (Berlusconi right wing party), works on a new decree by the Berlusconi government, redefining the nature of the pet-coke and making it usable in the refinery once more (La Repubblica, 2002).

In those years, environmental protests intensified and the company's built a communication campaign to show its commitment to minimize environmental impacts. It began in 2004 with the Environmental Improvement Plan, completed in 2006 and anticipated by the Environmental Statement on the Gela refinery, depicted by the top management of the plant as a clear expression of the desire to make available to the public data and environmental information for a continuous dialogue on achieving of the aims. In June 2007, when the results of the Environmental Improvement Plan were presented, with the satisfaction of the former Mayor Rosario Crocetta, ENI had invested 200 million euro in the renewal of the plant.

Following the same transparency policy, several documents publishing data about the measures taken to improve and upgrade the facilities were made public. Since the 1990s, with the activation of the SNOx2 filtration system, and thanks to some maintenance work and the renewal of the plant, ENI considered to have fulfilled its duty.

The crisis and the breakdown of the plant

In recent years, there has been a progressive and structural crisis of the petrochemical refinery sector, both in Italy and in Europe, and the Italian multinational was forced to reorganize its own plants management. Therefore, on April 18th, 2012, ENI announced the stop for 12 months of two production lines at the Gela refinery, where the three existing lines proceeded at 60% already for some times before that. Over 500 direct employees and other 300 workers from cluster industries are temporarily out of work and paid into the unemployment insurance service (ENI, 2012m). Due to the decline in demand for petroleum products, an excess of refining capacity and, therefore, a surplus of "refined" oil and gas, the Gela refinery alone has lost about 2 billion Euro since 2009. Exports to the United States has almost stopped in recent years, while demand in Europe is almost zero. Therefore, as stated by the management of ENI refining and marketing sector, "in this context, given the persistence of the critical scenario, ENI announced the need to implement a partial and temporary stop of the refinery of Gela, in order to reduce the negative impacts of refining income" (ENI, 2012m).

The 2008 financial crisis had an impact not negligible even in the oil sector. In 2012, the activities of Gela were temporarily stopped and 30% of the employees received unemployment. Beyond the international situation and the crisis in the sector, the inclusion of Gela in the list of areas at high risk of environmental crisis and the competition from Middle Eastern countries - able to establish lower prices for lower costs of labour and the 'absence of binding targets to reduce emissions - were the causes of the decline of the plant. Therefore, to date, the measures to face the crisis include:

- cutting 400 workers from the 1,350 direct employees;

- cutting € 330 million investment for the consolidation and revitalization of the factory;

- industrial restructuring that involves completion of the breakwater for berthing of ships and environmental enhancement.

In this context, the company was keen to sign an agreement with the main trade unions, ensuring the maintenance of facilities and confirming its investment of approximately € 480 million announced in the refinery Sustainability Report 2011. On 26 May 2011, ENI, Filctem, Femca and Uilcem signed an agreement "for the development and competitiveness and a new model of industrial relations", containing two guarantees that led to the consent of the trade unions: the coverage of the minimum wage in the case of stop of activity and use of social welfare and the non-closure of production sites until 31 December 2014 (Federazione Nazionale Chimici, 2011). The plant crisis and the pollution of the area caused unrest among workers and led to institutional meetings between the mayor and Prefect of Gela in order to declare the state of crisis.

Since April 2014, the refinery plants were stopped after a fire occurred on the 15th of March 2014, that damaged several pipes present on Island 7 Nord (ENI, 2014k).

ENI's development program for the area of Gela

On July 2013 ENI has announced a restoration and relaunch program of Gela's Refinery envisioning a 700 million investment. The plan was stopped the next year and followed a period of impasse and uncertainty over ENI's refinery destiny that has caused the mobilisations of several million workers, unions, local administrators and a general strike against industrial dismissal and demanding interventions in regards with local development (La Repubblica, 2014). In autumn 2014 an agreement among ENI and trade unions was reached during a meeting coordinated by the Ministry of Economic Development which envisions the refinery's conversion with the launch of bio-fuels production through Green Refinery (Ansa Sicilia, 2014). On November 6th 2014, an Agreement Protocol for the area of Gela was signed by the Ministry of Economic Development, the Sicilian Region, Gela's Municipality, ENI Group, Confindustria Sicilia, and the trade unions Cgil, Cisl, Uil and Ugl. It envisioned a new industrialization step aimed at creating a new productive system able to face the challenges of a competitive and continuously evolving market.

ENI's development program will mainly consider the following guidelines: the development of industrial production of sustainable products starting from renewable charges (Green Platform); the creation of competitive safety centres; a development organic policy of upstream activities, strongly focused on the valorisation of gas resources (ENI, 2014l).

The program will be develop in the following main intervention areas:

- Green refinery. Conversion of Gela's refinery into a bio-refinery. Green Refinery will have a vegetal oil productive capacity of about 720 ktons/year. The conversion will utilize ecofining technology, owned, developed and patented by ENI, that will allow the production of green diesel and will be able to process second-generation raw materials. The contemplated investment is 220 million Euro and its initiation by 2017;

- Upstream. The program envisions the initiation of new hydrocarbon exploration and production activities on Sicilian soil and offshore, with the realization of gas resources and the valorisation of existing potentialities of both offshore and onshore fields. The investment contemplated is 1.800 million Euros with an increase on average annual production of about 700 million cubic meter of gas and 1.2 thousand barrels of oil in the next 10 years, with peak values of 26,000-30,000 boe per day;

- Guayle Project: through Versalis, ENI undertakes the realization of a feasibility study for the realization of a project for the production of natural latex from natural materials with the related development of the agricultural supply-chain. In collaboration with the Sicily Region an agricultural supply-chain and a natural latex productive plant - with a 5 kton/year productive capacity to be realised inside Gela's refinery – would be realised;

- Logistic Pole. A logistic pole will be associated to the green refinery for the expedition of local crude oils and green fuels;

- Gas stock and transportation. Through a feasibility study, ENI has committed to consider the possibility of realizing a storage and transportation infrastructure in Gela for the purpose of supply heavy local land and maritime transportations.

- Competency centre. The program foresees the realization on Gela's territory of a safety competency centre which will provide services and support to ENI's different productive unities and to its societies in operational territories.

- Environmental restoration. ENI will realise environmental restoration activities of areas and plants (ENI, 2014m).

Criticalities of ENI's new Development Program

ENI's new Development Program, presented in the same months of the discussion and the successive transformation in law of Sblocca Italia Decree which will open to new hydrocarbon exploration and extraction in the Sicilian territory, particularly on the Sicilian Channel, has been criticized from national and

local environmental associations. Major criticalities interest the refinery reconversion project and new perforation and exploration activities on the Sicilian Channel and on the Sicilian territory.

The analysis realized by the Italian social movement against hydrocarbon drillings (Coordinamento no triv) considers contradictory that the agreement aims, on the one hand, to face the Gela's plant crisis choosing to abandon oil refinery sector while on the other hand it foresees the increase in liquid hydrocarbon production and contextually the increase of natural gas production, which is related to oil in electric generative sector. In particular, it observes that the document "Annotazioni su Protocollo di Intesa per l'Area di Gela" sees the strength of the creation of a new pole of green chemistry in the production of bio-fuels derived by palm oil production. This product, as previously reminded, is obtained through landgrabbing of agricultural lands in developing countries, with impacts on deforestation, soil degradation, eco-systems and especially, on environmental stability of people expropriated of their own lands. Besides, the document underlines that the production of "guayule" plantations in the Sicilian territory, essential raw material for the production of rubber, will entail a double advantage for ENI: avoiding decontamination costs of 5.000 polluted hectares, benefiting of related UE funds and capitalizing further consensus from the local population thanks to job opportunity perspective of employing (some hundred jobs). Apart from denouncing the agreement's contradictions and put in discussion the future bio-refinery sustainability, the document states that ENI's most important point is the remarkable potential growth for extractive activities that the Sicilian territory (including offshore) is able to ensure to ENI and to its partially-owned companies.

2.3 Environmental and health impacts of the conflict

General framework

As mentioned before, the Gela, Niscemi e Butera area, under high risk of environmental crisis, are Site of National Interest for ecological remediation. A paper by Musmeci et al. Published in 2009 in the journal "Ecologia e Prevenzione", confirms that "Gela's SIN particular characteristic relies in a large availability of data regarding the effects on the environment and health. Some elements are though lacking, in particular for areas outside the SIN but also inside the high risk area where people live". Industrial activities of Gela has caused a chemical contamination of all environmental matrixes producing high risks for human health and the environment (Musmeci et al., 2009).

Among the main environmental criticality of the Gela SIN:

- Non adequate efficiency in the groundwater security interventions implemented along the shore-side;

- Delay in the implementation of the clean-up of petrochemical site' soil, which continues to contaminate groundwater then released in the sea;

- Contamination of the Gela Plain by heavy metals, hydrocarbon and aromatic solvents released by the ponds, oil-pipelines and storage areas owned by ENI through EniMed.

Air pollution and insufficiency of SNOx system

On the contrary of most national refineries, Gela treats only national crude. The residual part produced is then treated and used as combustible for energy production: the pet-coke. It contains about 5 to 7% of sulphur and during combustion it releases a relevant quantity of sulphur dioxide.

Pollutant	% per emission source						
	E3 SNOx(%)	E4 FCC	E7 Coking 1	E16 Claus B2	E18 Texaco V303B	E21/1 CTE-1	E21/4 CTE-4
Dust		21.7					74.2
H2S						12.7	52.9
HCl	51.1						19.2
HF	77.8						
SOx	52.7			23.6			
SOV	70.2						
NH3		37	16.6	28.5			
CO	83.7				11.8		
NOx	31.4						30.6

Table 2

Emissions of the Gela refinery

% weight in respect with total emissions

Source: Musmeci et al., 2009

Since the 1990's, Gela refinery invested into an innovative system SNOx to treat the thermoelectrical plant emission by filtrating and treating toxic components regulated by law and emitted through the plants chimneys. Still, it did not solved all issues related to emissions as it does not capture all hazardous elements while problems of leaks remain under evaluated. As leaks mainly diffuses themselves in this case through soil contamination, it could be the main direct cause of impact on the population.

Data provided by the sicilian Regional Agency for Environmental Protection (ARPA) report the exceeding concentration of elements such as benzene, non-methane hydrocarbons and other heavy metals like nickel. High level of arsenic, molybdenum, nickel, selenium, sulphur, vanadium and zinc are associated to the petrochemical plant, while lead, coper, platinum, palladium, antimony and in part zinc, appears to be mainly produced by traffic.

Regarding pet-coke, the Physics and Chemistry Department of the Palermo University realised in 2005 a study on the relation between incineration and cancerous and teratogenous substances in the Gela area. The study analysed the concentration of heavy metal in the atmospheric particulate present in the area of Gela, examining powder deposed on pine needles and in proximity with the plant, finding high metal concentrations (Bosco, Varrica, Dongarrà, 2005). As Dongarrà - co-researcher of the study - explained, they "found some metals' concentration much higher of what it should be if they would have been emitted from natural sources […]. If you cross this data with the high incidence of tumours, cancers and malformations, it is logic to question the connection of the two phenomenons" (Dorru, E., 2012). The analysis of pet-coke sample incineration revealed concentrations in mg/kg of arsenic at 17,3, chrome at 114, Nickel at 787, lead at 125, vanadium at 1,070, zinc at 2,609 and sulphur at 44,790. Such results are more worrying if we picture the almost 3,000 tonnes/day of pet-coke incinerated in the last 40 years (Dorru, E., 2012). In short, several studies have shown an increased incidence of neoplastic illnesses – in particular of lung cancer – more consistent among workers from Gela than commutes, suggesting an etiologic role of atmospheric pollution in the area of Gela (Dorru, 2012).

Water contamination and water desalination

Contamination of groundwater located in the reclamation area reports levels superior than those limited by law 152/2006, in particular heavy metals, polycyclic aromatic hydrocarbons (PAH), cancerous aliphatic compounds and BTEX (benzene, toluene, ethylbenezene and xylene) (Gazzetta Ufficiale, 2006). Risks lie in the contact between groundwater and superficial and sea waters.

Table 3

Maximum values of some chemical substances in groundwater and legislative threshold values

Source: Bosco et al., 2004

Substances	Concentrations found (µg/L)	Normative limits (µg/L)
Arsenic	250,000	10
Ninyl Chloride	200,000	0.5
1,2 dichloroethane	3,252,000	3
mercury	2,300	1
benzene	160,000	1

nickel	150	20
p-Xylene	1,580	10
benzo(a)pyrene	0.14	0.01

Through a project to monitor and identify the superficial water of Sicily, the Sicilian ARPA monitored the coastal marine area of Gela. Contamination reported is due mainly to petrochemical contamination and to the lack of preventive measures to contain water pollution, although other factors of pollution like the harbour, the refinery and the sewerage water dumping are reported (Regione Sicilia, 2005).

Gela hosts a desalination plant extracting water close by the refinery and the pier. The produced water is ceded and diffused through the Sicilian aqueduct for civil use. The desalination and the water purification processes cause loss of elements fundamental for human beings. Moreover, the purified water suffers particularly the head and the lack of maintenance of the water distribution system causes soil infiltration and scarce quality water. It is important to specify that in this particular area water always has been an issue.

Besides from pollution, the distribution system is scare and entire areas of the city could be left without water for days. This influenced citizens to self-install hydrologic pumps which increased again water scarcity. Moreover, in 2000 water was declared non-drinkable. Therefore, people buy bottles of water, in some case also for cooking and washing, while the price of tap water remains unchanged until 2007, when thanks to an order of the former major Rosario Crocetta, tariffs and bills experienced a 50% halve (Quotidiano di Sicilia, 2011). A 2010 appeal issued by Caltacqua S.p.A. the company that manages the integrated hydro-service for the entire Caltanissetta province, determined new analysis and the cancellation of the major's order. Later, a legal lawsuit was opened by the company responsible for the supply of the hydro-service for the restitution of unsolved sums.

Epidemiology: tumours, malformations and pathologies

A study investigating the Gela mortality data between 1995 and 2000 and hospital admission between 2001 and 2003 notes that "the excesses reported are probably linked to working activity; even though feminine excess implies hypothetical etiological role of environmental pollutants [...]. The study evidenced a series of pathologies in excess – lung tumour, cardiovascular and respiratory indispositions, children asthma, and kidney illnesses – needing to be further epidemiologically monitored and analysed in relation with air, soil, water and food contamination (Fano et al., 2006).

Table 4

Mortality and morbidity in Gela risk area

Death and hospital admission for neoplastic causes that showed significant standardized mortality ratios (SMR) and standardized hospitalization ratios (SHR) compared to local reference.

+ = SMR > 100
- = SMR <100
● = SMR no data

Source: Fano et al., 2006

Tumor causes	Deaths		Hospitalisations	
	Men	Women	Men	Women
All Tumors	+	+	+	+
All tumours (0-14 years old)				+
Stomach	+			
Colon and rectum		+		+
Liver			-	
Larynx	+		+	+
Trachea, lungs and bronchus	+	+		+
Pleura	+			+
Bones			+	
Sarcoma	●	●	+	
Melanoma			+	
Breast	●		●	
Uterus	●		●	●
Ovary	●	-	●	-
Prostate		●	+	●

Testicules	•		•
Bladder		+	+
Nervous central system			+
Thyroid			+
Haematopoiesis system			
Non Hodgkin Lymphomas			+
Hodgkin Lymphomas			
Multiple Myeloma		+	
Leukemia			-

Regarding mortality for the period 1995-2002 and hospitalisations for the period 2001-2007, the National Institute of Statistics (ISTAT) reported higher rates of mortality in general and tumours for both men and women in the high risk area of Gela, Butera e Niscemi. A statistical increase in trachea, lungs, bronchial tubes, larynx and bladder as been noted for both sexes. Men shows an increase in bones, melanoma, prostate, stomach, larynx and multiple myeloma malignant tumours, while women shows an increase in colon, rectum, trachea, bronchial tubes, lungs, central nervous system and thyroid tumours. Moreover, hospitalisations' data showed an increase tumours related admissions, and in particular for women aged between o and 14 years old (Cernigliaro, 2009).

The analysis of non-tumour related mortality put into lights statistically significant excesses for both gender of psychiatric diseases and for men for trauma and poisoning. The analysis of hospital admissions shows excesses for both sexes in blood infective illnesses and other disease related to hematopoietic organs, nervous, circulatory, respiratory, digestion, and urinary systems.

A specific scientific study on Gela concentration of congenital malformation births realised by Bianchi et al., in 2006 shows that “hypospadias concentration appears as among the highest ever reported in the literature.[…] Together with general malformations, […] they resulted in strong excess among consumers buying fish, fruits and vegetables to ambulant sellers, or growing or fishing their own […]. Notwithstanding the investigation limits, those results identified critical points in the food chain and its effects on health”.

The study revealed a preponderance of congenital malformations of residents born between 1991 and 2002 – superior to 5,7/1000 - twice superior to those reported by the sicilian and the national registers in particular for problems with nervous, cardiovascular, digestion, integumentary and urinary systems.

A further study that revealed serious sanitary impacts in the area of Gela and the urgency of decontamination measures, was the 2011 Rapporto SENTIERI issued by the Instituto Superiore di Sanità. The report has underlined a serious contamination framework of water and soil and of verified – but not yet characterized – air contamination with the consequent excess of lung, stomach, pleural cancers, proving that the enormous delays in implementing a real decontamination of the land has seriously compromised the area's situation (SENTIERI, 2011).

Table 5

Mortality for the main cause of death

Number of observed cases (OSS), Standardized mortality ration cride (SMR) and adjusted for deprivation (SMR ID), IC 90% confidence interval, Regional Reference (1995-2002). Males and females

Source: Bianchi et al., 2006

Causes	Men			Women		
	OSS	SMR (IC 90%)	SMR ID (IC 90%)	OSS	SMR (IC 90%)	SMR ID (IC 90%)
All causes	2 200	110 (107-144)	114 (110-118)	1 744	119 (115-124)	123 (118-128)
All tumours	663	118 (110-126)	123 (115-131)	406	117 (108-127)	124 (114-135)
Circulatory system deseases	801	102 (96-108)	106 (100-112)	800	119 (112-126)	120 (114-128)
Malattie dell'apparato respiratorio	143	93 (81-107)	100 (87-115)	67	105 (85-128)	120 (97-147)
Digestion system deseases	122	130 (111-151)	135 (115-157)	63	100 (81-124)	104 (83-128)
Genito-urinary system deseases	35	103 (76-137)	119 (81-145)	63	94 (65-134)	100 (68-142)

2.4 A suffered conflict: an example of the relationship between big capital and outlying territories

Grassroots actions

The mobilisation in defence of health and the environment mostly focuses on specific issues and had known participation picks with the support of citizenship at large and workers, like in the case of the pet-coke scandal in 2002.

As the president of the Aria Nuova association explained in an interview released to Adnkronos, after the sequestration of out of norm pet-coke storages, an ad hoc law have re-established the previous state of the art, putting at risks citizens' health and legalising an hazardous waste as combustible for obsolete technologies. He denounced also that every intents to speak out the seriousness of the situation has been archived. For those reasons, environmentalist organisations have called the intervention of the Court of Justice that transferred the matter to the Gela Court – Procura della Repubblica di Gela (Adnkronos, 2013).

Children malformations is another sensitive issues that have mobilised citizens. The Gela Court investigations on the refinery impacts and on ENI liabilities are following about 30 malformation cases. In order to overcome the slow development of the penal process, the families have started another lawsuit against ENI, Syndial and Gela S.p.A. asking for compensations for the damages suffered (Rullo, F., 2012., Tondo, L., 2012).

Trade Unions and workers mobilised themselves after the announcement that Gela petrochemical centre would be reshaped in order to defend their jobs, but no other specific mobilisation have been developed. In the mean time, Gela former mayor, Rosario Crocetta, has been elected as Sicily Region President. In their letter to the new presidents, Gela citizens are focused their requests on water issue, they require Crocetta to reduce water price of half of its cost, to guarantee 24/7 distribution and to renew the water distribution and the sewerage systems.

Gela Court investigations on ENI

After its investigation on a submarine pipeline transferring crude from the harbour to the refinery, the Gela court implemented in december 2010 a lawsuit. Seventeen persons - ten managers of the refinery and seven security technicians - are under investigation for unintentional manslaughter, individual serious lesions and documentation falsification. In this occasion the local authorities - the City of Gela and the Sicily Region – step out the tacit agreement with ENI and constitute themselves civil part in the lawsuit.

Investigation led by the General Procurator Lirio Conti have started looking at the underground water under the reclamation area, as potential leaks and spills could have contaminated both soil and water. The Court is now investigating Gela S.p.A. refinery for possible omission of communication of polluting events, abusive dumping of hazardous waste and non voluntary disaster. For the current Gela Mayor Fasulo, “time has arrived to make light on citizens' health and clarify the situation once for all” (Battaglia, 2012).

Concerning legal aspects linked to Gela as a SIN area, Gela Public Prosecutor has provided the Parliamentary Committee of Enquiry on illicit actions connected to the waste cycle (XVI Legislatura) with information concerning some approved decontamination projects: the definitive project for the decontamination and security measures of VASCA A zona 2 with relative integrations and prescriptions and the definitive project for the decontamination of underground waters of Gela’s multisocietary establishment”, both at the expense of Raffineria Gela S.p.A.– Syndial SpA, that received authorization through ministerial decree. Concerning these two projects, an hearing at the Chamber revealed that concerning the first project, “preliminary inquiries have recently been concluded with the contestation of several offences concerning violations of the Environmental and Criminal Code for serious pollutions provoked by unjustified delays in the implementation of decontamination and security measures works on basin A zona 2 in the old landfill area controlled by Gela refinery”. Concerning the second project “scrutiny relative to the effective functionality of adopted measures for the decontamination of the groundwater are underway. These include continued contaminations of the groundwater by storage tanks of Gela S.p.A. refinery still without double bottoms and under exercise, as well as the effective functioning of hydro and physical barriers for protecting the marine environment, functioning where critical points concerning previously mentioned verifications” (Legambiente 2014b).

2.5 Open questions: strengthening mobilization and reinforcing environmental and sanitary monitoring

Occupation blackmail, illegality, institutional distrust and disinformation

The deep historical and social roots of the lack of widespread grassroots mobilisation have determined citizens life style. First of all, as the dismissal from employment started in 1963 have shown, the development of the plants corresponded to the reproduction of existing social schemes and related job insecurity. In the mean time, the contractual and working framework has been based on individualism, running through a mechanism of employees evaluation based on the time, rhythm and quantity of work produced as well as a flexibilisation of contracts.

