



# NO oil! Neither here nor in the Arctic

There is a solution to our energy  
dependency on fossil fuels

June 2014

**GREENPEACE**



# Content

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- 0 Introduction**
- 1 NO oil! Neither here, nor in the Arctic**
  - Dangers of prospecting in Spain
  - Dangers of prospecting in the Arctic
  - Why Greenpeace opposes oil prospecting
- 2 The solution to our dependency on fossil fuels: renewables and energy efficiency**
  - Greenpeace's requests
- 3 APPENDIX Oil investigation phases and their impacts on the sea**
  - References

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**NO oil! Neither here, nor in the Arctic** There is a solution to our energy dependency on fossil fuels





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# Introduction

The Ukrainian crisis has put the debate surrounding European energy dependency at the top of all the agendas and exposed two major problems in the European energy sector: the continuing heavy dependence on fossil fuels and the fact that 53% of energy consumption in Europe comes from beyond its borders, primarily from Russia.

The majority of responses being proposed by the European Commission and governments do not represent **any real change to the current situation**, which depends on hydrocarbon and uranium imports, but to merely change the gas supplier (from Russia to others) and/or to boost indigenous fuels (conventional and unconventional fossils, such as shale gas extracted by fracking).

Searching for more oil or gas **does not solve the problem of energy dependency**; instead, it exacerbates many other environmental problems. The present energy system based on fossil fuels is the main cause of global warming. According to experts at the United Nations, in order to avoid the worst impacts of climate change the rise in temperature needs to remain below 2°C. To achieve this, at least **two thirds of fossil fuels reserves that are underground should remain there and not be exploited**.

This also has a heavy local impact that affects not just the environment but also the economy: it can directly affect **fishing and tourism** in the regions where it is carried out.

This document looks first at the **state and impacts of the prospecting that Repsol and Cairn Energy** are carrying out in different parts of Spain. It is open season for oil in many parts of the world that remain free of any exploitation of this kind and these very companies **are also in the Arctic**, where Greenpeace is working hard to protect extraction of the misnamed “black gold”, among other activities.

This document also sets out the reasons why Greenpeace says no to oil prospecting and joins the **broad social rejection** that it is generating, as it has been demonstrated by the petition that has already gathered **more than five million signatures** calling for a sanctuary in the Arctic with a moratorium on prospecting and the widespread rejection of oil explorations in our country, by the public and local authorities, where Greenpeace **collected 50,000 signatures in just a few days**.

Finally, the report looks into how the current energy model depends on fossil fuels and the opportunity that exists to move ahead with real solutions to achieve ambitious European climate and energy targets by 2030.

A change of energy model through the use of renewables and energy efficiency is the solution. This is why Greenpeace says no to the search for more oil, neither in Spain nor in the Arctic, nor anywhere else.





# NO oil! Neither here, nor in the Arctic

## Dangers of prospecting in Spain

In the last few years there has been a renewed frenzy by the Spanish governments (the previous and current ones) in looking for hydrocarbons both in the ground (unconventional gas through fracking) as well as in deep waters along our coasts (the Canary and Balearic Islands, Gulf of Valencia, Alboran Sea, Catalonia, Cantabrian Sea). These are projects that are seeking to extract oil, from a depth of over 1,500 metres through oil platforms in open waters<sup>1</sup>.

The areas where the Ministry of Industry, Energy and Tourism wants to grant hydrocarbon exploration permits (the Canary and Balearic Islands, Gulf of Valencia, Alboran Sea and coast of Catalonia), have great ecological value, which has resulted in an unanimous rejection from the public. Civil society and some regional governments in the areas affected by these projects have shown their determined opposition to the prospecting, as it risks damaging the environmental richness of their waters, that have a high number of protected areas which are vital for the survival of many threatened species.

Another aspect that has been key to the total rejection of these oil projects is that they would also affect economic activity in these areas, given that a large part of this (**fishing and tourism**) depends directly on the natural environment being well preserved.

In our country, not all prospecting projects require the same level of administrative procedures. Permits in the waters off the Canary and Balearic Islands/Gulf of Valencia are those which are most ahead in administrative means.

Administrative authorisation by way of an **Environmental Impact Statement (EIS)** is required to drill for oil wells. This is granted by the **Ministry of Agriculture, Food and the Environment (MAGRAMA)**. If the developer obtains a positive EIS, it can immediately start prospecting (physical drilling in the case of the Canaries or seismic exploration for the Balearic Islands).