As the sociologist Pietro Saitta notes, even the agricultural and associations' sectors encounters difficulties to collaborate: “This fragmentation is visible in the rest of local society. It is underlined by elements such as the distrust in the capability to reach alone “minimum” objectives like a job; the normalisation of

clientelism in the discourses and the imaginary; scepticism on the abstract principles of legality" (Saitta and Pellizzoni, 2009).

For Saitta, the "pet-coke insurrection" calls for a "deep introjection into the idea that the factory is a core element for individuals and the community and for the survival of the city itself", in a "disciplinary process directed at influencing local masses to interiorise the ethic of production, work and profits in detriment of life". Said in other words, the externalisation of environmental and social costs allows the conservation of the socio-industrial system. Other fundamental elements are the collective psychological discomfort, marked by the failure of clean-ups, the scepticism and the lack of common planning between the actors of the conflict and the default of social powers able to impulse change.

The mafia had an important role in this context. As the Antimafia commission reported in its dossier for the years 1963-1964, "the industrial sector created new space where to develop illegality, speculations and abuses against work, workers and the companies" (Bascietto, 2009). Until the late 1970's, mafia organization Cosa Nostra was not so deeply well-entrenched in the social structure as today but the many resources provided had attracted criminal business. Efforts to contrast the phenomenon and the fight against organised crime, require particular attention for its relations with the local social and political forces. The many resources allocated have been a target of criminal business and the fight against criminality has requested a deep and personal engagement because of collusion, with local social and political sources. In Gela's context, many public decisions have ended up reinforcing the idea that legality is a negotiable question and the building, industrial, water and pet-coke sectors are the proof (Bascietto, 2009).

ENI put in place acommunication strategy recognising mistakes from the past and promising big investments to solve the complex present situation. As Saitta explains, the Gela demonstrates "the capacity of capital, in particular in its industrial and technological form, to shape the territorial and social context in which it operates, but in the same time to adapt to it, creating jobs and relative well-being though producing marginality, dependence and social and environmental degradation".

Data systematisation and intervention

The Gela case shows how important is the collection and systematisation of data related impacts on the environment and on the health of citizens. Such studies should be organically published and made accessible to local communities so to guarantee their awareness regarding the criticality of the territory and of the risks undertaken. It would be important to establish local and regional tumours and malformation registers in collaboration with the public health service and the local authorities.

Methodologically speaking, local institutions should find a way to combine technical/scientific investigation to popular epidemiology experiences. This approach, based on an partial recollection of health data through the mapping of

pathologies, connects popular and activists knowledge with scientific data. The Gela association “Amici della Terra” have promoted such initiatives contributing to reinforce population awareness regarding oil industry's impacts on health and the environment. In particular, air contamination and health impact would need to be further investigated as the clean-ups have been planned only for soil and groundwater contamination.

Companies' liabilities should be taken more seriously starting by improving quality and access to information. This case study illustrates how an industrial activity can condition and shape both the economy and the society of an entire area. Corporate responsibility is huge, but tolerated and characterised by the collusion and disinterest of local and national political ruling class, for which the intervention and investments for the restoration of the area should be handled completely by ENI.

3. THE MARGHERA CASE

3.1 Historical and territorial backgrounds

History

With an extension of 5,800 hectares, Marghera is part of the municipality of Venice, and it stands in the southern area of Mestre. Marghera consists of three main neighbourhoods: Marghera, Catene and Malcontenta, with a population of about 28,400 inhabitants. Before the construction of the industrial port and the building of a residential area, Marghera was a swampy area known as “Botteghini”.

At the beginning of the 20th century, Venice could not compete with other more industrialized centres of the Mediterranean Sea as it had not developed yet an industrial sector and a trading port due to the lack of an adequate space. On 12 June 1917 the anonymous society Porto Industriale di Venezia - Venice Industrial Harbour - led by the count Giuseppe Volpi was created.

The operations in the industrial area started in 1919, while on 10 May 1921 the construction site of the residential district was inaugurated. During the Second World War the harbour became a strategic target for the Allies who bombarded it several times. At the end of the war, only ruins remained from the industrial plants. The production started again and from the 50’s Porto Marghera became one of the best known industrial centre in the Country. The growth of Marghera led to the development of neighbouring residential areas. Marghera reached its maximum expansion in the production activities as well as in demographic terms during the 60’s, attracting many inhabitants from the old town centre of Venice and from neighbouring municipalities.

Territory

The Venice lagoon is the largest in Italy with a surface of about 550 square kilometres, of which 418 are subject to tidal excursion of the High Adriatic, the widest in the Mediterranean Sea. Three inlets connect the lagoon with the open

sea: Lido, Malamocco and Chioggia. The lagoon is a unique ecosystem, one of the most valuable and wide humid areas of salt and brackish water in Europe, a transition zone between land and sea that during the course of time underwent great transformations at the hands of nature and human beings (Benatelli, 2006).

The earlier major hydraulic works performed by the Serenissima Repubblica more than five hundred years ago to stop the natural process of collapsing of the lagoon caused by the flowing into of rivers on one hand, and the later emergence of the industrial centre of Porto Marghera on the other hand, progressively and structurally modified its morphology. The name Marghera comes from Venetian malghera which means “there was the sea” and the town bore stealing space from the lagoon.

Thousands of hectares of glass-like water and sandbanks – lagoon sandy soils that emerge from the water at low tide, constituting an unique habitat for the early lagoon flora and fauna that played a central role in lagoon hydrodynamic regulation – which served as an outlet for the continuous exchange of water set by tides, were covered by soil and industrial waste to give place to docks of the manufacturing area, chemical and iron and steel plants and to the comings and goings of tankers and grain carriers in the oil canal, ten times deeper than the average level of the lagoon. These interventions caused a strong increase of tidal volume up to subvert the watershed line facilitating the flood of the inner city of Venice during high tides (Benatelli, 2006).

3.2 History of the Petrochemical plants and its actors

In order to better understand ENI’s role and the development of the industrial Venetian area’s model, it is necessary to analyse the historical evolution of the Marghera’s industrial settlement and the motivations at the basis of the productions that followed (Rabitti, 1998).

Until the 1980s, there were two great national concurrent realities, that operated with a different cultural imposition: ENI, focused on oil refinery and on energy, and Montedison (from the assimilation Edison/Montecatini), active on polymers and fibres. Both companies operated in close connection with national Universities in planning new industrial processes (Benatelli, Candiello, Favarato, 2006).

Porto Marghera’s industry followed different historical phases marked by the economic benefit of the productive processes settled:

- The initial phase, back to Count Volpi's time, facilitated by the great availability of hydroelectric energy during those years;

- The intermediate phase, during the 50's, when Italy became a "refinery country" for continental Europe thanks to its features of logistical facilitation in the access by boat;

- The mature phase, during the 70's, when chemical, energy and petroleum industry expressed maximum levels of synergy and consequently the maximum impact in health and environmental terms;

- The decreasing phase, from the end of the 80's until now, characterized by a continuous and constant contraction in terms of production and employment. In this phase structural advantage factors like energy cost and logistics failed (Rabitti, 1998).

ENI's total employees dramatically decreased from a maximum peak of 40,000 in the 1960s, to 12,500 in 2003, of which 6,000 are directly employed, 4,000 of them in chemistry (Comune di Venezia, 1995).

The initial and intermediate phases: from coal chemical to petrochemical

At the beginning of the 20th century there was a high hydroelectric energy availability deriving from mountains dams in Alto Veneto. Count Volpi of Misurata, together with Doctor Gaggia and Count Cini, realized the great opportunity offered by this resource taking advantage of spaces and naval, street and rail logistic breaches of the Venetian area, also considering the large labour availability coming from Polesine. Thus, Porto Marghera industrial pole was created.

The availability of local energy resources together with the inadequate skill levels of the staff, led to the emergence and development of basic chemistry, characterized by non-advanced mass productions, with low technological content: metallurgy, fertilizers, glass productions (glass-coke) coal chemical. It was related that count Volpi "found an important basin of use for electronic energy in the chemical and iron and steel activity of Porto Marghera". With these premises, in 1917, World War I worst year, Volpi obtained from the Ministry Public Works and the financial management of the project for the realization of the industrial harbour (Tomasin, Volpi, 1987).

In 1935 Marghera had the most powerful thermal power station of Italy, with sixty factories working in shipbuilding, chemical fertilizers, aluminium production and steel millwork industries (Chinello, 1975).

The post World War II period experienced a consistent continuity between fascism and republic in that economic policy aimed at creating great industrial conglomerates. Therefore, with the aim to adapt the lagoon to the increasing development of the local economy, in the early 1950s a second industrial zone

was designed to host the chemical and petrochemical activities in Marghera (Chinello, 1975). Since the plant's design, there was awareness over the plant's dramatic impact on local environment: art.15 of implementing rules estimated that the site would include "plants that spread in the air smoke, dust or exhalations which are dangerous to the human life, and that discharge poisonous substances, which produce vibrations and rumours (Chinello, 1975).

The transition from coal chemical to petrochemical constituted a revolution in the industrial processes. The oil extraction and the following treatment need less manpower and oil is extremely adaptable for the production of numerous chemical substances (Benatelli, N., Candiello, A., Favarato, G., 2006).

In 1952 Monsanto and Sicedison opened the first plants for the production of VMC - Vinyl Chloride Monomer and PVC - Polyvinyl chloride, raw materials of plastic, and in sequence appeared the departments Vc1 - Vynil Chloride - and Vc3, followed by Vc5 for the production of compounds (rigid plastic coated particles essentials for the fabrication of plastic materials) and the department Vc6 in 1956, the year of the launch of the second industrial zone. It was a period of great development for industrial chemistry and new production lines were started such as Hydrogen cyanides, fluorine-derivatives and acetics (Benatelli, Candiello, Favarato, 2006). In a few years Marghera moved from a traditional industry active in the field of fertilizers that employed seasonal labour tied to the cycle of agricultural activities, to a modern industry, producing the basic material that in those years impetuously entered the lives of the Italians.

The 1960s boom and the 1970s mature phase

At the end of the 50's the petrochemical industry was in full expansion and in a while a second industrial area was used up in Marghera. The ground was prepared for the Piano chimico Nazionale/ National Chemical Plan that envisaged the start up of petrochemical centres all over Italy. The aim was to use the ethylene obtained by the cracking of oil to obtain derivatives destined to the manufacturing of auxiliaries for the industry, agriculture and for households. New petrochemical centres were inaugurated and Porto Marghera was connected through pipeline with Mantova (Lombardia), Brindisi (Puglia), Gela, Priolo, Milazzo (Sicily).

The economic boom led to a further expansion of the factories, and, in order to face the contemporary production requirements, in 1963 a new area for the creation of the third industrial zone was identified. The plants widening were made simultaneously with the opening of a big navigation canal in the lagoon from Malamocco to Marghera, launched in 1968 (Tomasin, Volpi, 1987). These major works allowed the development of the oil traffic within the lagoon to shift from 33 million tonnes in 1970, to 50 million tons in 1980. In 1966, Edison merged Montecatini to create Montedison (Rabitti, 1998). With the supervision of Mediobanca, Sogam – an holding company in joint control IRI-ENI – held a block of Montedison shares equal to the 15-20% of the capital, enough to gain the role of reference shareholder.

Between 1971 and 1973, the core sector of the petrochemical, the cracking division 4, was enhanced sanctioning the maximum development of Porto Marghera. Starting from 1973, Marghera, together with the majority of the European industries, suffered from a standstill and severe repercussion after the energy crisis due to an increase in oil products' prices and in energy and raw materials costs. All this happened while, among the public opinion, doubts on the chemical risks for the lagoon ecosystem increased, in particular after the creation of the Malamocco canal and its effect on the erosion of the fragile lagoon bed and on the rise of water level. To face these problems the special law for Venice of 1973 was enacted. For the first time, law established – in a limited and imperfect manner - more severe rules for the safeguard of the lagoon environment (Tomasin, Volpi, 1987).

The decreasing phase

In the meanwhile the international economic context worsened, giving rise to the crisis of the chemical industry at the beginning of 1980s, due to a sharp increase in oil prices. In 1984, EniChem was created, named after ANIC, the old ENI's petrochemical company that until 1983 ran the ENI petrochemical production.

In 1987 Raul Gardini succeeded in the management of Montedison and in 1989 Enimont was created from the merging of the public EniChem with the private Montedison - 40% ENI, 40% Montedison, 20% floating funds (Favarato, 2012). In 1988, the executive of the new company in the interest of showing more attention on the health impacts on workers, commissioned a survey to American company Apparails Italia s.r.l (Bresolin, 2002) on the state of the plants and on their productivity in compliance with the new European environmental norms (Rabitti, 1998). The results showed alarming concentrations of pollutants in numerous departments, emissions in the atmosphere, inappropriate stocked waste in dumps inside and outside the factories. In its final report, the American company recommended "a more in-depth survey of the fields belonging to Enichem and Montedison, in the past used for waste disposal, so to accept possible contamination dangers for underlying aquifers (…). The already mentioned situations can cause serious economic problems and penal and civic responsibility for future owners of questioned areas" (Rabitti, 1998).

In the meantime, the management of Enimont worsened because of a conflict arose between the two partners and the continuous interferences of politics. Enimont became again EniChem, which now included the majority of Montedison. On January 1st 1996, Enichem became a shareholding company and in 2000, it left the old denomination to be renamed Syndial S.p.A - Syndial Inc.. The activities strictly connected to the market such as primary chemists and plastics first produced by EniChem, were conferred to the company Polimeri Europa that becomes Versalis2 in April 2012 (Favarato, 2012). In a press release on April 2012, ENI declared that Versalis S.p.A "will give continuity to Polimeri Europa with

2 ENI S.p.A. is the Versalis' shareholder in charge of direction and coordination

a new industrial plan which envisages investments for Porto Marghera, totalling 120 million euros in over the next four years" (Favarato, 2012).

3.3 ENI's present role in Porto Marghera

Versalis and basic chemistry

Basic chemistry is one of the load-bearing axes of Versalis' petrochemical sector. Products are destined to industrial use as, for example, the production of polythene, polypropylene, PVC, polystyrene, some of the most used plastic materials. The research branch, as previously reminded, is mainly developed in the Porto Marghera and Mantova research Centres and Units, which collaborate with the Guido Donegani's Institute of Novara.

ENI describes Versalis in a brochure as its society that "produces and commercializes ethylene, propylene, butadiene and aromatics, for polymers production (ENI, 2012p). In February 2014 an agreement was signed between Versalis, ENI and the trade unions supporting the "Green Chemistry" project aimed at the transformation of ENI – Versalis plant di Porto Marghera. The project is integral part of Versalis strategy, which works for reinforcing products portfolio, even developing the green chemistry business. The general program envisages investments for about 200 million Euros which will be addressed for both the optimization and for cracking and the reorganisation plan, needed for the new green chemistry initiative. This project, promoted with the American society Elevance Renewable Science Inc., envisages the development and the industrialization of a new technology for the production of chemical intermediates from vegetal oils destined to high value-added applicative sectors such as detergents, bio-lubricants and chemical products for the oil industry. The project will take advantage of already used infrastructures, already present on the site and will be integrated with Versalis productive streams (ENI, 2014h).

Syndial and the environmental restoration's policies

Syndial S.p.A – part of the ENI group – furnishes today environmental restoration services. The company is involved in several legal contentious because of having polluted the EniChem facilities. Its main products areas are: chlorine-soda and derivatives (caustic soda, sodium hypochlorite, hydrochloric acid and hydrogen) and ethylene dichloride. In Porto Marghera, at the end of may 2012, Syndial President, Leonardo Bellodi, signed an agreement with the Venetian Municipality and the Regional authority for the divestiture of 110 hectares of disused areas of Porto Marghera to be cleaned-up. According to the agreement, ENI would continue to own areas where the facilities have not been dismantled and the refinery and the Versalis' Cracking areas. According to politicians, ceded areas would be destined to new industrial uses and there would already be at least 200 private financiers ready to invest € 1,5 billions (Favarato, 2012a).

In April 2014 a preliminary purchase and sale agreement was signed concerning these areas by Veneto Region, Venice Municipality, ENI and Syndial. The contractual scheme envisages the commitment of Region and Municipality for purchasing new areas in Porto Marghera, currently owned by Syndial, for a total extension of 107 hectares, divided in large lots A and B which will be given to Newco, a Region and Municipality participated society. The sale price for the more industrialized lot A (50 hectares) it is 25 million Euros, besides 5 millions for the already existent edifices. The cost of interventions for safety and remediation of the area is indicated in interventions approval Decrees. Lot B (about 60 hectares), that was put on permanent safety, is instead on sale for 1.5 million Euros with the recognition of 19.5 million Euros for future acquires in environmental costs for the realization and management of these activities. These are areas where permanent safety measures has already been realized by Syndial, who acquired certifications by the Province of Venice. For these areas, Newco will individuate modalities of use, using the necessary economic resources available. Therefore, Syndial should recognize in favour of future buyers the aggregate amount of 38 million Euros.

The aim of Veneto Region and Venice Municipality is to make available areas at moderate prices, decontaminated and to be decontaminated areas, in order to install new productive activities, thus relaunching and qualifying Porto Marghera's Strategic Role (Favarato, 2014).

The refinery

Porto Marghera's refinery was created by private initiative in 1926 by the name of DICSA - Anonymous Italian Society for Combustible's Distillation. That was the time of Porto Marghera first industrialization. In 1934, DICSA ceded plants to AGIP that boosted the refinery by building facilities for the entire cycle of crude oil manufacturing. In 1947 a society named IROM (Refining Oil and Ore Industry) was created with the participation of AGIP and AIOC (Anglo-Iranian Oil Company). In 1978, ENI acquires the entire plants and started a technological adaptation with the creation of the Vis-breaking and the Thermal Craking facilities and the construction of the new hydroelectric plant. In the following years, the demand of lower environmental impacts' combustibles leaded to the creation of semi generative process plants and to the development of reforming, revamping and Hydrodesulfurization processes (ENI, 2013d).

Until 2011, the refinery hired 300 operators and had a primary refinery capacity of 80,000 barrels/day and a conversion index (CI) of 20%. The oil was received in the San Leonardo pier - reachable by oil tankers of up to 85,000 barrels capacity - and then transported by a submarine pipeline of 11 km length and 107 cm diameter to the storage area supplying the primary distillation plants. Finished products - diesel oil, gasoline, coal oil, LPG, sulphur and bitumen - normally satisfied the 65% market requirement of the North East region of Italy. This production supplied almost 1200 sale points in Venetian, Trentino Alto Adige and Friuli Venetia Giulia areas, Austria and Slovenia by rail and road tankers. Manufactured crude oil came mostly from the Middle East, North Africa and Russia. Furthermore, from the internal area of the harbour, the refinery received and sends both semi finished and finished products. Despite that, refinery was at

a hair's breadth away from collapsing: during the three year period 2009-2011, the balance was negative, thus accumulating € 130 millions debts. According to prospect, during 2012-2015, the refinery would acquire around € 230 millions debts. In 2011, because of the economic crisis and the consequent Italian and European refineries' crisis, ENI was forced to temporary stop Porto Marghera's facilities' activities for six months. The entire refinery sector was crashed by the crisis. In 2011, in fact, the 15 refineries of the Italian territory had a production capacity of 106 millions tons/year in front of a market demand of only 78-80 millions tons/year (Ferrari, 2012). In September 2012, a new project of facilities' green reconversion was launched. The project, based on biofuel production and on a € 100 millions investments, aims to hire at least 180 operators starting from 2016 (Il Sole 24 Ore, 2012).

3.4 Impacts of the activities

Chemical processes and health impacts

In order to analyse quality and quantity of both social and environmental impacts of ENI's facilities in Porto Marghera, we should review different types of the industrial activity developed during the years. As refinery's activities and its impacts has been discussed in details in the previous case studies, we will focus here on the impacts of the chemical activity.

For years, several chemical industries - and, among them, Enichem and Montedison - have dumped VCM - Vinyl Chloride Monomer, chlorinated hydrocarbons and heavy metals in the Porto Marghera lagoon, thus provoking huge environmental damages and an increase of cancer's rate among local people.

VCM is at the basis of chemical process to produce plastic. It is a substance produced by treating ethylene – produce from oil - with a solution of sodium chloride through a chemical process. These resources are fractioned in small molecules, monomers which are re-merged in long chains, polymers. The passage from VCM to PVC - Polyvinyl chloride - is made through a chemical process, polymerization, which in Marghera's plants was practised in emulsion and suspension, while nowadays only the chemical process is adopted. Both proceedings take place in autoclaves at the presence of VCM, water and small dose of additives. Once the polymerization process is over, the monomersare separated and the emulsion produced is sent to a spraying dryer where the polymer is transformed into resin. After these processes, VCM takes the appearance of white powder grains and it is mixed to stabilizing additives, that is to say substances that exalt or diminish its properties with particular characteristics such as anti-flames, anti-oxidants, blowing agents, etc.

From there, compounds are produced that other factories transform into finished products used in everyday life. The list of produced substances is long: PVC, used in construction industry and agriculture; Pet and Pe (polyethylene) fundamental for

wrapping electric wires and for the manufacturing of colostomy bags; Ps (polystyrene) which evolves into expanded polystyrene; Pa (polyamides) for stamp and injection, wire drawing and blow molding; Abs (acrilonitil-butadiene-styrene) in the electric and electronic sector. Despite benefits from the use of plastic, this material is not harmless at all (Bresolin, 2002). In a paper published by the International Agency for Research on Cancer (IARC) in Lyon - the most important scientific body of the World Health Organization which promotes and critically examines studies on human cancer - we read: "The vinyl chloride has been related with liver, lung, brain and haematopoietic system's cancer. A large number of epidemiological studies and of case-reports confirmed the causal relation between VCM and liver hemangiosarcoma, a rare form of liver cancer. Several studies also confirmed that the VCM exposure causes other forms of cancer, as such as hepatocelular carcinoma and the malignant tumour of the lymphatic system" (IARC, 1999).

Impacts related to the work environment

In Porto Marghera's plants, during the first industrialization stage, seasonal labour force coming from surrounding fields was employed, normally indicated by parishes. This caused a strong business paternalism in production plants. With the launching of petrochemical activities, the social composition of the worker class changes and, as the new plants got more complex, workers were asked to have different expertise. However, during the course of the years, trade unions' activity was hard to consolidate while a complete availability in every operative position was requested from workers, often without considering security norms and manufactured products.

During the 1950-1960s, there was no debate about the limits of steam and gas concentration in the workplace. Workers had to carry out tasks in direct contact with VCM and PVC in dusty places, under gas, lead and colorant exhalations. In several working places (in VCM's production, stocking polymerization, drying, transformation and sending), VCM concentration was more than 2000 ppm - parts per million - and almost all the residual material was released in the atmosphere. Moreover, since when inhaled VCM produces a sense of euphoria similar to that of alcohol, several witnesses maintain that workers used to exit from autoclaves and facilities' sections inebriated and covered by a thin white powder. During that period, some medical researches on plastic health risks' confirmed the noxiousness of both VCM/PVC. In the 1970s, VCM workers started to suffer from Reynaud's disease – a precocious sclerosis, called "of the white hands" because it makes limbs' extremities very cold – and from hemangiosarcoma – a rare form of liver cancer.

The attention of harmful effects of plastics' components grew when in 1970 the Italian doctor, Antonio Caputo, revealed the carcinogenic nature of VCM, confirmed two years later by Dr. Cesare Maltoni of the Oncological Institute of Bologna, confirming the results of a previous research from a doctor working for Solvay in Rosignano who had not been believed by the company's high spheres: "in 1972 we gathered and realized the emergency posed by the cancerous effects of vinyl chloride, cause of three different cancers: Bartholin's gland carcinoma,

kidney cancer and empathic angiosarcoma. The first communication of these results was given on November 1972 and from these indications in December 1973 was diagnosed the first emphatic angiosarcoma." (Bettin, 2004, p. 160). As consequence, in 1974, the VCM exposition standard was reduced from 500 ppm to 50 ppm. Following this information, Porto Marghera workers pushed trade unions to ask for major controls, adopting the "Mac=0" claim which indicates the maximum VCM concentration degree admitted in industrial departments, that is zero. In 1973 VCM's concentration was still beyond 500 ppm. In 1975 an internal epidemiological investigation was started over Porto Marghera's workers health conditions and results confirmed sensationally all the harmful effects, including cancerous effects, of given substances. Medical charts created alarm for the great number of lung alterations, emphysemas, blood circulation pathologies among workers and a redundancy of cancer-related deaths in several plants (Bresolin, 2002). Despite the dramatic situation, in 1977 trade union management, step back concerning past claims, thus accommodating firms needs and creating a deep fracture in union movements. As a result, "no measures for workers' safety were actuated by Montedison, neither for younger less exposed workers, nor for the more aged and exposed ones" (Rabitti, 1998, p. 77).

Contradictions between the necessity to safeguard the working place and the claim for the right to work in a healthy environment were exacerbated. Workers were divided by the overwhelming dilemma of saving their jobs or claiming for the right to work in a safe environment. Contradictions were growing. Several workers started to believe that environmental issues were exploited to cover occupational shortage. Unions' executive and managers' associations feared that a disengagement process was taking place threatening the role of Porto Marghera in the national chemical industry. This worries induced some unions to justify the entire situation. As an example, in 1979 a great accident (a cylinder oil spilling) stroke Marghera Plant killing three technicians. In court, the Workers Council and Fulc trade union launched a city action and the judiciary enquiry led to the incrimination of the company's executives and supervisors responsible of the given activity's safety. However, after the coordination of national legal frameworks, the trade union left the process and after its recession as civil parts main charges were dropped. Despite the allowed concentration of VCM had been reduced, working conditions remained critical and hard for a long time especially because of obsolete plants. On the other hand, the increase in production meant an increase in risks of leakages and accidents. By that time, in some departments automatic monitoring systems were created, but it was a less adequate technology, as it only considered average values. Calculations underestimated real risks because of the plant's structure itself, that being quite big on average, made almost impossible individuating gas concentration areas. Only in 1983, thanks to a European Directive, VCM concentration limits were imposed (Bresolin, 2002).

Since the early 1980s, magistrates started taking care of infringements of health and environmental regulations as well as of the mafia-patronage system dominating between politics and enterprises. In 1987, at the beginning of Raul Gardini management in Motedison and in 1989, when Enimont was born from the merging of Enichem and Montedison, numerous trials were closed. From this

picture, it is clear that health environmental protection was not present in the agenda of several enterprises. While knowledge on VCM/PVC pathlogies increased, life in factories went on normally. Firms operated following the principle of competitiveness, setting interventions concerning workers health and environmental impacts in terms of productivity costs and profitability of the plant (Bresonli, 2002).

Despite that, as shown in 2000 by a research conducted by the organisation Medicina Democratica - Democratic Medicine3, the obsolescence of petrochemical's facilities was indicated as the main cause for Marghera's environmental and social damages (Carrara, Marra, Thieme, 2000, p. 17). As explained in the research, those facilities are commonly used between 26 and 43 years and most of them not only have been designed, realized and used in "open air" but also violating most of the elementary norms of best technique and safety (Carrara, Marra, Thieme, 2000, p. 24).

Environmental Impacts

Today, the lagoon environment around Porto Marghera is dramatically damaged by petrochemical industries' impacts, further spreading health impacts. It has been proved that consumers of lagoon seafood products are more contaminated than chemistry workers (Brunetti, 2008).

Marine salt scission, needed for the production of both VCM and PVC, is still using old technologies producing wastewater polluted with mercury and dioxin dumped into the environment (Greenpeace Italia, 1995a). Even chemical reaction that lead to formation of Ccm molecules produce undesired products, such as PCB, dioxins, furans and hexachlorobenzene (HCB), highly toxic compounds in small concentration that tend to accumulate in the organic matter present in the water. From there the contamination chain passed through filter feeding up to the top of the food chain - fishes, mammals, marine reptiles and human beings. Treatment of chemical waste is another issue as they are burned in petrochemical's thermoelectric plant and then dumped in internal area of the facilities or in inshore landfills. Liquid waste - around 20 thousands tons a year - until recently were directly dumped into the lagoon (Bresolin, 2002).

In 1995, Greenpeace Italian published "Death in Venice", a study conducted in collaboration with the Venice Institute of Health, where the risk of dioxin in the lagoon was announced. In the document, Greenpeace underlined the high level of pollution of the lagoon area and the Institute of Health suggested to prohibit fishing (Benatelli, Candiello, Favarato, 2006).

3 Medicina Democratica is a National movement active in the field of citizens and workers' health protection. The monthly review of the group is available on-line, URL: www.medicinademocratica.org

According to the dossier, in the Brentelle channel, nearby the petrochemical, in 1995, dioxin concentration was double compared to the Reno River, one of the most polluted ecosystems of the world. Despite the existence of the 1936 and 1963 Venice Special Law stating the interdiction of dumping of any type of waste or toxic substances which could pollute lagoon's waters (Legge Ordinaria del Parlamento, 1963) today's corporations still ignore the prohibition. In 1976, the Merli Law (Legge Merli, 1976) imposed new rules for toxic waste but, because of corporations' pressure, the law would be putted in effect only nine years later, in 1982 while first controls started in 1989. From 1992 to 1998 on over 1,648 on-the-spot controls 2,213 exceeding limits were found (Canova, 2004). In 1988, it was estimated for the main sewer of the petrochemical plants SM15 the release of 17 tons of bromoform, 47 tons of mud, 65 kg of polycyclic aromatic hydrocarbons able, alone, of polluting more than 260 tons of lagoon's bed. In 1994, the Water General Attorney estimated in the same sewer the presence of 70 tons of organic aromatic solvents, 220 kg of chloroform, 2 kg of carbon tetrachloride, more than 2 kg of dichloroethane, 320 kg of trichloroethylene, 400 kg of perchloroethylene, more than 22 tons of bromoform and 920 kg dibromochloromethane. In 1998, in the petrochemical areas 1498 chimneys have been censused from which 53 thousands tons of 120 different toxic substances are released in the air every year. Among them, 550 tons of carcinogenic materials of which 98 tons of chloridric acid, 66 tons of sulphuric acid, 7.7 tons of VCM, 9 tons of chloroethane, 1,500 tons of cyclic aromatic hydrocarbons, 5 millions tons of carbon oxide and 2 millions tons of dusts. Finally, 120 unauthorised toxic waste's landfills have been identified for a total amount of 5 millions cubic meters (Bettin, Dianese, 2002).

Today, the 5,800 hectares of waters and lands of the Porto Marghera area have been ranked by a special law (n.426/1998) in a list of ten areas that should be cleaned-up and secured. But in the current state of the art only 1,355 hectares are interested by investigation and planned clean-up. In addition to the 5 millions of toxic waste in the ground, over 12 millions of contaminated mud was accumulated in the industrial channel of Porto Marghera (Canova, 2004). Fishing is banned in several extended areas of the lagoon. Currently, areas investigated for environmental damages and for decontamination interventions already envisaged by the Master Plan only cover 1,355 hectares, about a third of the national interest site (Benatelli, Candiello, Favarato, 2006).

3.5 The social conflict

In 1984 various events alarmed the whole public opinion and questioned the presence of the chemical activities in the lagoon. First of all, the alarm was provoked by mucilage proliferation - a green slime produced by plants growing in water - in the Adriatic Sea favoured by nitrogen and phosphorous pollution. In the same year, the dramatic explosion of the chemical plants of Bhopal, in India, provoked thousands of deaths. In August, a blast occurred in the cracking section of Porto Marghera plants. Two workers where hurt. After the accident, Gabriele Bortolozzo, a petrochemical worker, started a complaint process at the Venice Court accusing ENI's management board for the lack of facilities' maintenance and the dangerous work conditions - exposed to contact with flammable and

carcinogenic materials (Bresolin, 2002). That was the start of the maxi lawsuit against Marghera Petrochemical.

The trial

In one of its last public debates, Pasolini wished that the ruling class which had governed Italy from the post World War II period until the mid 1970s, would one day be put on trial, if not real at least symbolic, for a long series of violations, "public money manipulation, wheeling and dealing with oil tycoons, industrials, bankers, connivance with mafia, Italy's landscape and urban destruction, responsibility for Italy's anthropologic degradation and for the savage countryside desertion (…)". Pasolini words were almost prophetical, considering the future advent of corruption as well as the historical trial against the Italian chemistry occurred in Venice.

The trial origine has to be seen in Bortolozzo's obstinacy, who for almost ten years gathered the material, proffs and information. A detailed dossier published on January-April 1994 edition of the magazine "Medicina Democratica", which would cause distress among chemistry companies. Becoming suspicious by the low number of notified deaths, it showed how working-class mortality was much more extended than previously thought or recognised. From his investigation, about 20% among VCM polymerization supervisors (90 out of 424) had been affected by serious illnesses or deaths. But the gravity varied in each department: the one where Bortolozzo worked, Cv6, 4 out of 6 of his colleagues had died before 1994. In the same year, on behalf of "Medicina Democratica" drafting committee, Bortolozzo presented a new petition, demanding a cognitive investigation over the working-class mortality and a verification of the data furnished by Enichem and Montedison (Bresolin, 2002).

The inquiry was entrusted to Venetian magistrate Felice Casson, who started a wide range investigation over the workers' health, plants' conditions and environmental pollution. This last branch of the investigation was enlarged on May 1995, following some surveys and analysis carried out by Greenpeace concerning the petrochemical sector. During the investigations, the failure of workers health safeguards and the decaying plants maintenance were ascertained. Thanks to environmental surveys in the area and its surroundings, a census was conducted over the numerous underground illegal dumps, stratum at risk, etc., turning the trial into the largest investigation of the lagoon's conditions and of its territory. The first phase of the trial ended in October 1996 with the request of commitment for trial for vertex of Italian chemistry. During the second phase of the trial, in the spring of 1998, Venice Assistant Attorney General, Felice Casson, managed to obtain a 60 billions liras refund for several victims of vinyl chloride monomer. It was the success of Bortolozzo's awareness-raising, who thanks to the diffusion of information in working-class neighbours, had managed to mobilize more than 250 subjects who had launch civil claims, especially workers and victims' familiars. But the elements gathered during the investigations led the conclusion that the society's apex were aware of the risks connected to VCM/PVC without trying to remedy to them. Thus another inquiry was opened, were 28 other multinational executives in Porto Marghera were incriminated (Bresolin, 2002).

Among accused parties, there were, ENI's and Montedison's ex president Eugenio Cefis, ENI's and Monfiore's vice president Alberto Grandi and Montedison's sanitary service responsible Emilio Bartalini, Enichem president Lorenzo Necchi. There were 3 main charges: massacre, manslaughter and physical and mental harm for 157 dead workers and the 103 ascertained professional illnesses, disaster for senseless pollution of one of the most beautiful and fragile lagoons in the world; concealment of acts and documents that societies had to submit to the State and to Region (Bressolin, 2002).

Chemistry companies, especially thanks to the continuous corporate past reshuffling, have managed to create an endless delegation mechanism aimed at passing responsibilities in more hands, so that everybody knew but nobody was really guilty. This has created judiciary difficulties in ascertaining individual responsibilities despite 120 hearings, hundreds of witnesses and the intervention of 99 experts. Things seemed to be changing and chemistry vertex risked severe punishments (Bresolin, 2002).

The first degree trial took place between March 1998 and November 2001 and concluded with the absolution of all the accused parties. The appeal was held from January to December 2004 and ended with the condemnation of Montedison's and Enichem's top managers in charge from the end of the 1960s to the beginning of the 1970s. In May 2006, the Cassation Court confirmed appeal sentences. Four managers and a professor were charged of involuntary manslaughter: two ex Montedison managers, Alberto Grandi e Piergiorgio Gatti, petrochemical division ex director Renato Calvi and 1976-1979 Montefibre vice-president Giovanni D'Arminio Monforte and professor Emilio Bartalini, head of Montedison's central sanitary division from 1965 to 1979. Nobody will serve his sentence, because the jury granted probation to them and 20 more cases went in prescription (Poqueddu, 2004).

The appeal has recognized the imputes responsibility even on production facilities field for the missed collocation of extractor hoods between 1974 and 1980 and, for what concerns environmental violations, it stated the violation of legislations about lagoon dumps until 1996, involving not only Montedison imputes but also Enichem's top brass. Public health would be put under risk because of waters and clams poisoning (Raccanelli, Guerzoni, 2003).

In particular the sentence condemning Enichem has examined an accident occurred to Porto Marghera's petrochemical sector on May 4th 1999: then AC1 sector produced 3 tons of ammonia and emissions signals got to firemen from Malcontenta's citizens, the surrounding occupied area during the industrial zone. The compensation for damages was immediately implemented, 290,000 Euros for the State, 100,000 Euros for the three local authorities and finally 52,000 Euros for the Associazione Medicina Democratica (Benatelli, Candiello, Favarato, 2006). In Italy, laws to protect workers were applied since 1950s, thus forcing managers to exact responsibilities.

Later on, magistrate Casson reiterated the accusation in a second degree trial, claiming the violations of article 437 of the Penal Code as “wilful caution omission”, recognizing the unfulfiled obligation of employers to eliminate risks to exposition to toxic substances. Casson stated the need to re-start from the precautionary principle implying that in case of doubts over the danger provoked by a given substance, the entrepreneur needs to adopt security measures in order to eliminate every risk. Whoever violates precautionary norms needs to take the responsibility of any side effects. Therefore, according to Casson, both Montedison and Enichem executives had to adhere to risk reduction obligations since the foundation of the petrochemical factory during the 1950s.

This historic sentence has confirmed important principles of environmental jurisprudence, recognizing the ownership of the request for compensation not only to the state but also to authorities and associations.

In the first degree trial, the crime seemed almost impossible to ascertain, as if it was non existent or not committed. The 15th December 2004, the sentence of the second degree trial recognised the crime but most violations went under prescription (Bettin, 2004). Some violations, however, have not gone in prescription. Therefore, accused parties have been charged with involuntary manslaughter. Marghera’s petrochemical industry long and dramatic history finds a first recognition in court proceedings, even though there were condemnations circumscribed to single cases.

Other lawsuits have been carried out during the years and in time have obtained victories and public recognition of companies responsibility in the environmental disasters impacting the lagoon, as the 700,000 refund to the Province of Venice for the issue of polluting discharges in Venice lagoon by Porto Marghera’s petrochemical sector. The civil sentence was established on March 6th 2012 at the Venice Court and ended a proceeding started ten days earlier and concluded with the recognition of environmental pollution damage and its heavy impacts on local communities. The sentence has also recognized damages to the image of the Province of Venice, even internationally, such as “exponential authority of Venetian community, appointed to the preservation of environmental health and of the correct functioning of essential activities such as tourism and the patronage of Venice territory artistic and cultural values”. Syndial was charged to pay the price of the inquiry, including legal expenses (about 10,000 Euros), while demand toward the other accused company, Vinlys, has been judged as non sustainable given that the firm, in serious financial crisis, has been liquidated (Veneto 7 Giorni, 2012).

Local committees and direct democracy tools

On November 28th, 2002, an high flame, preceded by a huge blast, lifted from the petrochemical plant, as consequence of a chemical reaction that was taking place in the TDI section manages the company Dow Poliuretani Italia. The threat of chemical risk loomed all over the town. Nearby, in the same plant, there were several tonnes of the lethal phosgene - a chemical reagent more known for its use

as war gas rather than for its industrial use (Candiello A., 2007). After the accident, a group of citizens decided to get organise and started to meet weekly in order to try to understand what happened. The Marghera Permanent Assembly Against the Chemical Risk, was created and still meets every wednesday in front of Marghera Municipality. The Assembly represents an important phase in Marghera's history because it embodies a change in the relationship between the community and the industrial reality. The creation of a new equilibrium was possible by a territorial re-appropriation process. The community started to act a double strategy: on one hand, the in-depth analysis and building of knowledge regarding the territory and the local production; on the other hand, a communication process based on the use of every available tool. Different groups entered in contact, shared opinions and experiences and learn to act together (Assemblea Permanente contro il rischio chimico a Marghera, 2012).

Organisations previously active in the area like "SOS Marghera" coordination committee, Medicina Democratica, the "Gabriele Bartolozzo" Association - created in order to honour the memory of Gabriele Bortolozzo, promoting his work and spread values and ideals that inspired him and continue his work - or the "Ecoistituto" inspired by Alex Langer and other realities gathered in the assembly. Each group is fundamental for the local movements' context. Some movements from the historical squatter movement in Italy – integrated into a network of national movements – introduced a series of articulated communication mechanisms such as demonstration, relations with students' associations, shock communication strategies in order to better reach and involve citizenship.

The representative model of the Permanent Assembly Against the Chemical Risk represents a specific innovation: on one side, this reality showed to be able to maintain a solid relation with citizenship and to become a real catalysing agent for democratic participation; on the other side the Assembly has demonstrated to an efficient negotiator external to the traditional political area. Because of this ability, the Assembly is less controlled and influence by traditional political channels, thus being more focused on reaching concrete objectives. The Assembly acts by two main operatives methods:

1. Planning: it organizes events in little time and with no or low economic resources based on a self-fund system;

2. Analysis: discuss and in-depth understanding of dynamics at stake;

Assembly's objectives are developed in three main areas:

- Chemical risk: need for an immediately intervention to eliminate unacceptable chemical risk's level to which the Venetian population is exposed, starting with the phosgene risk.

- Pollution: need to eliminate the sources of heavy pollution coming from mutagen and carcinogenic persistent substances. Urgent need of interventions for the elimination of chloride, VCM and PVC's sources.

- Claim: pollution from petrochemical activities accumulated in the years and its huge environmental damage still has terrible effects on citizens' health. Despite the numerous promises made by both corporations and local authorities, clean-ups never started. Clean-ups are the initial step in a process towards new development of the area.

In order to reach the two firs objectives, in September 2004, the Assembly decided to start a popular consultation process through referendum on chloride cycle. The referendum is a very costly action, both economically and at engagement level. This has usually been a tool used by political structured parties, financed and organized rather than by grassroots like the Assembly. But in 2004, the referendum petition resulted as the most adequate tool of direct democracy to enforce the local politics to implement measures to stop chloride processing.

The referendum question was simple: "Do you want that chloride, VCM and phosgene production and process continue?". In order to increase the referendum's visibility and to try to contain negative opinions on facilities' closure, the Assembly wrote several documents. In one of them, dedicated to employment, the group focused on the occupational issues used as instrument to block political initiative: "From 40.000 workers - the highest rate - in the 1960s, we passed to 12.500 of today - 2003 - of which 6.000 direct employers, and of them less than 4.000 in the chemical sector (…) Productions related to the chloride's cycle have - indeed - less than 600 direct employers" (Benatelli, Candiello, Favarato, 2006). In addition, four European directives on Environmental Safety (such as Seveso I,II, II, and Tolosa) were imposing a deadline for substantial reduction of Marghera's industrial plants' pollution and risk. The deadline was established on the 1st of January 2007, date in which chemical production of Porto Marghera should have been subdued to a new authorization process. To pass it, the production process as a whole should had been reshaped or reconverted.

In just two months the Assembly gathered 12,625 signatures for the referendum, then delivered to the government on February 17th, 2005. One year later, the National Home Office declared the referendum unacceptable. The Municipality Council of Venice decided, then, to proceed with a civic consultation by postal service. The result was clear: 80% voted against chloride, VCM and phosgene production process (Benatelli, Candiello, Favarato, 2006).

The originality of the Venetian movement lies in its culture of environmental respect that has grown in the decades through the struggles for economic, social and environmental justice. This has leaded the Assembly to define industrial reconversion plans and the consequent urban adjustments. Basing its approach

from a human and cultural point of view, Marghera is having a leading role among processes of territory re-appropriation related to industrial areas in Europe aiming at a new balance between natural ecosystems and anthropized structures. Up today, the assembly is still very active in the claim for clean up and ecological remediation and promotes concrete action for the cological conversion of the production in Marghera.

3.6 Future scenarios and advices

Changing Marghera: reconversion' initiatives

During these last years, both the industrial area and the urban centre of Marghera have changed. The industrial zone is looking towards a sustainable development. According to this trend, a Science Technology Park - called VEGA- was created. Here several new corporations settled down. The Vega Project, started in 1993, is today highly criticized by local realities because considered as a greenwashing initiative that does not really aim at a productive reconversion of the area.

Still some initiatives to enhance the environmental heritage of the area have been promoted, among others the bill for the establishment of the National Park of the Lagoon of Venice of 2006. Unesco and the European Commission, during the development of the Natura 2000 network, designated the lagoon area as a World Heritage Site. The area is also safeguarded by the National Special Law n˚171 of 1973 and is listed under the regional landscape protection law n°394 of 1991 (WWF, 2003).