By the close of publication of this document, MAGRAMA had granted a positive EIS for the **Canary Islands**, meaning that the project being put forward by the multinational **Repsol already has authorisation to begin initial drilling** in the sea bed. This has set a precedent that could open the doors to other companies reactivating their requests to start prospecting in other Spanish waters, which could bring about unacceptable social, economic and environmental impacts for the affected areas.

Meanwhile, **in the Balearic Islands/Gulf of Valencia the company Cairn Energy** is trying to launch a geophysical campaign through seismic exploration and is awaiting an Environmental Impact Statement for the area.

## Prospecting at the Balearic Islands/Gulf of Valencia

On December 23rd 2010, the Spanish Council of Ministers approved two Royal Decrees<sup>2</sup> granting a licence to two subsidiaries of the Scottish oil company Cairn Energy (Capricorn Spain Limited and MEDOIL plc) to look for oil and gas in five areas in the Gulf of Valencia named Albufera, Benfayó and Gandía as well as Alta Mar 1 and 2. In January 2013, Capricorn Spain Limited made a request to abandon the licence to prospect for hydrocarbons in Albufera, which is closest to the coast.

The remaining licences that have been requested cover an area of 2,420 square kilometres between the coast of Valencia and the Balearic Islands (**just 28 km from Ibiza** and 25 km from the Columbretes Islands).

The fact that the coasts of the Levant and the Balearic Islands are some of the most important tourist destinations in the Mediterranean is no coincidence: their coastlines, high quality of their landscapes and environment are crucial for this.

**In the case of Ibiza and Formentera**, both islands have international images that have allowed them to develop a competitive tourism sector that accounts for almost all of their economic activity. With a population of 150,000 residents, both islands have almost 2.5 million tourists a year, tourism expenditure of 2.4 billion euros<sup>3</sup>, as well as an **employment rate above the Spanish average** in all the Balearic Islands<sup>4</sup> and per capita income that is above the European average<sup>5</sup>. Equally noteworthy are their fishing grounds, for their economic importance and the employment that they generate. One example of this is the waters around the Balearic Islands that have been proposed as a sanctuary for the bluefin tuna<sup>6</sup>.

Among the areas affected by this study are the **salt flats** in the Pitiusas Islands, a wetland of International Importance, a National Park, a Site of Community Importance and a Special Protection Area for Birds. Of note in the salt flats is the presence of the **largest living organism in the world (a specimen of *Posidonia oceanica* that is eight kilometres long)** and a feeding area for the loggerhead turtle (*Caretta caretta*). Also at risk are the **69 kilometres of Formentera's coastline** that have some form of protection. Clockwise from north to south there are six areas in Formentera that are part of the **Natura 2000 network** (a European ecological network to protect biodiversity).

**Albufera** in Valencia remains among the most affected areas by prospecting in the Spanish peninsula (despite Cairn Energy having abandoned this area), a protected natural area declared a Natural Park, a Special Protection Area for Birds (SPA), Site of Community Importance (SIC) included in the List of Wetlands of International Importance by the Ramsar Convention and other habitats and species protected by the EU Habitats Directive (92/43/CEE).

Other areas that would be at serious risk include the **migration corridor of cetaceans** off the coast of Catalonia, Valencia, the Balearic Islands and the Natural Reserve on the Columbretes Islands, where amongst others, there are fin whales and bottlenose dolphins, threatened species and of community interest according to the Habitats Directive and Biodiversity Law 42/2007.

Greenpeace has opposed the exploration of hydrocarbons in these areas **since 2007, when its ship Rainbow Warrior visited and documented the region** where the British multinational MEDOIL intended to carry out surveys to look for gas<sup>7</sup>. Since 2011, after having learned of the concession of new licences in the area, Greenpeace has actively worked against these, drawing up reports<sup>8, 9</sup>, holding press conferences in the Balearic Islands<sup>10</sup>, making claims and holding meetings with political leaders both from the Islands and the Ministry of Industry, Energy and Tourism.