General trends in the national government institutions shows interests only in safeguarding Venice's hydraulic aspects, in particular the realization of maxi dams that will be used in order to blockade the sea (MOSE project). Several bills have been proposed to transform the zone into a large natural park under the National Park Act No. 394/91 (Istituzione Parco della Laguna di Venezia, 2006). The initiative was promoted by Italian deputies Cacciari, Zanella, Sperandio, Acerbo, Perugia, Francescato, Camillo Piazza, De Angelis (Istituzione Parco della Laguna di Venezia, 2006). The park still has not been instituted, despite strong pressure of some politicians and of citizens committees that consider the institutionalization of a green area as essential for the redevelopment of the territory and the safeguarding of connected activities (Bottazzo, Mencini, 2009). According to citizens, local committees and political forces, the establishment of a large protected area in the lagoon of Venice would mark a turning point to local urban policies and would then be an example for the whole country.

Moreover, almost nothing has been done in order to safeguard the lagoon's ecologic functions. Venice's lagoon has been for years object of debates over the most adequate safeguard measures to adopt in such an important ecosystem, but at the same time highly affected by the human presence (Ecovenezia, 2013).

Land reclamation, areas divestiture and refinery reconversion

Today Porto Marghera is one of the most polluted industrial area in Italy and it is at first ranks of “industrial site of national interest” waiting for clean-up according to Law 425 of 1998 (Legge 426/1998).

The conversion, safety and containment projects for the most polluted lands of the area have been dissembled for years as clean-up projects. Local institutions have realized a huge Master Plan suppose to address pollution level and the implementation of clean-ups (Legge ordinaria del Parlamento, 1963). According to the Master Plan, only 1/3 of the area listed as “site of national interest” - about 1,335 hectares - would be cleaned-up (Benatelli, Candiello, Favarato, 2006). Today, environmental clean-up and ecological conversion of production are the two most important things to be done in Marghera. The chemical industry, besides being the only responsible of the environmental devastation of the area, has grounded its reason for being in need for clean-up. Is it just a "detail" that the land in need for clean-up – based on the use of chemicals - is the one contaminated by the chemical industry itself? After having destroyed the area, making it unavailable for other activities, the chemical industry has grown the reason of it existence in the technical need for clean-up it can provide. It represents an offer that the community, deprived of negotiation power, can more difficultly turn down for other competitively alternative and economical options (Comune di Venezia, 2006).

Local committees no longer believe the “tale” of clean-ups. During the last years, some agreements have been signed between the Ministry of Environment, the City of Venice and the Veneto Region. These agreements are oriented to move forward the environmental restoration and production reconversion’s processes. The local committees and associations do not consider such actions a real step forward, but a simple acts of green washing without a real and tangible benefits for the community (La Nuova Venezia, 2013). Proving the point of Associations and local committees, some serious happenings to decontamination activities have happened in 2014. Simultaneously with agreements for the assignment of areas to be decontaminated, the entire city of Venice – from the Consorzio Venezia Nuova that built mobile dams against high tides to major institutional actors, including Region and Municipality – was devastated by a wave of investigations and arrests. In June 2014 a corruption system revolving around the realization of Mose’s mobile dams has emerged, leading to the conviction of the most important institutional actors in charge of Porto Marghera’s decontamination and reconversion.

Later on, in October 2014 a new enquiry connected to state funding assigned for the management of environmental emergencies on areas of national interest has put 26 people under investigation. Charges are criminal association, fraud to the State, attempted corruption and office abuse. The inquiry, started after a warning to Udine procurator’s office over money distributed over a decade in order to address the emergency state of the national interest site of Grado Marano lagoon’s has then merged with a similar case in Rome. Its outcome showed the existence of an association, formed by more people, which would conceive and fuelled environmental emergencies in order to obtain public money from the Ministry of Treasury for the decontamination of the interested areas (Il Gionrale di

Vicenza, 2014). Another investigative branch concerns “environmental transactions”, that is the payment of large amounts of money that numerous entrepreneurs holding real estates in Porto Marghera SIN had allegedly been forced to pay to the Ministry of Environment, which in turn would give to fund the consortio Venezia Nuova for clean ups, for over 500 million Euros (De Francisco, 2014).

In September 2012, ENI announced a reconversion project for the refinery with an investment of € 100 millions of euro for the production of biodiesel from 1 January 2016 (Il Sole 24 ore, 2012). In June 2014, the construction of Venice’s bio-refinery was official and is now completed. The bio-refinery is operative with a green diesel capacity of about 300 kt/y. The production will satisfy half of ENI’s green diesel annual production. Porto Marghera’s plant is the first refinery in the world to be converted into a bio-refinery.

Green diesel will initially be produced from vegetable oils, particularly palm oils, given the great availability on the market of this product, its economic convenience and the current scarce supply availability of second and third generation charges. The utilization of this second generation charges, in particular of animal fats, is envisaged from the beginning of 2016. Possible integrations with oily biomass refinery plants are being considered in order to re-utilize wastes such as distilled fat acids and glycerine (third generation charges) (ENI, 2014i).

4. THE VAL D'AGRI CASE

In the early 1990s, The Agri Valley - an area situated in the Italian Apennines of the Basilicata Region at the centre of South Italy - was the largest hydrocarbon deposits ever discovered in continental Europe. Extraction activities started at that time and ENI now operates in around 40 oil wells. More recently, Shell Company also started drilling in the area. The current volume of extraction is around 90,000 barrels and 3 million cubic meters of gas per day, almost the 10% of the national demand. This figure is intended to increase due to several wells expansion projects. However, no local development processes have been implemented to compensate this extended natural resources' extraction activity. The presence of extraction activities has affected the agricultural and tourist vocation of the valley. Furthermore, twenty years after the beginning of the extractions, no monitoring of extraction activities' environmental impacts has been implemented yet. That is to say that impacts on local communities and territories are not evaluated. In this context, several associations, committees, and citizen groups work to defend the right to health. Local groups ask for the elaboration of development policies based on the defence of the territory's naturalistic vocation (Corriere della Sera, 2013).

4.1 The Agri Valley territory

Basilicata - or Lucania - is one of the Italian smallest regions. It is scarcely populated - in total 600,000 inhabitants) and it is located in a mainly mountain and hilly territory. In this area is situated the Agri Valley, a 1,200 km2 sub-region of Basilicata, extended through the Sirino and the Volturino mountains. The area includes 19 municipalities for a total population of less then 50,000 inhabitants (Istat, 2001). Geographically, the area is a hollow, surrounded by the Lucan Apennines, where the Agri river flows. The area, partly included in the National Park "Agri Valley - Lagonegrese", is one of the most important in the region, from both culturally and economically points of view.

The local cultural patrimony is characterized by Grumentum Archeological Park and by the National Museum where roman colonization remains are collected and by castles and middle-age villages, churches and relevant monastic complexes. In the first half of the twentieth century, oil was discovered in the area. ENI started exploitation only in 1980s. In the last decade, new oil reserves were discovered.

For their extraction new licenses have been granted to Shell. To this day, the many extractive activities and the important infrastructures constructed on the land extract oil in Val d'Agri for over 10% the national requirements. This amount is destined to increase thanks to wells expansion projects and to the national Government choices inside the already mentioned Law Decree "Sblocca Italia", which will increment hydrocarbon extractions in Agri Valley and extending them to the entire Basilicata Region (OLA, 2014).

Over the las decade new oil reserves have been discovered and a new concession was granted to Shell. In this way, the local oilfield has become the biggest oilfield in Europe (Il Sole 24 ore, 2012).

Table 6

The territory in numbers

Source: Legambiente

30	Municipalities
48.000	Inhabitants
35,8	Inhabitants per sq. km.
-6%	Internal negative net migration (1991-2000)
25,3%	Over sixty population
26%	Unemployment Rate

The Agri Valley-Lagonegrese National Park

The Agri Valley-Lagonegrese National Park history began in 1991, but the Park was formally instituted in 1998, twenty days after the conclusion of the extraction activities' development agreement signed between ENI and the Basilicata Region. The environmental and naturalistic value of the Park is unique: in connection with the parks of Cilento and Pollino, the area involves four hydrographic basins - Basento, Agri, Sinni and Noce - and several groundwater reservoirs. In addition, as forests cover the area, it constitutes a habitat for some valuable endogenous species. Thus, the park hosts a fauna of great scientific interest (Ente Parco Nazionale dell'Appennino Lucano – Val d'Agri – Lagonegro, 2014).

The calculation of the perimeter of the Park, expected by mid-1999, occurred only in 2007. The proximity of the territory to the extraction area has impeded several times the path's definition and has not ceased to be a threat to the conservation of the area, due to the close presence of several oil facilities.

Water Resources

The Lucan territory is characterized by eight hydrographical basins with torrential features, characterized by winter flood and shallows in summer (Autorità Interregionale di Bacino della Basilicata, 2002). The Agri's river basin covers approximately 1,700km². After a 130 km² course, it flows into the Ionian Sea. In the centre of the valley there is the Pertusillo Lake, a reservoir that occupies an area of 75 square kilometres, with a 150 million cubic meters water capacity. The 30% of this water is used for irrigation, while about 65% supplies the nearby

region of Puglia of 103 m³ of drinking water per year. Finally, the Agri Valley is an area very rich in water springs and with widespread karst phenomena (Colella A., Colucci A., Longhitano S., 2003).

Seismic risks

The Basilicata region is characterized by an intense seismic activity. Several strong earthquakes have marked its history. The territory of Agri Valley is one of the most active areas in the Apennines: it is crossed by important tectonic lines which make it one of the most worrisome areas in the region, for both the frequency and the magnitude of earthquakes. In 1857 an earthquake with an intensity of XI in the Mercalli scale, hits the Apennines in the regions of Campania and Basilicata, in particular the Agri Valley area, causing death and destruction (Istituto Nazionale di Geofisica e Vulcanologia, 2013).

The National Institute of Volcanology and Geophysics has qualified the Agri Valley as high seismic risk area. These features constitute an additional element of risk for the area, especially in relation with the presence of extraction activities and the COVA's - Oils Centre in Agri valley - facilities. The COVA collects all the crude extracted from the wells and send it, through a 130 km long oil pipeline, to the ENI's refinery of Taranto, in the Puglia region. In this context, both the COVA and the oil pipeline infrastructures could therefore be exposed to seismic events. Nevertheless, the consequences that those events could entail on the territory and on the population are still not considered or included in pertinent emergency plans.

Economic structure of the area

The Agri Valley area is characterized by an ancient rural economy, based on agriculture and dairy production, and on cultural and naturalistic tourism, attracted by the environmental, historical and cultural resources of the territory. In winter season, the area also offers several ski resorts and facilities. The local gastronomy production, based on innovated agro-forestry-pastoral systems, is a very important source of wealth for the area. Several products, such as vegetables, cheese, wine and olive oil, are protected by the IGT classification - Geographical Indicator for Typical products. An example is the Sarconi Beans Consortium, which gathers 700 hectares of DOP trademark (Protected Designation of Origin) cultivations. Together with the Pecorino Canestrato di Moliterno, also an IGT one, the Sarconi Beans consortium represents one of the most significant examples of such productions. Nowadays, animal husbandry and agricultural's farms have to coexist with the intense drilling activity.

The territory faces several other problems: the lack of adequate transport infrastructures and public transport, the high incidence of unemployment and precarious job, the lack of entrepreneurship, the gradual drop out of agricultural economies, an insufficient tourism supply, etc.. Furthermore, the local government is unable to take pragmatic decisions about local development and territorial process.

Presently, the size of the oil field has transformed the crude extraction in the area in an issue of major economic and strategic relevance for the entire national energy sector. However, the matter has been raising serious concerns and disagreements at national level because of environmental impacts of the extraction activities, the protection of the Val d'Agri-Lagonegrese National Park and about the coexistence of drilling activities with traditional ones.

In this context, employment crisis persists and risks to increase. A part from the disappointing impact on local employment - scarce compared to the initial outlook, extraction activities constitute an environmental threat, which entails a territory loss of "attractiveness" (Mazzilli, 2014).

Population

In the Operational Regional Program (POR) of the Basilicata Region, the Agri Valley is defined as: "a weak area, although not devoid of dynamism in production, in tourism and in settlement. The internal and mountain municipalities are subject to strong depopulation and the lack of services for the inhabitants are serious. The industry, despite the creation of the industrial area of Viggiano, is hardly able to confirm itself and its future relies in the initiatives contemplated in the [1998] ENI-National Government – Region agreement" (Regione Basilicata, Progetto Integrato Territoriale Val D'Agri).

According to the 2001 census, the population of the area is about 48,000 inhabitants. Both the old age index – 131 - and the ageing index – 20.55 - appear to be relatively high and portray the area as a small territory, with a low workforce and experiencing a continuous loss of inhabitants. More recently, the population decline has been significant - -6% compared to 1991 - and the given birthrate is worrying too. The territory presents, indeed, differentiated socio-economic indicators from area to area: the average annual per capita income is between € 12,000 – Marsiconuovo - and € 8,000 - S. Chirico Raparo, only 50 km away. The unemployment rate in the area is higher than the regional average, already higher than the national average of 7-8 points. The Agri Valley is "an area in crisis where not even the processes of industrialization, like the development of the Viggiano industrial area and the formation of an oil sector, have made it possible to overcome a strong social crisis" (Regione Basilicata, 2003).

Critical situations in the territory

Among the most critical elements, we can report:

- Rarefied settlement structure: variety of micro municipalities threatened by significant emigration;
- Ageing of the population, low productivity and an increased demand for personal services - social welfare and healthcare - which result to be insufficient;

- A fragmented structure of production units, concentrated in traditional sectors - construction, crafts - and in agriculture;

- Tourism potential could be fully developed thanks to the natural, archaeological and gastronomic resources;

- Lack of infrastructures and communication networks and distance.

4.2 The development of oil activities in Basilicata

From the beginning to the actual division

The first exploratory studies in Agri Valley date from the beginning of 1900. From 1937, to the late 1950's, AGIP carried out exploration activities. The first oil-field was discovered in Tramore and extraction began. In total, 47 wells were drilled, 26 of which are operational, but as it was a mediocre production, it was suspended in 1953 (Ferruzzi, 2000).

In 1975, after a 15 year-break, AGIP restarted to explore the area. In 1981, at the foot of the Viaggiano mountain, the “Trend 1” or “Val D’Agri” light oilfield was discovered. The permission to exploit this oilfield was granted by the Ministry of Industry to AGIP in 1984. The oil discovered in here is a high-quality light one, with a 32° Api viscosity - its density related to water - and with a low sulphur content. In 1986, a new field of heavy oil - “Trend 2” or “Tempa Rossa” - was discovered. Two years later, another one was identified and called the “Monte Alpi 1”.

Overall, the Val d’Agri oilfield represents the widest hydrocarbon reserve in Continental Europe. To this day, oil concessions are extended on 660,15 kmq, of which ENI helds 60,77% (after replacing Agip), and 39,23% by Shell (replacing the Italian Enterprise Oil) (OLA, 2014).

Since the 1990s, the development of the Val d’Agri oilfields was intensified. Three mineral titles were given to AGIP with consequent concessions, divided between Volturino (45% ENI, 55% Enterprise Oil), Caldarosa (100% ENI), Grumento Nova (ENI 60%, Enterprise Oil 40%)

At the beginning of 1990s, the Petrex S.p.A. - controlled by ENI - submitted to the Viggiano municipality a request for the construction of the Oil Centre Monte Alpi, located in the industrial area of Viggiano, estimating an oil extraction of 5,000 barrels per day. The Oils Centre came into operation in 1996 and was expanded in 2001, when it changed its name in COVA - Agri Valley Oil Centre. From an initial quantity of 5,000 barrels per day, oil extraction rose till the actual 90,000 barrels per day. Since October 2001, a 130 km pipeline carries the extracted crude to the Taranto's ENI refinery.

The extraction activities' understanding between ENI, the Government and the Region.

On October, 7th, 1998, the Italian National Government and the regional administration of Basilicata signed an agreement for the development of the oil sector in the Agri Valley area. The agreement provides the obligation for the national government to regulate - by parliamentary law - the allocation of State royalties, to arrange royalties transfer from the State to the Region - in order to support the development of the area itself - and to finalize the building of local infrastructures underway - such as roads and airports.

In November 1998, after a long disagreements, the Basilicata Region and ENI signed an agreement for the exploitation of the Agri Valley fields. The understanding required ENI to undertake specific commitments, such as:

- the elaboration of an environmental monitoring system, granted by ENI, for an amount of € 5 million which should have been completed and put into operation by the end of 2000;
- the maintenance of the environmental monitoring system with a grant of € 3 million for 10 years to the upgrade the technological system;
- the creation and organization of the Basilicata Region Environmental Observatory as a tool for the protection and the enhancing of environmental resources.

The agreement also required ENI to:

- allocate € 5 million for 10 years to fund environmental compensation projects - reforestation, water conservation, etc.;
- allocate funds, for a maximum of € 2 million per year for a 10 years period, for the creation of sustainable development regional programs - in addition to the € 5 million share in a development company, focused on extraction's areas;
- pay royalties attributable to the Basilicata Region;
- build - by the end of 1999 - a regional energy company which should provides low costs electricity to the inhabitants, in order to “make clear the benefits associated with oil extraction”;
- set up - starting in 2000 and for the following twenty years - scholarships, doctorate and post-doctorate fellowships and specialization courses on environmental and energy issues for a total amount of € 250,000;

- create a local branch of the “Fondazione Enrico Mattei” – the Enrico Mattei Foundation - in Basilicata, as a research centre for energy, environment and economy;

- arrange - in cooperation with the Ministry of Environment and the Basilicata Region - emergency and environmental protection plans.

According to the agreement, ENI was also required to provide data on the oil business, through a six months publication concerning environmental impacts - on air, water, etc., number of employees, daily oil extraction's level, amount of direct and indirect royalties paid. On the other side, the Region had to define and to execute in time all acts and documents necessary for oilfields' exploitation (Regione Basilicata, 1998).

Since the 1990s, 40 wells have been drilled, 27 of which in productions. Among those, 23 wells and COVA are situated in the Viggiano municipality (La Repubblica, 2012).

The overall hydrocarbons production in Basilicata mainly goes through the COVA (Centro Olio Val d’Agri) and to a less extended Oil Centre in Pisticci and two gas centrals (Ferrandina e Pisticci). The productive increase registered over the last years is mainly to be attributed to Val d’Agri’s, reflecting a productive reduction of the field (ENI in Basilicata, 2014).

The COVA centre

In the COVA centre, located in the industrial area of Viggiano’s Minicipality, oil layer gases and layer water extracted are separated. This is the desulphurisation process - a pre-treatment that eliminates the part of the resource rich in compounds as sulphur, carbon and nitrogen - that occurs before the proper refining, and which - as mentioned in the Taranto case study - takes place in the Taranto refinery. The gas is inserted into the Snam network while the residual water is restored into the ground (Osservatorio Ambientale “Val d'Agri”, 2013).

In 2011, a new modernization plan for COVA was approved by Ministerial Decree as part of the new Agri Valley's concessions development program. The new plan envisages the drilling of 9 new wells - 3 for research and six for development - and the launch of 9 already drilled wells with relative installation of connection pipes. Among new activities, the existing Monte Alpi 9 well has been transformed in an re-injection well.

The Oils Centre first pipeline was completed in 1996. Since then, 4 pipelines have been built, for a total amount of 5 pipelines. The COVA's treatment capacity is estimated to be about 104,000 barrels per day. Current oil production is about 90,000 barrels per day, representing about 75% of the Italian and 4% of the European Union productions. The production at operating speed have been working since 2005, after the end of the upgrading of the COVA. In 2008, the total

investment cost estimated was about € 1.54 billion. Datas on the extracted quantities are provided by ENI without any kind of external control (La Repubblica, 2012).

Crude oil comes from 6 wells (Grumento Nova, Caldarosa, ex Costa Molina, Volturno/Alli, Monte Alpi, Volturno Cerro Falcone) linked with underground pipelines in the oil centre. They have an overall development of several hundreds km. Then, after crude oil is processed in Klaus plant and reduced of its sulphur component, it transported in Viggiano-Taranto pipeline, that transports the crude oil extracted in Total's Gorgoglione plant for treatment in refineries and direct sales (OLA, 2014).

The oil pipeline Viggiano-Taranto

The pipeline connecting the COVA to Taranto is 130 km long and was opened in late 2001. Before that, all the crude oil was taken from the Oil Centre and transferred to Puglia by road tankers. This operation presented particular risks related to environment and to road safety because of the tankers' congestion and local roads' quality, mostly narrowed and rugged mountain roads with a hairpin structure. The road transport was carried out by two companies and by 200 trucks with an average capacity of 30-40 thousand liters of crude oil. The frequency of transportation was of about 115 trips per day.

The extraction frontline: the Tempa Rossa project

Located at the North East of the Agri Valley field, the reserve of Tempa Rossa contains heavy oil. The oilfield was identified in 1989 and in 1991 an exploitation project was presented by ENI and other oil companies. From 2000, negotiations for the exploitation of the reserve have begun. The exploitation concessions are Perticara, Gorgoglione and Tempa D'Emma. In 2003, Shell Italia has taken over 29% of the Grumento Nova concession. In 2005, Grumento Nova and Vulturino's area were merged in the Agri Valley concession, owned at 60,77% by ENI S.p.A. and at 39,23% by Shell Italy (Ministero dello Sviluppo Economico, 2014).

In the mid-2000s, Shell asked licenses to build a second Oil Centre in the Corleto Petricara municipality. Later on, ENI has withdrawn from the project, selling its quotas to Total who became the major shareholder. The Tempa Rossa project for the extraction of hydrocarbons was presented by Total in 2003. Nowadays, the French society holds 50% of total shares in joint venture with Shell (25%) and the Japanese group Mitsui (25%). The project development foresees the construction of eight wells – six drilled and two to be drilled, the construction of an oil treatment centre, where hydrocarbons, after being extracted and channelled into an underground pipeline, will be treated and separated in different by-products (crude oil, combustible gas, sulphur, GPL) and later, according to the product, sent through underground channels. The construction of a GPL stocking centre (2 underground tanks with a 3.000 cubic meters) with 4 points for trasnfer to tanker trucks. Besides, Total has planned the construction andd adjustment of service infrastructures (streets, water and electricity systems for the treatment centre, networks for the transportation and the distribution of hydrocarbons). Once the

plants will be at operating speed, the daily production should be of 50.000 barrels of crude oil, 250 cubic meters of natural gas and 267 tons of GPL (Total, 2008).

After an initial refining process at the Corleto Perticara oil centre, crude oil will be channelled through the Viaggiano-Taranto pipeline. After the refining process, the daily sulphur production will be about 60 tons. After a suspension of works, the oil centre is temporarily under construction and its entry into service is envisaged in 2016 (Il Sole 24 Ore, 2013).

Some valuations made in 2000 revealed the presence of a 483 million oil barrels' stock, but, overall the extractive activities in Basilicata could easily reach one billion barrels. The Basilicata Region is presently involved in 70% new exploration activities. Until now, ENI invested approximately € 2.7 billion (Wall Street Italia, 2013).