**Figure 1 Map of oil prospecting projects in the Balearic Islands – Levant – Catalonia area.**





### Other prospecting plans in the rest of the Balearic Islands and Catalonia

As well as the Cairn Energy project in the Balearic Islands/ Gulf of Valencia (see figure 1), there are other projects underway in the rest of the Balearic archipelago and off the coast of Catalonia to be added to this oil fever. The status of the different projects is as follows:

- 1 Gulf of Valencia:** programme of hydrocarbon exploration granted to Cairn Energy in this gulf. Promoter Capricorn Spain Limited (subsidiary of Scottish oil company Cairn Energy). Location: to the northeast of Ibiza and Formentera. **Currently pending the Environmental Impact Statement** for acoustic surveys.
- 2 From Minorca to Ibiza and Formentera:** acoustic surveys project being promoted by Spectrum Geo Limited, "2D seismic campaign in free areas of the Balearic Sea in the northwest of the Mediterranean". Located in the north of Minorca and northeast of Majorca (in the first phase) and all of the south of the Balearic Islands archipelago (second phase). **Currently in the process of prior environmental consultations.**
- 3 Gulf of Leon:** Hydrocarbon exploration programme requested by Cairn Energy, "Seismic campaign in free areas of the Gulf of Leon, off the coasts of Catalonia and the Balearic Islands". Located to the north of Minorca and Majorca. **Currently awaiting adjudication to the oil company offering the best bid.**
- 4 Majorca and Minorca:** acoustic surveys project promoted by Seabird Exploration FZLCC. Located to the north of Majorca and Minorca (areas that overlap with those for which licences have been requested by Cairn Energy in the Gulf of Leon). **Cancelled because of an administrative error by the promoter on 28 January 2014, the promoter could reapply.**
- 5 Tarragona and Majorca:** Extension of the area where Repsol has already been granted hydrocarbon research permits and where it is exploiting oil from the Casablanca platform, "Seismic acquisition in the Casablanca area, off the Tarragona coast". Acoustic surveys project promoted by Repsol Investigaciones Petrolíferas S.A. (RIPSA). Located to the northeast of Majorca. **Currently awaiting the outcome of the Environmental Impact Statement.**

### Exploration in the Canary Islands

Oil exploration in waters around the Canaries began in 2001, when the Spanish government granted **Repsol** hydrocarbon research permits for the blocks Canarias-1 to Canarias-9.<sup>11</sup>

In 2004, a ruling by the Supreme Court (TS) overturned these permits for failing to meet the project's environmental requirements, accepting the action against the administration filed by, amongst others, the Island Council of Lanzarote. However, during the time between the government authorisation and the TS ruling, Repsol carried out a seismic campaign without having drawn up an Environmental Impact Study.

On March 16th 2012, the Spanish government approved a new Royal Decree<sup>12</sup> (547/2012) allowing Repsol to resume operations to drill on the Canary Islands' seabed. The process is currently subject to a new appeal before the Supreme Court, but with the administrative approval (EIS) having now been issued.

Oil exploration could have a catastrophic effect on the archipelago's main economic activity, tourism. The closest point in the area that Repsol could drill in is **9.7 km from the coast of Fuerteventura and 18 km from Lanzarote.**

**Seven foreign federations** of tourist operators and travel agencies (Germany, United Kingdom, Estonia, Finland, Norway, Sweden and Denmark) accounting for 80% of the almost 12 million tourists who come to the Canary Islands every year, **have warned the Spanish government in writing** that the prospecting could seriously affect the future of the tourist industry on the islands<sup>13</sup>.

Another factor to take into account is that the closest islands to the prospecting (Lanzarote and Fuerteventura) depend on good water quality for its **drinking water supply** (desalinated water).