The European Investment Bank fundings to ENI

In 2002, the European Investment Bank (EIB) has granted a loan to ENI for the development of its production in two Agri Valley fields (EIB, 2003). The agreement includes the creation of an environmental management plan collateral to the environmental monitoring network created with the Region. To get the project approved, ENI had to submit an Environmental Impact Assessments related to the concessions' implementation and to produce an Environmental Management Plan (EMP). According to the plan, ENI should grant assistance during works' execution - provided by a group of archeologists - and several other protective measures, including a reforestation project and an emergency plan. According to the agreement between the oil corporation and the Basilicata Region, ENI undertakes to provide environmental compensations as complementary measures to the EMP. Other complementary measures include, among others, the support to the economic development of the region and the creation of an environmental monitoring system's network. Such monitoring system should had included an emission control system, a remote sensing seismic system and a bio-monitoring process. Besides previsions, the network is still inactive. According to ENI, the system would be under implementation. The EIB, in the document for the loan distribution, indicates that in the Basilicata Region's website a webpage with real-time all the datas on extraction should be provided. Meanwhile, the webpage is not working.

Giving handouts to the territory: the royalties

As previously mentioned, for the oil extraction activity, ENI pays royalties to the Region, calculated according to the legislation in force. The amount is 7% of the total value of the extracted resources, calculated on the market value - annually updated - of a barrel of oil. This 7% is divided between the region – 85% - and the municipalities involved in mining activities - 15%, distributed in proportion to the number of oil infrastructures and wells they host in their territories.

To realize how derisory this figure is, it’s worth to compare it with other example: in Bolivia in the 1950's, oil companies left to the Government the 17% of the value

of the extracted product; more recently, in 2005, the Indonesian Government and ExxonMobil signed an agreement, whereby 85% of the value of the extracted resources is collected by the central state, while 15% is split between ExxonMobil, Petramina - the Indonesian oil company - and local governments.

In Basilicata, oil companies leave just a 7% royalties of extracted barrels, calculated on a non-updated price and without an external quality control, if not ENI's self-certification. According to ENI valuations, between 1998 and 2012, up to now the company would have paid to the Region and municipalities about € 585 million's royalties (ENI in Basilicata, 2012). Royalties use and management is a matter of concern and discontent in the concerned municipalities. Some recurrent critiques demand to allocate royalties in investments able to trigger a productive and a cultural development rather than reduce them to welfare or embellishment interventions. Guidelines set out in the 2003 Operational Program could be helpful to orient royalties allocation, even more because the program has been signed between the region and all the thirty municipalities of the district. In the Guidelines, four action lines were indicated: protection and improvement of the environmental living conditions, creation of essential infrastructures, the quality of life improvement and productive activities support.

Region	Import in Euro
Basilicata	91,861,571.22
Municipalities	**Import in Euro**
VIGGIANO	10,703,072.73
CALVELLO	2,356,639.87
GRUMENO NOVA	1,571,093.25
MARSICO NUOVO	1,178,319.93
MONTEMURRO	392,773.31
Total	16,201,899.09

Table 7

ENI's Royalties in 2013

Source: ENI in Basilicata, Local report 2013

Extraction' site outlook

In 2011, ENI required the Ministry of Environment and the Regional government to expand the Viggiano Oil Centre and to increase the production up to 130,000 barrels, thus activating 44 producing wells. In the same period, the monitoring system - provided for by the ENI-Region agreement - was not operative yet, and still is not. Expansion works involve the construction of the fifth pipeline of the Oil Centre, destined to carry gas, the building of a new incinerator and two new tanks. An increase in gas production is thus foreseen compared to the current 3,6 million Sm3/g. On April, 2011, President of the Basilicata Region and the national government agreed a new Memorandum of Understanding which includes the expansion of the drilling activity and the doubling of oil production (Ministero dello Sviluppo Economico, 2011). In exchange, local authorities require

a national intervention for the improvement of the local public services.

The current agenda, approved on January 2012, includes the following activities:

- Research activities: drilling of 3 new research wells: Pergola 1, Serra del Monte - Montemurro, S. Elijah 1.

- Development activities: drilling of 6 development wells ; conversion of 9 wells into production wells and creation of new well areas ; installation of pipelines for the connection of existing wells with the forthcoming ones ; conversion of the Monte Alpi 9 well into an injector well ; adjustment of Oils Centre's facilities for the increasing of the treatment capacity to 104,000 bbl / d (Osservatorio Ambientale "Agri Valley", 2013a)

In March 2011, during the ENI-Assomineraria Conference, held in Basilicata, partners concluded that it would be possible to increase extraction' activities, doubling them from 80,000 to 175,000 barrels per day.

The effects of the SEN and the "Sblocca Italia" Law Decree in Basilicata

Recently, the link between oil exploitation and the future of Basilicata region has been reinforced. Between 2012 and 2014, several measures were adopted both at a regional and at a national level to double the extractions and the production of crude oil. The Regional Council voted on April 8th 2014 the "Oil Resolution" and the Regional Law n.17 of July 11th 2014 on "urgent measures concerning the internal Stability Pact" which would intend to increase the manufacturing of crude oil and carry on with "subsistence" road, trying to utilize current expenses and without restrictions – as well as for oil incomes (Dommarco, 2014a).

On August 2012, the Minister of the Environment, Corrado Clini, launched the National Energy Strategy (SEN), which - among other critical points - opens an unexpected scenario in relation to the extraction activities in Basilicata. The 2014 "Sblocca Italia" Law Decree, has given a further incentive to exploration and extraction activities in the entire country making effective SEN's guidelines. In Basilicata Region's case, the new Decree oil activities could move from a 35% of interested land to a 64% (Dommarco, 2014a). In particular articles 36, 37 and 38 concerning liquid and gassy hydrocarbons, so that prospection, research, farming and underground stocking concerning hydrocarbons become strategic activities for the future of the country.

On April 2014, the Ministry of Economic Development, Federica Guidi after relaunching the issue of oil extractions in the entire Italian peninsula, organized negotiating tables with president of Basilicata region Maurizio Pittella. Central was ENI's the request of obtaining new authorizations in Val d'Agri and the possible increase of royalties to confer to interested Regions and Municipalities. The "Sblocca Italia" decree and National Energy Strategy aims to accelerate the

production increase: from the current 90.000 barrels per day to 104.000 as envisioned by the 1998 agreement ENI-Regione Basilicata, and then move further towards 129.000 barrels extracted everyday only in Val d'Agri, as hoped by San Donato Milanese society in its "Local Report 2012" (ENI in Basilicata, 2012).

The same discourse will be valid for Total, present in the other oil valley of Basilicata, where an oil centre is under construction in Corleto Perticara, that thanks to 2006 agreements for the daily extraction of 500.000 barrels of crude oil, could push the limit to 80.000 barrels everyday. Overall, there could be 259.000 barrels extracted from Basilicata everyday. Just less than the amount of barrels that Italy imported from Libya before the beginning of the war broken out in 2011 (Dommarco, 2014b).

To this day, between Eni and Total, ENI is the bigger player and manage new oil development program which envisions the drilling of new wells. Operations that first of all need to overcome COVA's structural problems that, since January 2014, is object of malfunctions ascribable to electrical supplying programs. The last one is that of September 24th – one of the four from the month of August – that, after several surveys encouraged experts from the National Mining Office for Hydrocarbons and Geo-resources to declare the state of attention and require the society the solve anomalies or to suspend activities (Dommarco, 2014b).

Local government' role

The subordination of politics and, in particular, specially the subordinate role of local governments towards the state and the business sector, constitutes one of the biggest problems of the area. This phenomenon made difficult for the local territory to take advantages from the risk-opportunity's paradigm coming from petroleum activities. At local level, regional, provincial and municipalities' governments have been unable to set binding conditions and to defend some essential instances, as environmental monitoring, transparency and royalties. On the other side, national institutional representatives are no longer recognized by local communities as able to represent them, to meet their demands or to solve their difficulties.

Starting from autumn 2014, following the publication of the Law Decree "Sblocca Italia" and its following conversion in Law n.166/2014, Basilicata municipal administrations started a trend reversal using a new approach, especially those in the Agri Valley. In particular, article 18 has been put under the discussion by local administrations, as it gives back to the Ministry of Environment and the Ministry of Economic development decisional power over environmental authorizations over agricultural concessions on the sea and binds those onshore to generic understandings with interested Regions. This process will be facilitated by an single concession which will skip several authorized passages imposed by the current normative, thus reducing execution times and limiting oppositions (Dommarco, 2014c). Between October and December 2014, 64 Municipalities joined a common initiative to challenge the "Sblocca Italia" Decree, launched in September in Villa d'Agri in order to ask to the president of the Region, Marcello

Pittella, to impugn “Sblocca Italia” at the Constitutional Court (OLA, 2014a). Almost all the Councils of joining municipalities unanimously deliberated the requested addressed to Pittella. And some of them went further deciding, contextually, to launch further initiatives “aimed at impeding hydrocarbons research or extraction activities on the entire Municipal land” (Pavesi, 2014). At the beginnings of December, a wide coalition of citizens, associations and students has brought the protest to the Region, where on December 4th the Regional Council approved a resolution demanding to president Pittella to challenge the definitions of article 38 that humiliate regional powers (Greenreport, 2014).

Agri Valley as an international hydrocarbon hub

The intention of transforming Italy into a gas hub includes as direct consequence the transformation of the Basilicata Region - and in particular the Agri Valley area - into an oil hub. According to this scenario, the valley would become a strategic centre for the European and Italian oil network, due to the huge presence of wells, oil centres, gas and oil pipelines and storage fields. With the convergence of TAP - Trans Adriatic Pipeline, South Stream - owned by the Russian Gazprom - and the Maghreb gas pipeline towards southern regions of the country, the Basilicata region would become a great strategic value's hub for gas storage and transportation. Doubling of oil production is directly related to this scenario: if oil extraction was completed in half the time, existing drilled and drained wells could be used for gas storage. In this context, Basilicata would be the Italian Southern hub, flanking the central one - situated in Abruzzo-Molise - and northern one - located in Lombardia-Romagna. This gradual transformation of the region into an energy bondage can be easily demonstrated by the dozens of requests for concessions, claims and research permits presented, among others, by Shell, ENI, Esso.

4.3 Oil extraction impacts on the territory

Oil extraction is an activity with high environmental impacts. Mining activities are divided in different phases: the exploratory phase, the real extraction and the processing phase, each of which entail several and different environmental impacts. During the exploratory stage, after chemical and physical analysis of the geological samples, explosions are induced to identify the existence of the reservoirs. This operation is not recommended in areas of seismic risk as the impact on the geological equilibrium is very high. In the next stage, during the drilling phase, augers pass often through aquifers which risk to be contaminated. Groundwaters, debris and fluids coming from drilling have to be treated along with waste generated during the well drilling – 6,000/7,000 cubic meters for 4,000 meters deep's wells (Ferruzzi, 2000). The oil processing is preceded by a pre-phase during which crude oil is separated from the liquid and the gaseous parts. Liquids are collected in special tanks, dehydrated and then re-injected underground. The gaseous part is de-humidified, separated from methane, piped in the SNAM network and then burned. Another delicate issue concerns the disposal of waste processing. Lack of transparency and the absence of

responsible authorities' controls constitutes an uncertainty factor regarding the real effects of waste storage and underground re-injection.

In Basilicata, it appears clear that extraction activity's size contrasts with the regional natural and rural heritage and with the naturalistic vocation of the territory. In addition, the affected area constitutes a valley with a low possibility of pollutants' dissolving. In this context, it is relevant to underline how difficult is to generally obtain any information on the environmental impacts of the extractive activities. As example, after the 2011 ENI request for the increase of production - Integrated Environmental Authorization - emission levels' allowed increased. As a consequence, citizens asked for transparency and control, complaining about the lack of monitoring system controlling pollutants related to the extraction of oil. Up today, more than 20 years since the beginning of the extraction' activities and 17 years after the launch of the COVA, ENI is still trying to complete an environmental monitoring system, prescribed by COVA's Environmental Integrated Authorization (ENI , in Basilicata, 2014a).

Agencies in charge for impacts' monitoring - first of all the Basilicata Regional Environmental Protection Agency (ARPAB) - demonstrated to be unable to carry out an effective and continuous monitoring. The Environmental Observatory "Val d'Agri", provided by the 1998 agreement as environmental compensation measure in relation to the oil extraction project, took its first steps in 2011 and was put into effect in 2012. The observatory, a documentation centre on environmental data, was designed to inform the population on environmental impacts in a clear and transparent manner. This entity does not implement directly measures for environmental protection and compensation, nor conducts analyses and it is not a supervision body. Its composition, focused on institutional and political representation, does not make it an independent observatory. To this day, according to Legambiente, the action put into effect by the Environmental Observatory is still inefficient, as its activity is limited to collecting limited and fragmentary existing information and to their presentation through a portal that does not help much in understanding the interactions between industrial activities, the environment and the health of Val d'Agri's citizens (Legambiente, 2013). The limited tools and the vague powers this body has, make it unable to provide a real network for the protection of the territory.

Environmental impacts

The italian legal framework on protected areas

Law 394/1991 - contains a specific ban for the hydrocarbons industry which is - in theory - prohibited within parks. Hydrocarbons' research activities - despite not being subject of an explicit prohibition - should not be considered compatible with the principles included in the article 1 of law 394 (Legge quadro sulle aree protette, 1991)

About this exclusion, in 2001 the environmentalist organization Legambiente exposed a complaint to the European Commission on the oil activities in the areas of Agri Valley and Val Camastra Alto Sauro. Two years later, the European

Commission launched an infringement procedure against Italy concerning oil activities located in some sites of Agri Valley and Val Camastra Alto Sauro, declared by the Commission areas of community interest (Legambiente, 2008).

In 2003, the Basilicata Regional Council validated a proposal to perimeter the new Park of the Agri Valley. The purpose was to reduce the park in favour of the development of oil industry. Thereafter this hypothesis has been stored. As a result the perimeter of the Park was took only in 2007. Proximity to oil facilities and the passage of infrastructures through the Park constitute relevant environmental risk factors. Furthermore, oil installations - both the wells and the COVA - being often located nearby residential areas, they are not just endangering the natural park, but also local inhabitants. For example, the Alli 2 Or - a recent drilling well - is located just 300 m far from the houses of the Villa D'Agri village - Marsicovetere municipality - and just 1 km far from the local hospital. Another well is located 2 km far from the Pertusillo dam. In front of this situation, no institution or local government has presented complaints, nor has exposed the situation or has started a legal action.

Air pollution

Atmospheric impacts are almost due to to the combustion of unused gas, the stabilization of groundwaters in carbon dioxide and sulphur dioxide and flames. The main pollutants emitted into the atmosphere are: hydrogen sulphide (H2S), sulphur / sulphur oxide, sulphur dioxide (SO2), nitrogen dioxide (NO2), PM10, carbon monoxide (CO), benzene, volatile organic compounds (VOC) and polycyclic aromatics (PAHs) as benzopyrene, toluene, xylene). Among them, the most dangerous are: SO2, H2S, PAHs, PM10s, the non-methane hydrocarbons, the dioxins and the furans. Furthermore, sulphur dioxide, nitrogen and other substances deriving from the extractions constitute risks for human health as they entail serious dermatological and respiratory problems - asthma, bronchitis, emphysema and respiratory infections. In addition, some compounds - such as benzene - have carcinogenic effects. Information about the monitoring of H2S emissions and hydrogen sulphide - derived from surveys carried out only since 2008 - started to be disclosed only in 2009. According to the Lucania Environmentalist Organization (OLA) - an independent organization working for years to document, report and inform citizens about oil extraction's impacts, the emissions measurements were carried out discontinuously and incompletely. Furthermore, emission pollutants' thresholds' are still not clear and - compared to other much more restrictive regulations - generally really low.

There are two bodies responsible for monitoring, with duplicate skills and halved effectiveness. As described in 2009 by OLA, apart from ARPA Basilicata another instrumental body, the Metapontum Agrobios, has been created. This body should deal mainly with agricultural research but actually overlap the ARPA in environmental monitoring. ARPA monitoring activity, which started only in 2007, is carried out by a stable unit of control placed in the Industrial Zone of Viggiano. This body is charged of observing SO2, NO2, CO, benzene, PM10, O3 presence in the air. On May 8th, 2008, ARPA carried out a measurements campaign by mobile unit in both Viggiano and Grumento Nova. Metapontum Agrobios uses,

instead, a stable station in Viggiano, thus basically duplicating the function of the one used by ARPA - it monitors the same pollutants - and a second “circulating” control unit which monitors pollutants' concentration in different places in Agri Valley. The pollutants monitored are those indicated by the 2002 Ministerial Decree n.60, a decree transposing two European Directives limiting values for benzene and carbon monoxide - 2000/69/CE - and sulphur dioxide, nitrogen dioxide and oxides of nitrogen – 1999/30/CE - in ambient air. The Metapontum Agrobios control units do not control the presence of H2S. In conclusion, there are two monitoring bodies that, besides overlapping, make the situation increasingly deficient (OLA, 2009).

At the beginning of 2012, the ARPA Basilicata released data coming from various surveys on air quality (ARPAB, 2013). According to Gianluigi De Gennaro, Viggiano's technical advisor and chemist at the University of Bari, the measurements carried out was discontinuous and weak. Furthermore, measurements appeared often not carefully validated - or not validated at all - because, if analysed with a careful process, they appeared scientifically impossible (De Gennaro, 2012). Presently, on the ARPAB website there no data coming from the four Viggiano control units. The only datas available, those of the 2012 report, are incomplete. In addition, there is no reliable olfactory metric measurement which calculates the real impact on the inhabitants' quality of life and the smell arising from the COVA oil activities. In conclusion, the creation of a continuous and stable monitoring system able to describe the air quality in the area, the presence of polluting plants, and its consequences on public health and environment results to be really urgent and necessary.

Water pollution

Oil is a substance with strongly polluting qualities: low volatility, viscosity, persistence make oil hard to treat once messed with water. In the Agri Valley area most of oil extraction facilities and pipelines are placed next to hydric resources (Ferruzzi, 2000). For this reason, water pollution concerns both surface waters (revers, lakes, etc.) and underground aquifer. As already mentioned, hydrological richness of the valley and springs' complex are of capital the Region. Main water springs reach a 2,000 liters/second flow rate. In the area there are also several important basins from which depends the hydric supply of both Basilicata and Puglia. About 4.5 million people and several cultivated areas relies on water coming from those basins, specially from the artificial lake of Pietra del Pertusillo. An hydrocarbons' spill - even a random one - can deposit sediments on the Agri's alluvial aquifer - which supplies about 31,000 inhabitants of the area, living in 14 municipalities - and from here directly reaching the Pertusillo basin.

Oil infrastructures and crude oil production and transportation (oil centre, extraction and re-injection wells, pipelines and networks for “reinezione”) impacts on a delicate hydro-system. There are already criticisms that involve the delicate equilibrium of the water circulation system (Petrusillo, Montemurro, Calvello, Marsico Nuovo, etc) especially the Agri aqueduct which serves more than 30.000 citizens, 14 villages and 3 communities and still lacks a constant water monitoring system, goods of strategic interest, not only for local development, but also about

the preservation of life and of vegetal and animal biocenosis, put under risk because of the impacting human exploitation, especially of oil (OLA, 2014).

Both research, drilling and exploring activities present a not negligible environmental risk. In the research phase, controlled explosions could has critical consequences on water circulation, both at quantitative and qualitative level. For what concerns drilling activities, perforation could notch aquifer stones, thus blending aquifers with different chemical and physical characteristics. Finally, waste generated by extractive activities (groundwaters, salted sludges, heavy metal sludges, metal- bearing minerals, mining products, etc.) can rapidly degrade underground waters' quality. Furthermore, oil extraction need a huge quantity of water: 8 barrels of water, that is to say 1,272 litres of water every 159 litres of oil. Nonetheless, as already underlined, there is no water's quality constant monitoring, neither for springs' water nor for underground ones. 2012 surveys reveals the presence of heavy metals - manganese, barium and chromium - in the Acqua dell'Abete spring and barium in the Pertusillo dam (La Gazzetta del Mezzogiorno, 2012). Albina Colella, a professor of Biological Science of the Basilicata University, conducting researches on the Pertusillo dam revealed the presence of both heavy metals and hydrocarbons on the basin's sediment. The survey, presented on November 2012 during a conference organized by the EPHA - a local organization for environmental and health protection - included datas coming from 5 different areas where sediments' samples have been taken. According to Prof. Colella, those samples represent a chemical archive of basin pollution's history. The same things wouldn't be possible by taking water samples because their composition is variable. Survey's results show huge quantities of some chemical components, levels which exceed soil's limits fixed by law (60 mg/kg). This is due to the absence of binding provisions limiting sediments themselves. Chemical components founded - barium, manganese, iron, aluminium, chromo - would be polluting elements that - besides being all related to extraction's activities - that would make waters very dangerous for agricultural plantations. If contaminated, plantations would need a particular purification process, different from the existent one. Those results specifically come from two small streams, the Scannamugliera and Spetrizzone, which cross the Montemuro re-injection well - normally uses for the re-injection of extraction's residual materials.

Soil pollution

Extraction's facilities building impacted all the area. According to valuations, more than 1000 hectares have been involved for the building of the Viggiano-Taranto pipeline - 450 hectares, the construction of the COVA - 130 km, about 400 hectares - and the equipment of wells - around 100 hectares. Several hectares used for facilities are part of the Agri Valley National Park (Ferruzzi, 2000). The acidification process - consequent to polluting emissions - together with acid rainfall produced a deterioration of flora and fauna's heritage of the area. Despite the huge naturalistic importance of the region, no research has evaluated those effects yet. Extractive activities are damaging the habitat of several animal species, most of them under protection - wolf, wildcat, otter, bird of prey, etc.. The same is true for the flora: altered microclimate conditions, affected by facilities'

proximity and acid rainfalls, provoke the premature maturation of cultivations. In addition, a huge number of plants and trees have been destroyed to leave space for oil facilities. Agricultural output was impacted too: cultivations have been exposed to combustion's fly, carbon oxide, nitrogen and ozone and beekeeping is damaged by the compromised quality of the air. Bioitaly's areas - a series of sites considered by the European Union areas of Communitarian Importance Protected Area strategic for biodiversity conservation - has been affected too by the presence of 4 extractive facilities, placed inside the protected area (Legambiente, 2013). It should be emphasized that hydrocarbons' and chemicals' soil pollutants represent a risk factor in terms of food chain contamination, thus threatening population's health (Ferruzzi, 2000).

Accidents, spills and risks

Wells are connected to COVA through a subterranean pipelines system that could be damaged or generate accident and spills during the transportation process. This eventuality would have serious consequences both for water and soil. For what concerns acoustic pollution, people living nearby Oils Centre and wells denounce a loud ground noise and some sporadic rumbles coming from COVA. Details of the many accidents occurred during transport and oil extraction can be found in reports by the local EJO OLA based on data gathered thanks to a constant monitoring activities carried out by their popular observatory “OLAWatch”. Among available reports: “10 anni di "effetti collaterali" del petrolio in Val d'Agri (OLA, 2009a), and “Cosa bolle in pentola? Il centro olio e i pozzi di petrolio e gas in Val D’Agri” (OLA, 2014).

Post extraction environmental restoration. In the valley, lots of areas are affected by extractions or by abandoned disused wells - needing clean-up. Even the COVA area and underground pipelines would need reclamation. In principle, affected areas should be reinstate to previous environmental conditions by facilities' dismantling, reclamation and by grass' replantation.

Hydrological upheaval and seismic risk. Oilfield exploitation generates subsidence phenomena that come on the top of an already fragile situation, characterized by high seismic risk with no monitoring system abreast. Subsidence is a soil collapsing phenomenon followed by a subsequent level decrease caused by a reduction of underground layers' thickness. Generally, both extraction and re-injection of fluids from subsoil could induce variation on the micro-seismicity of the area, thus increasing low intensity seismic phenomena. In this context, is appears highly worrying that neither an institutional emergency plan nor an evacuation plan have been created.

Health impacts

In 2009, the Mario Negri Sud Consortium and the Pharmacological and Biomedical research Centre of Chieti realised a research called “Updating the environmental study on the realization of the ENI Oils Centre of Miglianico near the Feudo di Ortona (Chieti)”. The document presents the 5th Regional rapport, dated 2000, on Occupational and environmental Epidemiology, which included

some interesting data on respiratory pathologies' incidence nearby the ENI's Oils Centre. Analyses were done in the COVA areas' of Viggiano - composed of 4 municipalities for a total amount of 11,186 inhabitants – by an epidemiological research grounded on 1996-1998 hospital discharging document. According to the survey, during the selected period, recoveries due to respiratory's infections amounted to 44.4 every 10,000 inhabitants, compared with a regional average of 19.3. Same trend for asthma: 10.4 recoveries every 10,000 inhabitants, compared with a regional average of 5.5. According to the research, in areas considered as exposed to high risk, heart-lung hospitalization rate is generally higher than regional average. Particularly, in the area nearby the Oils Centre, asthma, ischemic heart disease and impairment episodes are more frequent than in other areas of Basilicata (Bolognetti, 2010). The research unit has recommended to the Epidemiological Regional Observatory to go on with further investigations.

According to the Regional Health Department of Potenza, Basilicata's percentage of people who have cancer is higher than the national average for 0-54 years old female and 15-59 years old male. But there is a lack of a real epidemiological mapping of sentitives areas as the Agri Valley and Val Basento, Tito. Since 2010, the Health Impact Evaluation (VIS) Commissionof Viggiano works in the Municipal Council with the aim of measuring extractions' impacts on population's health. In February 2013, local institutions presented a VIS project for both Viggiano and Grumento municipalities. The project focuses on the identification of environmental pollution and the contingent relation with citizens' health conditions and on the endorsement of agreements for strengthening environmental and public health protection in the area. It is grounded on stakeholders' participation and consultation (Mele, 2013). As specific datas and epidemiological are inconsistent and there is no epidemiological map of polluting activities' impacts, there is the need to develop specific epidemiological and monitoring tools and to sustain them by constant primary prevention.

Socio-economical impacts

From the economic point of view, land exploitation does not deliver the promised benefits to local communities. The promises of employment and development have been disregarded and extractions caused damage to tourism and agriculture sector. The payment of substantial royalties to the region and the municipalities has missed the goal to support a sustainable local development. The initial investment made by ENI - € 1,600 million euro - have now reached € 2.7 billion - to which royalties must be added - would suggests that the Agri Valley is the protagonist of a strong process of economic development. Previous ENI industrial development plans in Italy, such as in Sicily, Gela, in Taranto, Porto Marghera etc. do not show encouraging elements for the future of the Agri Valley. Industrial investments in the area are growing GDP and exports but do not improve, if not poorly, employment and quality of life. At a distance of twenty years, the investments' objective settled with the agreement of exploitation - vocational training, retraining corporate support for entrepreneurship - could be declared a failure. Most of the workers employed in the various phases of mining consists of technicians from outside the area. In 2013, the number of people employed directly and indirectly by ENI in the Agri Valley, has reached a total of 2,881 units,

of which 348 direct employees and 2,533 indirect employees. Overall, employed resident in Val d'Agri are 701 (ENI in Basilicata, 2013).

Depopulation continues at a rate of about 1,000 people a year, no exception made for the area affected by mining, proof that the oil has not brought the expected wealth. In addition, the settlement of mining activities has caused the economic devaluation of land and agro-pastoral farms. The municipalities affected by extraction have prepared an Operational Programme for the Development of Economic Productivity of the area of Agri Valley as a tool designed to support the development of economic and industrial activities of the area defined by the LR n. 40/95 - 30 municipalities, 19 of them included in the Combined Territorial Plan (PIT). Some economic opportunities that could be developed include: increasing demand for rural tourism since the establishment of the Agri Valley-Lagonegro National Park, the development of niche markets related to the enhancement of local products and organic farming, the development and enhancement of an integrated tourism winter sports, the recovery of traditional professions and techniques, the development of the agriculture and forestry potential. Oil activities, unfortunately, are a potential risk to the development of many of these activities.

4.4 Local communities' reaction

Social subjectivities and environmental, occupational, health, and participarional issues

Soon after the first years of the drilling boom and related wealth expectations, citizens and social organisations starts questioning the oil activity. However, the level of mobilization was not high, especially considering the ongoing employment disruption and the negative effects due to mining activities on the territory. Among the main critical elements denounced by organizations, committees and citizens:

- The lack of information and consultation mechanisms related to oil extraction for citizenship and local authorities;
- The absence of a safeguard of the local economy based on tourism and agro-pastoral activities as a consequence of mining activity;
- The systematic lack of control on water, air and soil quality and on population health,
- The absence of a fixed system of units and stringent emission limits;
- The lack of mining's strict provisions for protected areas to preserve wilderness or particular landscape value, for residential areas nor rivers or lakes;

- Lack of epidemiological studies.

In July 1996 the first major demonstration was organised by local decision makers worried about the lack of employment opportunities brought by ENI. Several days of sit-in took place in front of Viggiano's COVA. In 2000, a coordination of associations, trade unions and committees organised a demonstration to draw attention to the extent of the environmental risks associated with oil activities and report the failed perimeter of the park. Also in 2000, WWF Italy and Camastra Association, denounced at the European Court of Human Rights the lack of involvement of local authorities in decision-making and the presence of mining in protected areas. In the following years there has been various demonstrations, sit-in and marches against oil activities, for the economic development of the territory and for the protection of the environment.

2014 was a year of new and strong mobilizations in Val d'Agri and in the entire Basilicata, following the decisions of the Law Decree "Sblocca Italia" concerning the country's extractive future and in particular of Basilicata, the region that produces more crude oil. Different forms of protest were put in action during autumn 2014: demonstrations in Basilicata's main cities, preparation of documents and initiatives on the field, joint mobilization weeks with the participation of students, environmental associations with the participation of students, environmental associations and civil society organizations, local management and participation to national demonstrations in Rome with committees and other regions against the "Sblocca Italia". The mobilisation saw the participation of several civil society organizations, local associations for the defence of the territory and national NGOs.

OLA, the environmentalist organization of Lucania, was founded in 2006 by several associations that active in the area. OLA daily monitors and acts towards local environmental threats. It produces data and reports, information initiatives, institutional dialogue, complaints and mobilisations. After, the agreement on the Memorandum in 2011, OLA launched the so-called "sMemorandum" a joint document to request for a moratorium on oil and gas assets in Basilicata and the protection of citizens and workers. The memorandum provides a set of guidelines to be submitted to local administrators. National organisations such as Legambiente and WWF have also followed over the years the mining activities in the area publishing articles and dossiers on various environmental aspects of hydrocarbon extraction (OLA, 2011).

Although several independent organisations are doing a great information job, as mentioned earlier, social conflict in the territory concerned extraction has never reached such level so to start a stable process of constant social mobilisation. However, some experiences need to be highlighted. The Committee No Oil Lucania is active in different parts of the region in controlling mining activities and in denouncing the lack of controls and the impact on the territory and the population. Over the years, the Committee has organized numerous mobilisations, marches and sit-in. Among their requests and proposals exposed:

- Immediate moratorium on mining in progress until the effective entry into operation of environmental monitoring systems;

- Suspension of the technical activities of Viggiano COVA to allow third-party entities all needed technical inspections to reassure the population about the harmlessness of the system;

- Verification of the existence and dissemination of the safety and evacuation plans in case of serious accidents;

- In-depth investigation and research regarding oil activities' impacts on people's health, the environment and local economies:

- Immediate cancellation of all permits and instances for further exploration and production of hydrocarbons in the Basilicata Region;

- Adoption of legislative measures to preserve permanently the territory from hydrocarbon extraction;

- Increase royalties from 7% set by d.l n. 625/96, to at least 25% through a system of participative and public certification of the extracted oil.

Moreover, the Association Laboratorio per Viggiano animates public administration discussion. They presented several motions, agenda and proposed resolutions with particular attention to the environmental and health impacts of the activities. Other committees active in the area are the inter-municipal Committee of the Grassano/Tricarico, the Lucana Network - “Cittadini attivi Bernalda”, SOS costa ionica (Ionian Coast), Committee for the Right to Health of Lavello, Committee for the protection of Pertusillo, and Committee pro Environment Senise. Born in 2011 as a free association of mothers and women living mainly around the Viggiano’s Oils centre, the association Onda Rosa organises assemblies, meetings and demonstrations to raise awareness about the health risks, especially for children. Onda Rosa wants also stimulate institution to draw attention on the impact of mining activities. In 2012, in the wake of spanish indignados movement, was born in Viggiano Town Hall a permanent sit-it held by a committee of unemployed people. The committee sit in in front of the town hall for a few weeks, asking measures for employment to respond to local inhabitants' needs. In general the threshold of concern about the future of oil activity and its impacts remains high between citizens and the various committees active in the area.

On September 19th 2014, in Villa d’Agri, some of the main associations locally active for the defence of territory – OLA, WWF, Laboratorio per Viggiano, Libera Basilicata and l’Onda Rossa – organized a round table “Oil in Val d’Agri – Information speaks: what’s boiling in Agri Valley’s pot?” with the aim of stimulating local communities and entities, over Val d’Agri exploitation systems. The event, in

which took part citizens, committees, movements, institutions and civil society delegations, has paved the way to “Sblocca Italia” challenging initiative through which majors and local authorities are asking to Basilicata’s president, Marcello Pittella, to contest “Sblocca Italia” Law Decree in front of the Constitutional Court. In December 2014, the initiative counts on the participation of 64 Municipalities.

Besides, the following propositions for land development emerged from the round table (OLA, 2014):

- Suspension of all authorisation procedures for new hydrocarbon wells and of new instances for research permits in Basilicata and of COVA’s further enlargement, with a crude oil manufacturing limit of 85.000 barrels per day;

- Royalties redistribution, not according to the wells, but to the quantified damage through monitoring system, using them exclusively for the land development and the future of young generations;

- Land zoning, based on a serious environmental and sanitary monitoring in order to determine the areas where it is not allowed to live, breed, farm, even in order to refund who has lived in these areas so far, and promoting the entire region and Val d’Agri remaining territory in order to reinforce sustainable agriculture and tourism;

- Access to information concerning oil wells engineering plans, in order to exercise technical and environmental controls;

- Constitution of a regional fund aimed at the decontamination and the recovery of polluted areas, following extractive activities with the restoration of the original state of places affected by plants and pipes;

- Independent and retrospective epidemiological study in all the Municipalities of oil industry area, even if without wells (zero point for new mineral and industrial activity areas);

- Survey methodologies, transparency and promulgation of the Environmental Observatory's data on the Agri Valley and other oilfields in the Region.

4.5 Conclusions and recommendations

Concretely, all claims arose from local communities' organisations and committees are ascribable to one request: the increase of civil society and local administrations' role in decision making process concerning both territory's and citizens' conditions. A good example are people mobilisations and local authorities protests developed following the approbation of “Sblocca Italia” Law Decree and particularly of article 38, aimed at excluding local administrations from management decisions and land utilization. Participatory round tables and other engagement's mechanisms in the local development planning process would be suitable instruments to prevent environmental conflicts.

Another concerning issue is the absence of an environmental and epidemiological monitoring system that could be implemented through:

- The creation of a stable, constant and qualitative monitoring network administrated by independent and competent bodies;
- The scientific evaluation and validation of data;
- The use of collected data for multicriteria impacts' analyses;
- A widespread availability and accessibility of monitoring;
- The supervision of surveys, researches and studies.

There is an urgent need for local epidemiological studies on cancer, heart and respiratory diseases in order to evaluate the connection between their increase and oil extraction's environmental impacts. For what concern protected environmental heritage, there is an urgent need for efficient supervision's bodies. Those entities would prevent the development of oil extraction's facilities in protected areas. Another urgent intervention is the creation and diffusion of a emergency plan in case of natural disaster. This need come from the already high risky nature of the area - due to seismic activities - now increased by the proximity of oil facilities with residential areas, hydric basins and protected ecosystems. People should be informed and simulation of evacuation should be organized. Finally, as the extractive pole is located exactly in the centre of Agri Valley, local, regional and national public administration should guarantee environmental restoration of the area once oil extraction activities over. These kind of provisions should be included in concessions' agreements, thus protecting the territory from additional impacts coming from industrial areas' abandonment.

5. The Taranto affair

Over the last years, the industrial activity in the province of Taranto, chief town of the Southern region of Apulia, was in the news for the pollution produced by the Ilva steel plant. Ilva is the European's largest steel plant, twice the size of the city itself. Ilva was known to be connected to Cementir, a cement plant which used the steel factory's waste to produce tonnes of cement, with serious consequences in terms of pollution and health and safety. However, in the city's industrial hub there are also other contributing factors to the environmental impacts. As if the overwhelming presence of the Military Navy in the area wasn't enough, whose presence has caused the failure of the traditional mussel farming activity, the local population has also been coexisting for decades with ENI's refinery and thermal power station.

In 1964 the Italian division of Shell built the refinery in Taranto in order to cover the oil necessities of Southern Italy, with the intention of adding another facility to complement the oilfields found throughout the Italian peninsula and the preexistent refineries of La Spezia and Rho (Eni, 2008). Shell owned the refinery until 1975, at which point ENI took over with the brand 'Italian Petroleum Industry' (IP), controlled by Agip Petroli and by SNAM. In 1987, the administration of IP refineries in Italy was transferred in its entirety to Agip Raffinazione, and in 1995 the latter was merged with Agip Plas, thus marking the complete transfer of all ENI refineries, including that of Taranto, to Agip Petroli. In 2001, the facilities connected with the thermal power station, operating within the refinery, were transferred to another branch of ENI, EniPower. In March 2007, the administration of the thermal power station became independent from the ENI refinery and the management of the two facilities became independent (Eni, 2008). In 2013, there was a partial scission of a branch of the company – the thermoelectric power plant of Taranto Refinery – in favour of Eni SpA (Eni, 2013d).

Since the late 1990s, the situation in Taranto had been presented as a

problematic issue to the Italian public opinion. It was considered necessary to intervene through industrial adjustment and environmental measures for a number of reasons: the levels of air contamination caused by polluting substances (dioxine, furan are benzopyrene notoriously amongst the most dangerous) and the related health issues, but also the presence of polluted sediments on the seabed and the related consequences on mussel farming in the Great Sea and the Small Sea (Martuzzi, Mitis, Biggeri, Terracini, Bertollini, 2002).

In 1998 law 426/1998, 'New interventions in environmental matters' was passed, regulating remediation efforts to be taken out in polluted sites. Article 1, comma 4 states Taranto as one of the remediation sites of national interest (Italian acronym: SIN), for the 'unsustainable levels of pollution of the area, the high level of damage against the ecology of the area, and the related health issues for the community'. In 2000, a decree issued by the Ministry of the Environment associated the activities of the Taranto industrial area to the municipalities of Taranto and Statte, with an overall population of 216,618 inhabitants according to the 2001 Census. The decree stated the presence in the area of a refinery, a steel foundry, a harbour and unauthorized landfills of urban solid waste coming from a number of different places (Ministero dell'Ambiente, Ministry of the Environment, 2000).

Shortly after the Ilva case caused an uproar in the news at the beginning of 2012, the Italian Government, the Apulia Regional administration, and the local administrations of the province and the municipality of Taranto agreed on a protocol named 'Agreement protocol for urgent interventions regarding the environmental remediation and redevelopment of Taranto', which included the allocation of € 336 million to a project of environmental remediation, and for the recovery and industrial redevelopment of the polluted area. Of this sum, €8 million were to be devolved to the assistance and recovery of the Tamburi area in Taranto, a district neighbouring the Ilva foundry. The protocol was approved shortly after the administration of Apulia region had passed a law regarding the containment of furan and dioxine emissions (Regione Puglia, 2008) and later of benzopyrene emissions (Regione Puglia, 2011).

One last interesting and yet inherently dramatic fact is that of the employment situation in Apulia: over the first half of 2009, one year from the beginning of the economic crisis, the employment rate in the region dropped by 4.4% to 1,240,000 employed people, compared to a 1.2% drop on a national level. On a local level, the province of Taranto registered a drop in employment of 8,8% (a high percentage when compared to other provinces in the region, the lowest being that of Lecce – 3,1%) (Ministero dell'Interno, 2009). The age group that was hit the hardest was people between 25 and 34 years old: from 2008 to 2012, employment in this age group went down from 61.2% to 58%. Within this age group, men were also hit harder than women, and since 2008 their employment rate has gone down by nearly 10% – from 82% to 72.7% (ISTAT, 2013). Further, in such a situation only the larger companies have enough financial resources and market power to be able to afford more or less substantial investment campaigns aiming to raise productivity in their facilities; more 'traditional' firms, weaker from both a financial

and technological side, seem doomed to fail, faced with the ongoing diminishment of consumerism (itself a consequence of the employment crisis) and with the increasingly attractive competition to be found abroad. In Taranto, ENI has 461 active employees, in an area where approximately 24,000 people have been laid off and are collecting some form of unemployment benefits and insurances. Furthermore, recently Ilva has laid off 6,400 of its own employees (Stefàno, 2012). It is easy to understand how the big companies in the area are advantaged over the members of the community who are caught in a kind of deadlock.

5.1 The refinery

The refinery has a balanced refining capacity of 120 thousand barrels per day and a conversion index of 72%. It can process a wide range of crude and other feedstock. It principally produces fuels for automotive use and residential heating purposes for the Southern Italian markets. Besides its primary distillation plants and relevant facilities, including two units for the desulphurisation of middle distillates, this refinery contains a two-stage thermal conversion plant (vis-breaking/thermal cracking) and a conversion plant for the conversion of high sulphur content residues into valuable products and catalytic cracking feedstocks (Eni, 2014n). In 2013 the facility processed a total of 2.87 mmtonnes (million tonnes) of oil, carried to Taranto from the Agri Valley fields in Basilicata through the Monte Alpi pipeline. According to the ENI website, 120 thousand barrels pass through the facility every day on their way to petrol pumps throughout Southern Italy (ENI, 2014n).

In 2007 ENI requested an Environmental Impact Assessment for the 'expansion of the production capacity from 6.5 mmtonnes to 11 mmtonnes' (Ministry of the Environment, 2011a). On the 23rd of June 2011 the Ministry of the Environment published on its website decree n° 565, in which the 'Technical Committee for the Environmental Impact Assessment (EIA) and the Strategic Environmental Assessment (SEA)' expressed on the 2nd of April 2009 its disapproval regarding the sustainability of expanding the capacity in the Taranto refinery. All the activities performed in the refinery were listed in the report, along with the reasons for which it was not possible for ENI to double its production. Two types of reasons were given: the first type referred to strictly technical issues, whilst the second was more connected to the negative impact such an expansion would have in terms of pollution and health and safety for the inhabitants (Ministry of the Environment, 2009).

The report claimed that the expansion of the refinery

> "would entail an increase of emissions from the refinery chimneys and of the amount of polluting substances affecting the territory. If the expansion were limited to purely technical modifications to the facility, there would be an inherent improvement in air quality, however along with the expansion of the refinery itself, so is the oil production

expected to increase, from 6,5 mmtonnes to 11 mmtonnes per year" (Ministry of the Environment, 2009).

In conclusion, the negative views expressed by the Technical Committee were also due to the partial reports provided by ENI on the amounts of polluting substances emitted and on the effects of these on the Sites of Community Importance in the area. Furthermore, no mention was made in the company's report on the levels of ozone in the atmosphere and on the effects such an expansion would have on these.

Notwithstanding, in 2008 'Tempa Rossa' project, presented in previous case study, was presented. The 'Tempa Rossa' project involves the extraction of unrefined oil from the center of the Basilicata region, in an area at an altitude of between 600 and 1000 metres, from 8 oil wells reaching down 4000 metres underground, 6 of which have already been built. The unrefined oil, once extracted, would be transported to Taranto, where it would undergo treatment and successively would be exported via the Mediterranean Sea. Production is expected to begin in 2016, and the project has received approval in March 2012 from the CIPE, the Inter-Ministerial Committee for Economic Planning, with a budget worth €1.6 billion coming from private investors, 300 millions of which going to Taranto (CIPE, 2012).

The project, which, according to the French multinational will concern both marine and terrestrial habitats, will have a daily production capacity of 50.000 barrels of petrol, 230.000 cubic metres of natural gas, 240 tonnes of LPG and 80 tonnes of sulphur. According to the Gazzetta del Mezzogiorno, the main newspaper for Puglia and Basilicata, the Taranto municipal and local administrations, as well as the Puglia regional administration and the Ministry of the Environment would have requested from ENI some form of environmental compensation, to make up for the pollution and for the negative environmental impacts that the city will undergo due to the project (Gazzetta del Mezzogiorno, 2012). "Tempa Rossa" project will see the construction of a number of new facilities in Taranto, including two new storage tanks which would store up to 180.000 cubic metres of unrefined oil, one new pre-cooling facility and two new vapor collection facilities, to be added to the preexisting structure. Furthermore, three new platforms will be added to the oil export terminal on the Great Sea, which would be able to host between 45 and 140 oil tankers (Palmiotti, 2012).