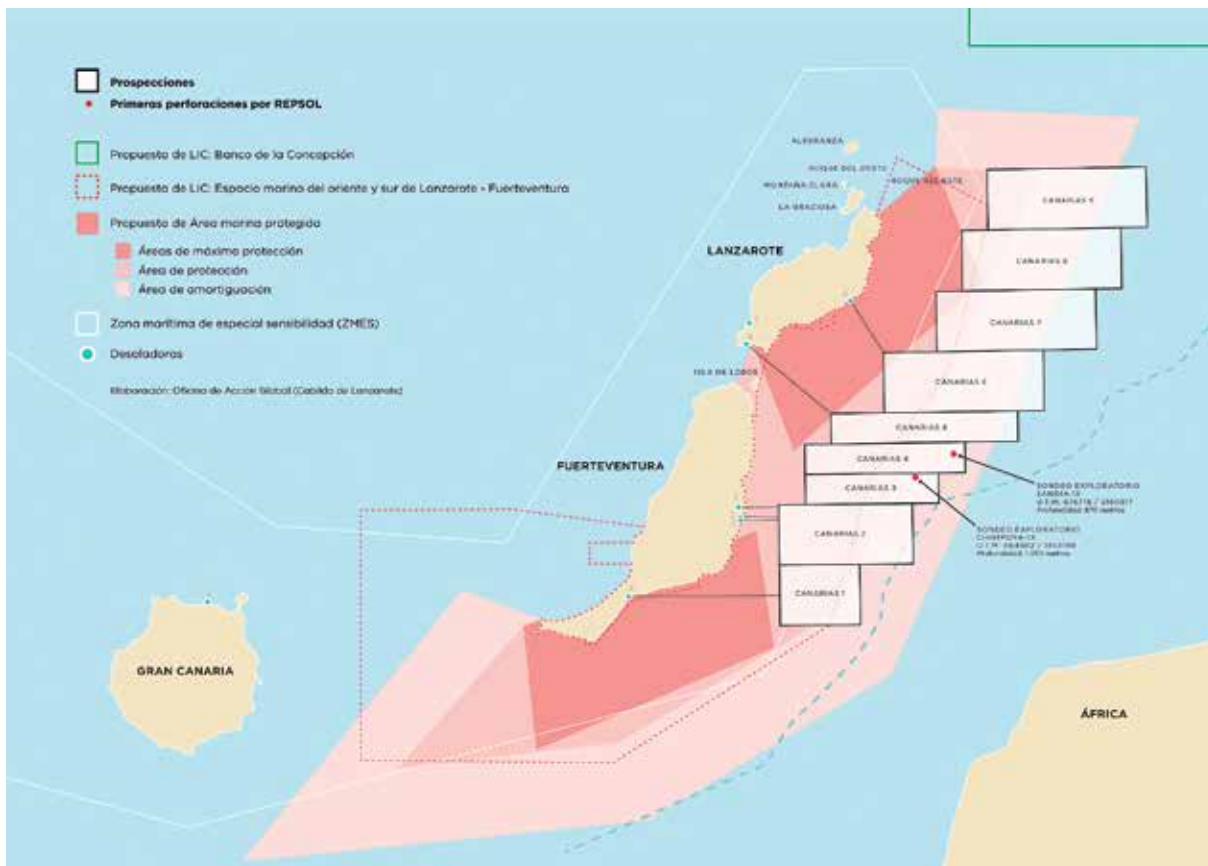
This has resulted in all the Canary Islands authorities, the business sector, fishing associations and civil society as a whole unanimously opposing Repsol's oil project.

The Canaries possess one of the most important natural environments in the world, with **over 19,000 species of fauna and flora, of which 5,000 are exclusive**; meaning that they only exist in the archipelago. Five of the seven islands are designated **Biosphere Reserves (UNESCO)** in their entirety and another for 50% of its territory. In addition, the Canary Islands have four National Parks, and over 47% of its territory is protected by UN, EU and Spanish agreements and laws.

One of five areas in the world to have deep-water outcrops is located close to the coasts of Lanzarote and Fuerteventura. This makes **the marine diversity and fishing richness in the area one of the most important in the world**. In addition, it is one of the places with the greatest concentration and number of species of Atlantic cetaceans (26 species some of which are declared endangered species). A decision is pending on MAGRAMA to declare an extended area off the islands of Lanzarote and Fuerteventura to be a marine SCI that would practically correspond to all of the prospecting area. This decision is being delayed due to pressures from the Ministry of Industry.

Greenpeace started to campaign against prospecting in the Canary Islands in 2012, when the government announced its willingness to re-authorise Repsol's operations in waters off the archipelago. To this end the organization has submitted reports<sup>14</sup>, allegations and claims to the European Commission<sup>15</sup> and held press conferences<sup>16</sup>. The organisation's boat Arctic Sunrise<sup>17</sup> (which continues to be detained in Russia for having campaigned against drilling in the Arctic) has visited the islands and meetings have been held with both the regional government of the Canary Islands<sup>18</sup> and the Ministry of Industry, Energy and Tourism. Following the announcement of the positive EIS, Greenpeace will try to stop the exploration through all possible legal means, appealing to all European and state courts<sup>19</sup>.