The announcement of Tempa Rossa project was published on the Gazzetta Ufficiale of Italian newspaper "la Repubblica" on March 29th, 2014 by Eni S.p.A., Refining&Marketing Division. It presented to the Ministry of Environment and for Protection of the Land and Sea, an instance for the launching of an EIA procedure for the adjustment of Taranto Refinery structures destined to stocking and movement of crude oil coming from Tempa Rossa oilfield in Basilicata (Ola, 2014b). On July 2017, a Conference of Services took place, participated by the Ministry of Environment and the Ministry Economic Development, as well as Region Puglia, which gave its authorization to the project despite the disagreement expressed by the Municipal Council on July 14th, only three days

before (Casula, 2014). The Municipality opposed the realization of Tempa Rossa project for environmental reasons, in particular for the emissions – especially for volatile compounds – that would be increased by 12% the already critical situation of Taranto (Palmiotti, 2014).

In autumn 2014, the national government played a key role in Tempa Rossa project. Indeed, in the maxi amendment to the stability pact approved by the senate there is a norm unlocking the construction of Taranto's logistic base and of Basilicata's oilfield. The government had inserted Tempa Rossa chapter in the maxi amendment foreseeing an extension of the single authorization for the project's downstream infrastructures. In this case, Taranto Refinery's works will be used for conveying through pipelines oil arriving from Basilicata, stocking it and load oil tankers (Palmiotti, 2014a).

With the amendment to the Stability Law the government aims to allow "the effective realization of projects for the creation of hydrocarbons oilfields". In practice, the "single authorization regime" under the Ministry of Economic Development competency is extended to "works and infrastructures necessary and vital for guaranteeing their exploitation" in order to give a "significant impetus" to employment. The amendment declares that, in order to "simplify the realisation of works for strategic energetic infrastructures", the unique authorisation will be valid for "works needed for hydrocarbon transportation, stocking and transfer into the refinery; auxiliary works; coastal terminals and for port infrastructures aimed at the exploitation of existing concessions, including those located outside the production cultivations perimeter (Palmiotti, 2014).

The appeal to the European Parliament

Since the 22nd of January 2012, 'Tempa Rossa' is under examination by the European Commission for breaching the Seveso Directive, for providing only a partial environmental impact assessment, for failing to consider the ripple effect entailed by the construction of the new tanks (with a capacity to stock up to 180.000 cubic metres of oil) in proximity to the current facilities, for the increase in fugitive emissions and for the related danger of new spills in the Great Sea due to the treatment and the transport of unrefined oil (La Repubblica Bari, 2012).

In march 2012 the organisation Legamjonici filed a complaint to the European Parliament because the refinery was subject to legislative decree n° 334/1999, a transposition of the Seveso Directive (96/82/CE) and the so-called Seveso II Directive (96/82/CE), the 'European norm for the prevention and the control of accidents related to determined hazardous substances' (Ministry of the Environment). The directive further speaks of specific imperatives that need to be followed by the managers of facilities where such substances are, or may be, present in higher quantities than those permitted by established norms (Ministry of the Environment). Taking into account the current legislation, the European Parliament has thus accepted to consider petition n° 1107/2011, forwarded by Legamjonici Committee spokesperson, Daniela Spera (Parlamento Europeo, 2012).

In particular, the Committee denounced “the violation of Seveso directive, the approximate environmental impact assessment, the absence of a study on the domino effect for the construction of two new tanks with a 180.000 m3 capacity next to the already existing plants, the increase of diffuse and fugitive emissions, the risk of oil spill into the Big Sea during crude oil manipulation and transportation” (La Repubblica Bari, 2012). Following the reception of the petition, the European Parliament has started an inquiry asking to the European Commission the authorization to forward an investigation over the issue. Legamjonici Committee, in association with Greenaction Transnational has asked to the European Parliamentary the withdrawing of the environmental compatibility decree, released by the Ministry of the Environment (La Repubblica Bari, 2012). Besides, in relation to the pollution of the Little Sea, Legamjonci Committee has also emphasized the violation of Directive 93/43/CE on environmental security and of 1881/2006 CE regulation, asking for the intervention of the European Commission Directorate-General for Health and Consumers (SANCO).

In February 2013, Swiss multinational ABB (Asea Brown Boveri), which produces technological equipment in the field of energy and automation, signed a contract worth approximately $40 million for the expansion of the ENI refinery terminal in Taranto. The Swiss multinational explained that ‘the contract is part of ENI’s project to improve the refinery’s infrastructure and to guarantee a reliable connection with the ‘Tempa Rossa’ oilfield’ (ABB, 2013). The news has concerned Legamjonici Committee: “The extension of the pier already existing in the Big Sea bay will be used for oil tankers docking which will supply of oil extracted in Tempa Rossa oilfield and that will be stocked in new Eni’s depositories” (La Gazzetta del Mezzogiorno, 2013). Besides, there is also concern over the increase in vessel traffic of Taranto’s Big Sea and over its effects on the local environment. To this end, the committee has accused local administrators for their “blindness” concerning “the local territory’s grave contamination risk” (La Gazzetta del Mezzogiorno, 2013). There are also word against the industrial sector, accused of upsetting “traditional economy in an already unsustainable situation of environmental degradation” (La Gazzetta del Mezzogiorno, 2013).

Also in February, a preliminary report was presented to the Taranto municipality regarding the obtainment of NOF (Nulla Osta di Fattibilità, preliminary feasibility authorisation) for the adjustment project regarding the ENI refinery facilities for the storage and the transport of unrefined oil from the “‘Tempa Rossa’” oilfield (Provincia di Taranto, 2013).

Emissions

In its declaration concerning the environment in 2007, Eni declared having implemented a system for the control of greenhouse gas emissions within the refinery. This system is based on data collected by an internal process, in accordance with Emission Trading norms, which, according to the European Community Directive 2003/87/CE on the exchange of GHGs, require that the managers of polluting structures monitor and record their GHG emissions appropriately from the 1st of January 2005 onwards (ENI, 2008).

The Ministry of the Environment had assigned to the Refining&Marketing department of Eni S.p.A., according to the Seveso Directive (Art.11, paragraph 1), a maximum of 1,045,297 tonnes of CO2 for the years 2005-2007. (ENI, 2008) In its report Eni declared having made the regular yearly controls on emissions through Det Norske Veritas (a Norwegian provider of verification and risk management) (DNV, 2012) in December 2007 and March 2008. According to the analyses, over the three years from 2005-2007 the amounts of CO2 emitted were of 1,094,580 tonnes/year in 2005, 1,028,806 in 2006 and 1,050,490 in 2007. According to a chart drawn up by the European Environment Agency (EEA) of the 622 most polluting factories of 2011, the ENI refinery came 544th. EEA report that the facilities produce every year 754 thousand tonnes of CO2, 495 thousand tonnes of nitrogen oxide, 1,620 thousand tonnes of sulphur oxide and 647 thousand tonnes of volatile organic compounds (EEA, 2011). However, the emissions of Pm10 and ammoniac are not quantified in the report, yet these are heavily polluting substances for the air in the Taranto gulf, along with the substances emitted by the nearby Ilva factory (which came in 52nd on the EEA chart) (EEA, 2011)

According to a study carried out by the WWF Taranto scientific committee (Baldacconi, R., 2012), the most dangerous chemical emitted by the refinery's desulphurization facilities would be hydrogen sulphide, also mentioned by ENI's environmental statement (ENI, 2008). The chemical would also be the origin of the distinctly pungent smell, widespread across the Apulian town. The study further lists some of the consequences of long-term exposure to the chemical, including neurological problems, chronic tiredness, faintness, depression, memory loss, migraines, learning difficulties, sight problems, blood circulation problems and loss of consciousness (Baldacconi, R., 2012). Furthermore, 'exposure to hydrogen sulphide may lead to genomic instability or to the development of adenomatous polyps often associated with colon cancer' (Baldacconi, R., 2012).

The strengthening of Eni's plants, that nowadays have 133 tanks, will contribute to the increase of industrial emissions in Taranto's air. According to Eni, emissions will experience a 11-12% increase. Such increase will inevitably increase the organic compounds that periodically force Taranto's citizens to stay at home in order not to breath the "smell of gas" that invades the city (Casula, 2014).

5.2 The thermal power station

Context and activity

The facility is located within the ENI refinery, approximately 5 km away from the town itself, in the Taranto Industrial Development Area, on road S.S.106 'Jonica', near Punta Rondinella, a small cape by the sea. Taranto Refinery's thermoelectric station was sold by Enipower to ENI S.p.A. on October 2013. The plant, provider of electricity and steam for the refinery, includes a turbo alternator, powered with

fuel from the refinery, three furnaces fuelled with fuel oil from the refinery and four steam turbines. The total capacity is of 410 thermal MW and 86 electric MW (EniPower, 2012). In 2007, EniPower S.p.A., owned entirely by ENI, requested that a new methane gas pipeline be constructed, arguing that switching from fuel oil to methane would diminish the station's environmental impact, as would the station's emissions in terms of nitrogen oxides (NOx) and sulphur oxides (SOx). The goal was to replace the existing thermal power station with a new combined cycle station within the refinery, with a capacity 3.5 times larger than that of the current facility.

In October 2007, SNAM Rete Gas S.p.A. (part of ENI's group) requested from the Environmental Department of Apulia regional Administration the permission to build the methane pipeline, to which the department responded by demanding that the project undergo an environmental impact assessment, in accordance with regional law n° L.R.11/2001, "Regulations concerning environmental impact assessment practices". In early May 2008, the Taranto Provincial administration redirected the assessment requested by SNAM to the Ministry of the Environment, as the concerned area for the assessment is classified as a site of national interest, and therefore under the ministry's jurisdiction (Regione Puglia, 2001). In October 2008, the Provincial administration declared that the project for the methane pipeline wouldn't be affected by the aforementioned environmental impact assessment, because it was considered a 'necessary part for the completion of the expansion project concerning the Hydrohicking unit of ENI S.p.A., Refining & Marketing department', a project which had already been qualified as viable by the Ministry of the Environment (Provincia di Taranto, 2009).

In August 2009, the Regional administration acknowledged the outcome of the environmental impact assessment, however, through resolution n°1540, it opposed the decision to carry out the project, arguing that the harmful consequences on health and safety and on the environment, including an increase in carbon monoxide emissions and a substantial rise of carbon dioxide emissions by 276%, would be 'directly related to the size of the new facility and to the company's intentions to augment exports by building a bigger station'. 72.7% of the produced energy would be sold, thus nullifying, according to the administration, the benefits of switching to a methane gas supply (Losappio, 2009). Michele Losappio, regional councillor for employment for Apulia and member of the regional administration, accused the Ministry of the Environment of having deliberately ignored the regional administration's viewpoint regarding the project. Stefania Prestigiacomo, spokesperson for the Ministry of the Environment, issued on the 14th of September 2009 the positive outcome of the EIA on the Taranto thermal power station, included in a list of 'strategic works necessary for the country's economic and environmental development' (Governo Italiano, 2009).

On the 1st of March 2010 the Taranto municipality approved ENI's project for the construction of the new methane pipeline as part of the project for the development of the new thermal power plant (Comune di Taranto, 2010). The project is divided in two parts: one part of the pipeline would connect with former EniPower facility in Taranto, and the other part would connect with the Taranto

refinery (Leone, G., 2010). The superintendent for the Ministry of Cultural Heritage and Activities also spoke up regarding the methane pipeline project, indicating the presence of archaeological artefacts in the area. The superintendent specifically emphasized the archaeological relevance of the site where the pipeline would be constructed, maintaining that a team of archaeologists be present throughout the digging phase of the project, and that all operations be immediately suspended if any archaeological artefacts were to be discovered (Ministero per i Beni e le Attività Culturali, 2010).

On the 26th of April 2010, the Ministry of the Environment approved through decree n°209 the project for the construction of the 240 MW cogeneration power plant. Despite the fact that this decree also related the opposing views expressed by the Apulia regional administration through decree n°1540 (Regione Puglia, 7th August 2009), the decree constituted in fact all the authorization necessary for the project to be initiated. In 2010 the regional administration appealed against decree n°209 and presented its case at the Lazio regional court, requesting that the decree be cancelled and that permission for the project be revoked. Ezio Stefàno, mayor for Taranto presented the same appeal to the Lazio regional court in the name of the Taranto municipality, demanding that both decree n°209 (the declaration of environmental compatibility) and another decree – released by the Ministry of the Environment on the 24th of May 2010 and authorizing the environmental integration of the project – be cancelled. In October 2011, the president for the Altamarea committee against pollution in Taranto wrote an open letter to the regional councilor Michele Pelillo and to Ezio Stefàno, enquiring 'how come the publically expressed view regarding the new EniPower station changed from dissent to approval' and accusing the institutions of neglecting the views of the public (De Marzo, 2011). Following these manifestations of dissent, EniPower released a statement saying that it had 'decided to abandon the project for the 240 MW power station, and that instead it would concentrate on developing the new project of "Adjustment of the Cogeneration power station" (EniPower, 2012) Eni S.p.A., current owner of the thermoelectric station is carrying forward the project for the adjustment of Taranto's cogeneration plant. The project plans the substitution of obsolete equipments, with a gas turboalternator, with heat recovery boller, running on natural gas (about 42 MWe) and a direct fire boiler (110 t/h stream) also running on natural gas and on a stream backpressure turbine (12 MWe). For the connection of the station with the National Electric Transmission Network, the realization of an 800 overheard power line is planned (150 kV) (Ministero dell'Ambiente e della Tutela del Territorio e del Mare, 2014a).

Legamjonici Committee has sent to the Ministry of Environment observations regarding the methane plant in the Taranto's Refinery whose production of carbon monoxide (CO) is 5 times higher than the current fuel oil plant. In Legamjonic observations, it is underlined that continued nitric oxide (NO) and CO emissions can have impacts over health in an area already strongly compromised and that Eni's study lacks a correct epidemiological evaluation over long term and short term health effects. Legamjonici has also highlighted that there was no appropriate accident analysis both for the new plant and for the entire refinery, also in consideration of the area's meteorological events (Legamjonici. 2014).

Emissions

According to Eni's sustainability assessment for the year 2011, the multinational company reported that 396,765 tonnes of CO2 were subject to emission trading norms, an increase compared to 2010 reported data. On the other hand, emissions of nitrogen oxide NOx and of sulfur dioxide SO2 had gone down, thanks to the fact that usage of fuel oil had been replaced with refined gas, the use of which was increased in 2011 by 10% (EniPower, 2011).

Epidemiological data

The Atlante della Sanità Italiana 2001 ('Italian Health Atlas 2001') was the first publication to summarize the epidemiological facts relevant to the residents of Taranto. The study took into account mortality statistics from 1996 to 1998, collected in Italian Local Health Services centres (ASL) across the country. According to Giorgio Leone, journalist for the local newspaper TarantOggi, "in the study appears a new criterion, that of 'avoidable deaths', which indicates the extent to which a lack of appropriate diagnosis, therapy or disease prevention has an impact on the difference between the potential life expectancy and the actual recorded life expectancy' (Leone, G., 2012). According to the study quoted by Leone, in the area surrounding the Taranto ASL the number of avoidable deaths appeared to be higher than the regional average, whilst compared to the national average the age difference between the potential and the actual life expectancy is greater in Taranto than elsewhere. Furthermore, the study recorded for both genders a higher incidence of cancer-related deaths and deaths by failure to the respiratory system compared to national figures.

The SENTIERI project began in 2007. SENTIERI, or the national epidemiological study of high-pollution risk areas, is a project financed by the Ministry of Health and organized by the main research body of the Italian National Health Service (ISS). The study analyses industrial areas and landfills where levels of environmental pollution and related health and safety risks are such that they have been qualified as National Interest Sites for ecological remediation (SIN) (SENTIERI, 2011). According to the outline, the study took into account 44 of the 57 sites listed in the "National remediation program". In each site, mortality levels from 1995 to 2002 have been considered according to different criteria. In late 2010 the research methods and the results of the conducted study were published, merging data from 63 different causes of death and of environmental pollution in the aforementioned high-risk sites (SENTIERI, 2011).

The epidemiological research carried out by the SENTIERI research group in the Taranto municipality showed high death rates caused by:

- all kinds of tumors (between 10% and 15% for both sexes); and more specifically:

- lung cancer (30%)

- pleural tumors
- acute respiratory system diseases (50% for men and 40% for women) associated with a 10% excess regarding deaths related to respiratory system failures
- digestive tract diseases (15% for men and 40% for women)
- blood circulation diseases (5%, especially recorded in male subjects). A high number of deaths related to cardiac ischemia was also recorded, in both male and female subjects (SENTIERI, 2011).

The study also showed an unusually high number of deaths due to pre-natal diseases, and evidence suggests that there is a connection between such figures and proximity to refineries or dedicated waste disposal areas.

In its conclusion to the paper, the SENTIERI research group argued that from 1995 onwards, 'the data concerning mortality for the residents of Taranto point to the conclusion that the area is an unhealthy living environment' and that the 'evolution over time and space of these data correspond to the spatial and chronological distribution of the productive and polluting activities which have characterized the area for several decades'. (SENTIERI, 2011)

In 2014, a new SENTIERI report, where it is reaffirmed that in Taranto's SIN "Mortality for all causes, including cancers, circulatory and digestive system diseases, is higher than the Region's standards. Specific causes showing excesses in both cases are: infectious diseases, liver and lung cancer, pleural mesothelioma, non-Hodgkin Lymphoma, and among non-cancer diseases, dementia, hypertensive illnesses and ischemic heart disease, as well as acute respiratory diseases and cirrhosis" (SENTIERI, 2014). Also of note, according to the same report, is the excess of infant mortality.

The Tumours Register Jonico Salentino, an institutional data collection for the Salento region was active between 1999 and 2001, albeit as an experimental institution. This was replaced by the Tumours Register Apulia, complemented by the local Tumours Register for the Province Taranto. In 2010 a research project began on the incidence of malignant tumours in the Taranto municipality until 2006 (Comba et al., 2012). Based on data recorded by the regional register, a comparison of the mortality statistics for five of the provinces of the region for the period between 2000 and 2004 showed that the number of deaths due to lung cancer, respiratory system diseases and other chronic illnesses as concerns men was higher in the Taranto area than both regional and national average figures (Martinelli et al., 2009). Specifically, the study indicates that for the city itself the incidence of such diseases was 28% higher for men and 33% for women, and in other areas in proximity to the industrial hub similar figures were recorded, ie. there was a higher incidence of about 26% for men and 32% for women of such illnesses. As for pleural tumours, the incidence was higher by about 350% for men

and 200% for women, and merely in the city of Taranto there was a higher rate of mortality due to pancreatic cancer, breast cancer and bladder cancer (Comba et al., 2012).

In late 2012, the Sistema Nazionale per la Protezione dell'Ambiente, a national institution for environmental protection, formed by ISPRA – a leading Italian institution in matters of research and protection for environmental matters – ARPA – the union of regional institutions for environmental protection – and APPA – the union of provincial institutions for environmental protection – published the eighth report on the 'Quality of the environment in urban settings'. This report took into account local cases for contention in environmental matters, and assessed the efficacy as well as the actual implementation of environmentally sustainable political measures in the context of strategic environmental planning measures. It focused on 51 provinces – all those with over 100,000 inhabitants in the chief town, from every region of Italy – and approached a number of themes, such as mobility, atmospheric quality, climate change, waste disposal, green spaces, biodiversity, tourism, water resources, sound pollution, electromagnetic radiation, etc…

In the chapter on atmospheric quality, amongst the various measurements for chemicals in the atmosphere are reported the atmospheric levels of PM10, PM2.5 (atmospheric particles having a diameter below 10 μm and 2.5 μm, respectively), benzene (C6H6) and nitrogen dioxide (NO2). Atmospheric release of these chemicals can have both human or natural causes, but evidence shows that any increase in their atmospheric levels is typically caused by human activities such as fuel combustion for transport purposes. There is a legal threshold for the emissions of these chemicals, due to the serious damage they can have on living beings. According to the study, in the area of Taranto the levels of particulates (PM10 and PM2.5), of benzene and of nitrogen dioxide are below the established threshold. However, levels of benzo(a)pyrene, a highly carcinogenic chemical which is toxic for humans in any quantity, are abnormally high in Taranto. Decree 155/2010 set the recommended limit for benzo(a)pyrene emissions to no higher than 1.0 ng/m3, yet according to data recorded by a monitoring unit in Taranto, the levels for 2010 were of 1.8 ng/m3 (Sistema Nazionale per la Protezione dell'Ambiente, 2012).

Similar data were recorded by the Apulian division of ARPA, which from June 2008 through to 2009 carried out a number of atmospheric tests on the wind in the Taranto area, recording atmospheric levels of PCDD (polychlorinated dibenzodioxins), PCDF (polychlorinated dibenzofurans), IPA (polycyclic aromatic hydrocarbons) and PCB (polychlorinated biphenyls), thanks to devices capable of recording levels of atmospheric chemical concentrations in different wind sectors and in different conditions of windiness (ARPA Puglia, 2010). To have a better understanding of the origins of these polluting substances, the table below shows atmospheric levels of IPA as recorded by ARPA in the Tamburi quarter, in Taranto:

Sources of IPA emissions	Kg/year	Proportion individual sources out of the sum total (%)
EDISON	0,0012	0,10
0,0004	0,03	ENIPOWER
0,1232	10,2	CEMENTIR
0,0243	2,01	ENI
0,0145	1,20	APPIA ENERGY
0,0193	1,60	AMIU
99,74	8,258	ILVA
99,74	8,258	ILVA
0,0151	1,25	SEA PORT
0,0295	2,44	TRAFFIC
0,0290	2,40	HEATING

Table 8

Atmospheric levels of polycyclic aromatic hydrocarbons

Source: ARPA Puglia, 2010

According to the online newspaper Inchiostro Verde, for thirteen days between the 13th and the 25th of May 2009, ARPA Puglia carried out a number of analyses with the AirMedor gas chromatograph, located on a mobile unit between the ENI pier and the IV Sporgente pier (Congedo, 2011a). 'For three days in a row – explains the article – high levels of concentration were recorded for almost all monitored malodorous chemicals, and during the peaks of concentration the wind was blowing mostly from North-West, which means that it is quite likely that the origin of these emissions was the ENI oil storage facility' (Congedo, 2011a). Two years later, the same online newspaper published a letter sent by Vanni Ninni to the Taranto prefecture in January 2013. Ninni, a spokesperson for the '1000xTaranto' committee, spoke thus about the updating of the external Emergency Plan - an external intervention on activities performed by companies and industries which may be potentially dangerous for the environment and the local population - in Taranto: 'Maximum levels of 13 ppb of hydrogen sulphide were recorded. To give an idea of what this means, the Federal Government of the United States recommended to set the threshold at 1 ppb.' (Inchiostro Verde, 2013).

Following complaints by inhabitants of Taranto regarding foul smells on the 17th of January 2012, the ARPA technicians examined the data recorded by the atmospheric quality monitoring devices, located in the urban area in proximity to the industrial hub. Results showed higher levels of polluting substances than normal, however these were still under the limits established by the current norms regarding atmospheric pollution (ARPA Puglia, 2013). The following day, ARPA technicians examined data recorded by the mobile monitoring unit regarding levels of hydrogen sulphide (H2S), a highly toxic chemical, into the atmosphere.

According to the data collected by the mobile unit, 'peak levels of hydrogen sulphide in the atmosphere were recorded on the 17th of January both in the morning (between 2 and 6 a.m.) and in the afternoon (between 5 and 8 p.m.), and levels of sulphur dioxide [SO2] peaked at 11 a.m.' (ARPA Puglia, 2013). Following these examinations, the technicians controlled the data recorded by the three units located near the Eni refinery concerning flammable waste substances emitted by the refinery chimneys, in order to control the data concerning these emissions and to determine 'the possible malfunctions of the facility which may have caused emissions of sulphur compounds into the atmosphere' (ARPA Puglia, 2013). According to the report published by the regional body, following the control of the units nearby the refinery, evidence suggests that on the 17th of January 2012:

- Unit Eni N°3 recorded peaks of H2S and SO2 at the same times and in similar quantities to those recorded by the ARPA mobile unit, located nearby.

- Unit Eni N°1 recorded peaks of H2S between 6 and 9 a.m.

- The refinery chimneys had disposed of approximately 9 tonnes of flammable waste, especially between 9 a.m. and 3 p.m. (ARPA Puglia, 2013).

Merging the data above with that concerning the atmospheric levels of chemicals in relation to the wind, the ARPA technicians identified the Eni refinery as the source of H2S and SO2 emissions. The conclusion to the report goes as follows:

> "The foul smells which were the object of complaint on behalf of Taranto citizens on the 17th of January 2012 were due to emissions of hydrogen sulphide (H2S) from the ENI refinery near Taranto (…) On the same day, in proximity to the Testa Hospital, a peak level of 350 µg/m3 of SO2, probably coming from the chimneys of the ENI refinery, was recorded, an amount higher than that established by decree 155/2010, (…) Such occurrences are in all likelihood related to the fact that some parts of the facility have been relaunched. This fact was notified by the refinery, however ENI failed to report any anomalous occurrences (ARPA Puglia, 2013).

According to a WWF Scientific Committee's study (Baldacconi, 2012,), the most dangerous chemical would be the hydrogen sulphide, produced in the refinery during the desulphuration process, also mentioned in the ENI environmental declaration (ENI, 2008). According to the WWF research, hydrogen sulphide inhalation causes neurological diseases, weariness, faintness, depression, memory loss, headache, learning disabilities, sight and flow blood's problems and miscarriages (Baldacconi, 2012). Even more, as we can read in the WWF report, hydrogen sulphide presence in the air – very high in the Taranto area – "can lead

to human genome's instability or mutation, typical of colon cancer's polyps" (Baldacconi, 2012).

On June 2013, ARPA Puglia General Direction transmits to the ISPRA research institute a copy of the Provincial Taranto Department Technical Report (DAP) produced after olfactory complaints received by the DAP on May 12th-13th 2013. In the report - signed the directors of both the Regional Air Centre Director and the Provincial Taranto Department – we read: "Even in this case, as happened before, the olfactory phenomena seems to be related to ENI refinery's substances transported by the wind up to the city" (ARPA Puglia, 2013).

5.4 Social conflict, work and territory

Workplace safety

In the Eni's refinery in Taranto, there were numerous work accidents due to the lack of safety plans, fire control or emergency plans, deficiency repeatedly denounced by local committees and authorities. In 2011, the Regional Technical Committee (CTR) rebuke several times ENI because of the irregularity of the external emergency plan, which is necessary to protect the public from possible problems caused by industrial explosions or toxic agents (Inchiostro Verde, 2011). At that time, the CTR also denounced the superficiality and lack of documentation relative to the external safety plan. The failure to comply with legislation date back to 2009, when the CTR sent reminders and invitations to adapt to the rules since the failure to meet that obligation according to the committee would be "a very serious fact because it puts at risk the very security of the citizens and workers of Taranto" (Inchiostro Verde, 2011). In March 2012, the European Parliament initiate an investigation following a complaint lodged by the local committee Legamjonici to the absence of a study on the effect dominoes for the construction of two new reservoirs capacity of 180,000 m3 next to existing plants and the risk of oil spill in the sea for the handling and transport of crude oil and the consequent possible violation of the Seveso Directive (Legamjonici, 2012) - legislation which plans to pay particular attention to the placement of new facilities to avoid feeding risk of accidents and possible subsequent domino effects (Spera, 2012). To understand how the system of Taranto is at risk, it is good to briefly reviews the too long list of incidents that occurred so far.

In May 2006, a spill of 30,000 cubic meters of diesel fuel occurs in an area located close to where the Gas Natural International SDG SA's Regasification project should have been built. In 2008, the project received a negative opinion from the environmental impact assessment Committee. In October 2007, following a puncture of an exchange tube of the desulphurisation system of the residues' hydro-conversion structure (hydro-cracking), the sulphuric acid poured outside the plant.

A few months later, in March 2008, an air compressor broke out during a maintenance service done by two workers of the firm "Tecnogal", from the city of

Brindisi. The two employees, responsible for the cutting of the compressor - disused for over a month - were injured in the face and lower limbs as a result of the explosion and gas leak. Again, in October of the same year, a fire blazes as a result of the dispersion of flammable substances in torch, an automatic safety procedure of the structure in case of power outage (Leone, 2012a). High flames and columns of dense black smoke spread all over the plant. The same mechanism developed as a result of a power outage in July 2009. The safety system make the structure go haywire and causes the leakage of black smoke from the torch (Leone, 2012a).

In 2012, during a May night, a spill of kerosene in gaseous state causes a fire in one of the collectors used for the transport of gas. The fire expands to the cooling systems. Despite extensive damage to the support structures, there has been no wounded. About a month later, again during the night, a minor explosion involved a oil pipeline (Leone, 2012). Also in this case, fortunately, there were no injuries.

In May 2010 the facilities of the working cycle of Eni's refinery in Taranto is placed under observation by the Regional Technical Committee. At the meeting are present: the Region, ARPA and Regional Directorate of the Fire Department's Command in order to ascertain the responsibility of the oil company about not only the risk of fire, but also and especially, the " risk of potentially dangerous air emissions" (Armenise, 2011). To the company is ascribe not only the lack of safety in the workplace, but also the inability to control emissions into the atmosphere that would certainly be caused by a blaze (Foschini, 2011). In July 2011, after about a year of broken promises, the Regional Technical Committee gives the company 3 months to come into compliance (Armenise, 2011). Following a number of complaints from local movements, in September a point of order is raised by the congress person Pierfelice Zazzera from the political party Italia dei Valori. During the interrogation the oil company is accused of lacking an External Emergency Plan and of failure in providing information to citizens about the risks linked to the plant. For these reasons, it is noted that as a result of non-fulfilment of the requirement the Committee had imposed to ENI "the activity in all areas of the plant is suspended until the full implementation of the prescription " (Atto Camera, 2011).

Two incidents occurred between September and October of 2012, thus re-putting in spotlight the security conditions inside the ENI's plant in this Ionian city. On September 10th, a pipe goes on fire because of a failure of a connection valve in the fuel passage line, thus causing burns to a worker. In that area a black cloud raise, and the ARPA technicians verify an increase in the value of benzene in sewer the fire zone (Diliberto, 2012). Exactly one month later, on October 10th, 2012, a fire due to a broken crude oil pipe causes burns to two workers hands and face from the contracting company Tps. It is the unitarian trade unions representation (RSU), at the time, to denounce the risk for employees, after two incidents with the same dynamics, in the same company and involving the same types of work. The RSU representatives ask the company to invert the logic of the maximum savings – considering it irreconcilable with security (*Confederazione Italiana Sindacato Lavoratori*, 2012). Meanwhile, on the same day, an

entrepreneur - owner of an ENI's subcontractor - and the site manager, are convicted to one year imprisonment. Both charged of failure to comply with safety measures and of manslaughter for the death on Vincenzo Mansi, an employee in the subcontractor firm, killed in 2010, on November 5th, (Taranto Buona Sera, 2012).

A few days after the accident, the Prefect of Taranto Sammartino gives notice of the procedure for updating the External Emergency Plan of the ENI refinery on the basis of the safety report of the Puglia region Technical Committee. Until that time, ENI had shared the plan with Ilva (La Repubblica Bari, 2012a). The new plan was presented by the Prefect on December 11th, 2012 and then published Prefecture and the Municipality of Taranto's website for a 30 days period in order to allow citizen to consult it (Ministero dell'Interno, 2012). At the same time, some training courses involving schools and associations started.

Despite timid measures taken in 2012, the accident list carries on. On April 25th 2014, two workers of Eni's contract company were injured in a fire stared in Taranto's ENI Refinery. The most seriously injured of the two reported first and second degree burns to both his hands and his face. The fire accident was accompanied by a black cloud that has enveloped Taranto's industrial zone sky and has alarmed for the umpteenth time Taranto's citizens over the refinery's pollution (La Gazzetta del Mezzogiorno, 2014).

Social Conflict

The reality of the industrial area of Taranto has generated and continues to generate great conflicts among the resident population. Citizens organise themselves against environmental devastation because politics is often absent or deaf and the media tend to follow big corporations' logic. Several committees begun to denounce and take forward the struggle to defend the territory and the local economies, as well as for health protection and workplace's safety.

Focusing on the ENI's case in Taranto, it is possible to notice how citizens' information access is very arduous and precarious. Only thanks to the meticulous work of denunciation, study and information collection done by several committees, the inhabitants of Taranto could have learned more about the choices made behind their back by ENI managers, the national government and the local authorities.

Among the various groups, the "Taranto Libera" Committee, which on March 2011 became "Legamjonici" to continue the protection of environment and health's activities and extending its action to all citizens of Taranto province. In addition to Legamjonici, an ad hoc group - "Taranto LIDER" - Free Initiatives for Economic Diversification and Conversion - has been created with the aim of discussing on possible alternatives to heavy industry and about the growth of a new public opinion awareness (Legamjonici , 2011). On the web page of the "Taranto Libera" Committee, the principles of the two groups are clearly declared:

- Impossibility of the achievement of the eco-compatibility of the actual heavy industry, both through facilities modernization or through compliance with the limits of the law (environmental legislation uncertain and approximate) ;

- Application of the maximum precaution principle and of a primary prevention with the establishment of epidemiological maps, since health protection is not guaranteed by the simple control of pollutants;

- Indemnity for damages caused to the health of the population and material damage to the neighbourhood Tamburi ;

- Overcoming the current industrial scenario by planning economic alternatives taking into account the diversified real vocations of the territory;

- Closure of the pollutants districts of the industrial area and conversion with remediation of contaminated areas;

- Critical position and debate with both the political class and the institutions responsible for the protection of public health;

- Waste management without landfills and incinerators;

- Refusal of nuclear power energy production and promotion of clean energy production that uses renewable resources in a rational way (Legamjonici, 2011).

The Committee repeatedly brought the attention of the public opinion and that of the Taranto's citizens on critical issues in relation to ENI's production expansion in the city. In particular, long before the negative opinion of the environmental impacts assessment committee on the request of doubling the refinery production advanced by ENI was made public, the Committee was informing the population about what was going on through press conferences and public activism (Bonucci, 2013). In June 2010, the Taranto Libera Committee discovers the relationship between the authorisation granted by the City of Taranto to SNAM Rete Gas - for a pipeline construction to transport natural gas at the Eni's refinery - and the building of a ramification of that same pipeline, used to fuel a larger power plant (Coordinamento Comitato Cittadino Taranto Libera, 2010a) .

About the new project, ENI argued that the transition from a fuel oil central to a gas-fired plant would have significantly reduced emissions (ENI, 2009). In June 2010, the Taranto Libera Committee denounced that in fact this decrease would

have been very low. In their blog, members of the Committee describe the project enlargement by saying:

> "To the planned 240 MW must be added also the maintenance of a 39 MW plant in operation today powered with fuel gas and other 8.3 MW turbine. The plant of 85 MW, in part working with fuel oil and in part with gas, would become a 288 MW plant integrally gas powered. The negative consequences for health and territory are identified in an increase of emissions of carbon monoxide (from 87 ton / year to 456 tons / year), of CO and a tremendous increase in CO2 of 276% (Coordinamento Comitato Cittadino Taranto Libera, 2010).

It is important to note that, just as the committee denounced the criticality of the projects proposed by Eni in Taranto, the general secretaries of various Trade Union at that time, CGIL - Luigi D' Isabella -, CISL - Daniela Fumarola - and UIL - Gianfranco Turi - wrote to the mayor Stefàno highlighting how was essential for the area of Taranto to " finalize the substantial planning fielded by ENI, Enipower and Cementir, which provide, among other things, the necessary measures for the facilities technological upgrading" therefore "an immediate meeting also in order to evaluate the findings at the recent services conference on the conversion of the power within the ENI refinery" would be appropriate (Cifarella, 2011).

Following the negative opinion expressed by the Ministry, the proposed extension of the central , doubling the refinery and the power plant is replaced by a more modest" adaptation of the cogeneration plant ."

5.5 Conclusions and recommendations

Taranto has been oppressed by years of industrial activities which had and still have serious impacts over the environment and people's health.

Taranto's SIN resolution for the decontamination of the area – a territory polluted both by ILVA and ENI's refinery, by electric plants, by Cementir, by sewage systems, by the military bases and other companies – is very late. The 2011 and 2012 Services Conferences reiterate the urgency of "irrevocable and compelling" adjustment works, particularly needed considering the strong and unjustified delays. Other delays are accumulated in regards with the decontamination of areas interested by accidents and fuel oil and hydrocarbon leaks observed over the last ten years. Time passes, pollutants are still there and there is a concrete aggravation risk (Caforio, 2014).

The 2014 SENTIERI report, reiterates the complexity of Taranto's situation, giving a series of recommendations to follow simultaneously with clean-ups, such as a better characterization of environmental systems and of food produced and consumed in loco; the construction of an information system on health emergency

finalized to an epidemiological study on short-term effects using exposition data collected by ARPA's monitoring network for air quality (SENTIERI, 2014).

A further critical issue is the scarce diffusion of information and data over the pollution and the situation on the territory. This information shortage by institutions and companies operating in the area was criticized by Legamjonici and other local committees operating on the field at the forefront in analysing the situation – the diffusion of information concerning the status of the project, the environmental and sanitary situation, and signalling to institutions the anomalies of the project and of its impacts over the territory. Also 2014 SENTIERI report underlined the importance of spreading information and that "results of investigations over SIN's resident health conditions and preventive interventions must be object of objective and transparent communication processes in order to establish a climate of faith among citizens and institutions" (SENTIERI, 2014).

2014 was a turbulent year for Taranto's area, with the implementation of new measures for the effective realization of Tempa Rossa project and the consequent clash over project authorisation between committees and local institutions on the one hand, and national government and companies on the other hand. Recent governmental decisions favourable to the implementation of the project are in line with national plans for the increase in fossil fuels extractions. As a matter of fact, Taranto's project is directly related to new hydrocarbons extractions in Basilicata oilfields. A major participation of local administrations and the creation of real mechanisms for communities involvement in local development policies and decision making would be an effective tool for conflict prevention.

Conclusions

In this report we traced back Eni's history and its strategic and economic choices from its birth do this day. The four case studies analysed helped us to underline criticalities that characterise the Italian industrial giant, particularly in regards with the questionable transparency as well as sustainability of its actions on the field and those of its subsidiaries. From the historical review here presented, four conclusive considerations regarding politics, environment, economy and democracy emerge.

Eni was created in 1953 as a public company, under the leadership of Enrico Mattei and became an S.p.A. in 1992. After a privatization trance started in 1995, the State now own only about a third of the oil giant, whose dividends goes to the Ministry of Treasury – a consequent amount of money, obtained from hydrocarbons extraction manufacturing and distribution activities. The first issue that we intend to arise, concerns the tight bound between the company and the State and the great influence that the first had on Italy's choices over energy policies.

Italy is still focusing its energy policy on gas and oil resources rather than on the transition toward an energetic model based on decentralised renewable energies and energy efficiency, despite the Europe propose strategies for the development of renewable energies and tools to greenhouse emissions. Among the instruments we refer to, there is the climate-energy 20-20-20 strategy from the Directive 2009/29/CE that foresees a 20% reduction of greenhouse gases, and a 20% increase of renewable energies as well as a 20% energy saving by 2020. Another instrument is the climate energy package 2030 that aims at a 40% greenhouse gas reduction by 2030 as well as the passage from 20 to 27% of energy that should come from renewable energies.

In 2012, Italy has launched a SEN (Stategia Energetica Nazionale – National Energetic Strategy) mainly centred on the increase of fossil fuels, for opening new extraction frontiers, particularly offshore in the Adriatic and Ionic seas, and for the transformation of the Italian "Bel Paese" into a gas hub. Similarly, there are government measures, such as the 2014 Law Decree, Sblocca Italia, whose articles 36, 37, 38 are aimed at favouring oil companies activities though SEN's indications to constitutional reforms, starting from the revision of the Titolo V of the Italian Constitution, promoting a strong centralization of decisional powers and concessions over extractive activities managed by Ministries, thus inhibiting the power of local authorities, Regions first of all. Here emerge a political energy vision centred on gas and oil, that is the core business of the six-legged-dog, aimed at investing increasingly on extractions (where already active) and on the enlargement of extraction. A vision going the opposite direction of scientists'

reiterated alarms over the climatic crisis – in particular regarding the necessity to contain the increase of temperatures within 2 degrees – and contrasting the IPCC – intergovernmental Panel con Climate Change - position on the urgency of a substantial reduction of emissions altering the climate, mainly caused by fossil fuels. The nexus between Eni's activities and programs, national energy policies and the consequent defence of the economic interests of the Italian oil giant rather than those of the community are still a controversial issue with serious environmental and social impacts both nationally and globally.

A further national norm to be considered concerning the bound between Eni's activities and national environmental policies is Law Decree 145/2013 under the title "Piano Destinazione Italia" (Italy's Destination Plan) and in particular article 4 that underlines the controversial and long-standing environmental issue of the recovery of Sites of National Interest, among which many have been contaminated by Eni or its subsidiaries. Article 4 entitled "Measures in order to favour the realisation of Sites of National Interest's clean up", introduces the possibility for the Ministry of Environment and the Ministry of Economic Development, of stipulating program agreements with one or more owners of contaminated areas or other subjects interested to put into effect integrated projects of safety and land decontamination, as well as industrial reconversion and productive economic development in SINs. According to the plan, polluters receive public financings (for which there is a fixed limit) and are exonerated from "every other obligation of decontamination and environmental reparation" not present in the article. Besides, the article talks about the attribution of tax credits, that is to say tax detractions that favour companies operating in contaminated areas. Therefore, according to Law Decree Sblocca Italia, the responsibility of polluters is limited. It was article 2 of Law n.13/2009, as denounced by associations, environmentalists, committee and local administrators, that introduced an alternative extrajudicial resolution procedure for litigations concerning payout procedures for the decontamination and restoration of contaminated areas and compensations for environmental damages. According a 2011 Greenpeace report, the main "final user" of the tax amnesty would be Eni (Greenpeace, 2011).

Eni is present in 20 Sites of National Interest and in 80 Sites of Regional Interest. In order to face activities in those contaminated sites in 2003 has established Syndial, ex Enichem, that is active in 50 disused areas, of 17 SINs. Syndial, as previously examined, has been investigated for environmental pollution of Enichem plants and has pending disputes over decontaminations in the sites of Porto Torres, Priolo, Napoli Orientale, Brindisi, Pieve Vergonte, Cengio, Crotone, Mantova and Gela. In Gela's SIN area, the firm has recently proposed a project for the conversion of the plant into a green refinery. In this territory, as in other places for which remediation is required, Eni proposes to convert industrial sites into "green refineries" thus utilizing so called "renewable resources", centred over the exploitation of bio-fuels that require extensive cultivations – one of the main causes of land grabbing – in order to rule out decontamination obligations

imposed by the Italian law and while strengthening its image of sustainable and environmentally friendly company.

Another criticality emerging from the relationship between Eni and the areas where it is active and the low economic compensations paid for hydrocarbons related activities. In Italy, one of the main reason to invest in the oil sector is the low percentage of "environmental compensations" – royalties. These royalties the income that oil companies provide to States, Regions and Municipalities affected by oil extraction activities, in order to compensate for the exploitation of the territory and the impacts on the environment. Despite Italy ranks as the fourth oil producers in Europe, the royalties it pays at national level amount to 10% for onshore extractions and 7% for gas and 4% for oil offshore extractions, according to their selling values (Dommarco, 2012a). Eni, the main oil producer in Italy, pays derisory sums for extraction authorizations. Moreover, as displayed in Val d'Agri's case, Eni's extraction activities usually do not correspond to any real process of long-lasting local development aimed at the implementation of activities guaranteeing local people's well being both at present and after the extractions.

Finally, it is necessary to underline the lack of democratic participation and the inclusion of citizenship in local development choices often leading to conflicts with civil society and local communities. The importance of including citizens and local committees in choices concerning the well-being of local areas and of its inhabitants has strongly re-emerged over the last months in the context of the new Decree Sblocca Italia through a consequent wave of mobilization from both citizens and local authorities. Recent legislative activities implemented with Sblocca Italia, therefore, move toward State's centralization of power, decisions and authorization procedures for hydrocarbon exploration, development and production. A choice that goes in opposite trend compared to the claims emerging from environmental conflicts that underlines, on the contrary, the necessity of a major involvement for local communities in decision-making processes concerning resources utilization and the land management.

At local levels, there are many instances asking for protection of local territories, the institutionalization of real participation mechanisms and for the recognition of the role of both local communities and local authorities in matters concerning economic choices with socio-environmental impacts and for. The four cases here analysed helped us to demonstrate how Eni often fails to respect criteria related to environmental and social responsibility and how the failed inclusion of communities in choices concerning the land usually cause social conflicts that can erupt with different timing, intensity and forms of mobilization like in Porto Marghera, Val D'Agri, Gela and Taranto.

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