**Figure 2, Position for permits to drill for oil in the Canary Islands Courtesy of SaveCanarias.org**





### Prospecting in the Alboran Sea

Within the regulatory package authorised by the Council of Ministers on December 23rd 2010, there were permits granted to CNWL Oil Espana, a subsidiary of the Canadian company Sherrit International Corporation and to Shuepbach Energy/Vancast Exploration<sup>20</sup>. These authorised the named companies to search for oil or gas in **six areas off the coast of Andalusia** named Chinook – A, B, C and D, Tesorillo and Ruedalabola.

These new permits to explore for hydrocarbon potential off the Andalusian coast between Cádiz and Almería go in **addition to numerous other active gas wells**. They do also add up to other research projects looking for hydrocarbons. Of note amongst these are those of REPSOL Investigaciones Petrolíferas, S.A (Ripsa)/Gas Natural Exploración named Siroco A, B, C and located off the coast between Fuengirola and Motril. On June 22nd 2011 Ripsa/Gas Natural Exploración obtained the environmental permit from the Ministry of the Environment to carry out an exploratory survey, named Siroco-A, that will take place on the external continental platform of the Alboran Sea, approximately **9 kilometres to the south of the municipality of Mijas and 12 to the southeast of that of Fuengirola**, in Málaga province. It will reach a maximum depth of 1,600m, with a water depth of 165m.

**Sea areas affected** by drilling in the Alboran Sea include: Calahonda, a natural area protected by the EC Habitats Directive (92/43/CEE); the seabed in the Bay of Estepona, covering 90% of Posidonia oceanica meadows and a natural area protected by the previously named directive; the Maro Cerro-Gordo cliffs, a Special Protection Area for birds (SPA) and a natural area protected by the same directive; and the Alboran Sea natural site which is also protected by the same directive.

Other areas of interest at risk would be the one covering the **migration corridor of cetaceans such as the fin whale and tuna, e.g. the bluefin tuna**, that runs between the Strait of Gibraltar and through all of the Alboran Sea.

Drilling in the Alboran Sea has also been subject to Greenpeace campaigns and it has delivered a report<sup>21</sup> and documents<sup>22 23</sup> against this.

**Figure 3, Position for permits to drill for oil in the Alboran Sea**

FUENTE: Ministerio de Industria, Energía y Turismo

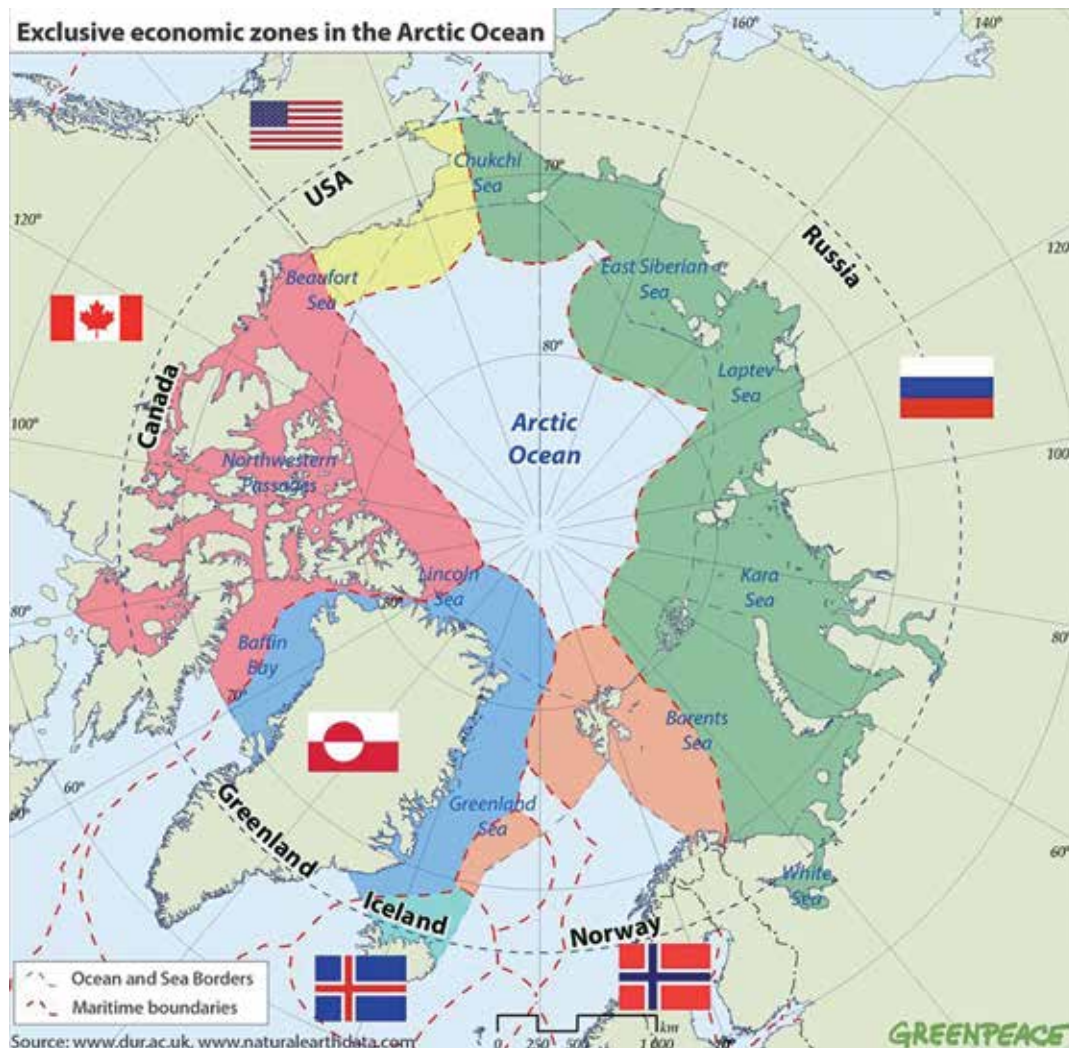


## Dangers of prospecting in the Arctic

It is open season for oil in many parts of the world, and also in the Arctic. The fever for the misnamed “black gold” is having a harmful effect on it like a real fever would on a patient. **The ice melting, increasingly quickly**, in the area as a consequence of climate change, enables boats to move into areas that were impassable until now during many months of the year. This means that oil companies<sup>1</sup>, the same ones that are causing climate change, can benefit from the catastrophic consequences that their operations have on the planet, specifically in the Arctic.

Greenpeace is carrying out a strong campaign to save the Arctic. It is the most important environmental battle at the moment, as the future of one of the few places where a natural balance exists is at risk and also because **what happens in the Arctic will inevitably determine the planet’s future**. Halting climate change and saving the Arctic is the greatest challenge that humankind has ever faced. Although for many others, the Arctic is **the greatest oil region in the world outside the Organisation of the Petroleum Exporting Countries (OPEC)**<sup>25</sup>. The geopolitical reality of the Arctic is complicated to manage, as many countries and companies view this ecosystem as an inexhaustible source of opportunities (see figure 4).

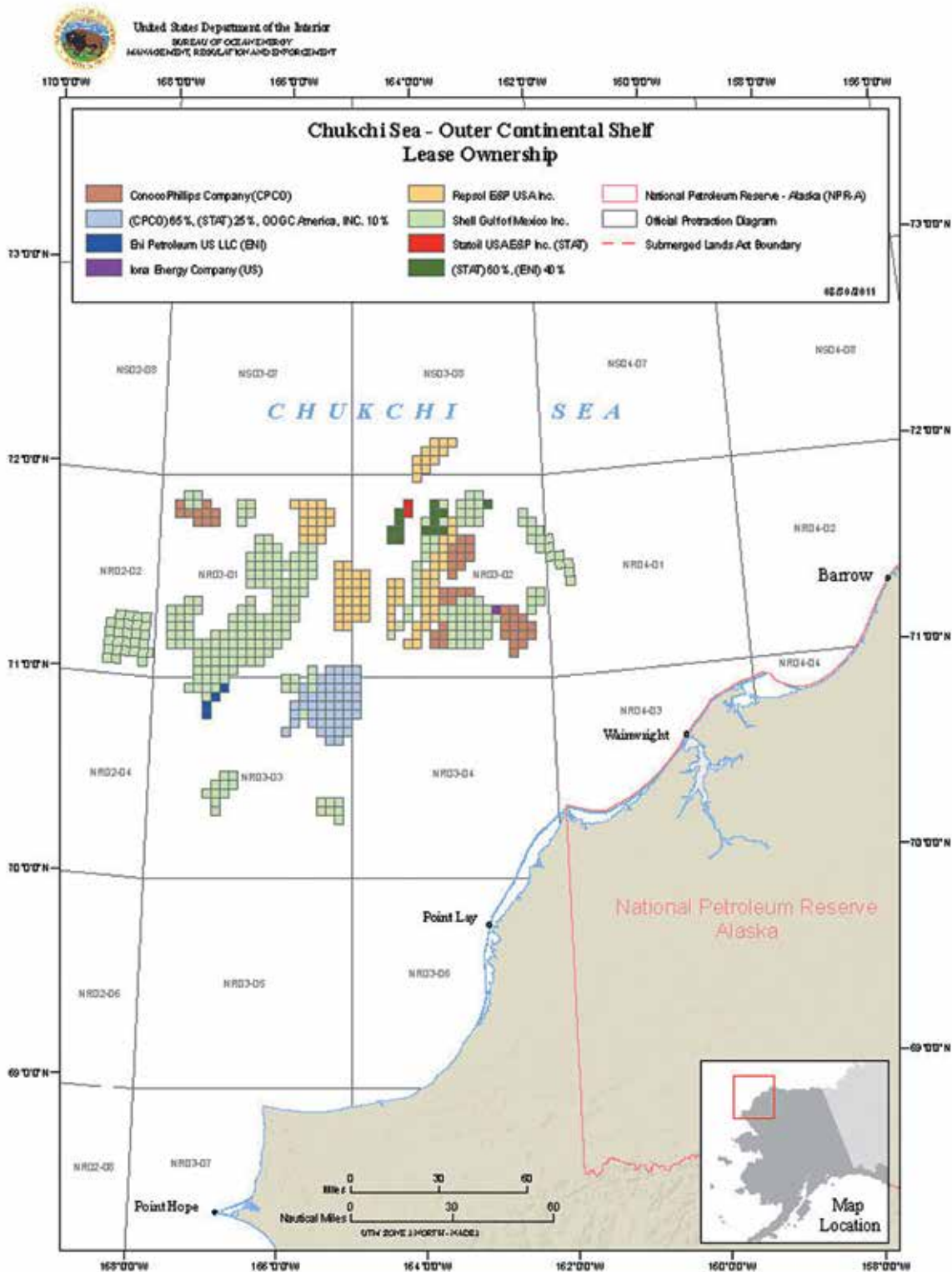
Figure 4. Country boundaries in the Arctic Economic Exclusive Zone Source: Greenpeace based on [www.dur.ac.uk](http://www.dur.ac.uk) and [www.dur.ac.uk](http://www.dur.ac.uk)







**Figure 6. Areas operated by Repsol in the Alaskan Arctic (US).** Source: United States Department of the Interior. Bureau of Oceanography. Source: United States Department of the Interior. Bureau of Oceanography.





### What roles do Repsol and Cairn Energy play in the Arctic?

*“From now on we want to be present in the whole Arctic adventure, where less than 10% of the territory is being explored”.* Fernando Martínez Fresneda, Repsol’s general manager for Russia.<sup>30</sup>

In 2006, Spain was admitted as an **observer country to the Arctic Council**, an intergovernmental political forum which makes decisions on the transnational management of the Arctic. As stated at the time, “this will facilitate the incorporation of our researchers to projects taking place in both polar regions of much interest at the moment for scientific research”. However, the Spanish interest goes without doubt beyond this: Marcos Gómez Martínez, the ambassador for Ocean and Polar Affairs, stated in 2012<sup>31</sup> that **the potential for sea transport in the Arctic is of interest** for Spain. He also expressed Spanish interests in fishing and in exploiting its natural resources, an area in which **Repsol** has already signed agreements with companies to operate in the region (see figure 6).

**Spain, as an observer country, has greater capacity to influence**, to increase transparency and equality in matters related to the Arctic region. Getting observer country status shows that Spain’s activities and opinions regarding the region have been recognised by all member countries. In fact, one of the few foreign players that has been able to penetrate the opaque Russian oil sector has been Repsol, which first started operating in that country in 2006.

**Cairn Energy**, is also one of those companies that is searching for oil in the Arctic and in Spanish waters. Although large oil companies such as Shell, Statoil, Chevron and Exxon Mobil are competing to destroy the Arctic, Cairn, at the moment, is the first oil prospecting company to operate in **Greenland**<sup>32</sup>.

The government of Greenland **has refused to publish any response plans to possible oil spills** by Cairn and the company itself has maintained an air of secrecy around this matter, allegedly to avoid any third-party sabotage. Added to this silence, is the apparent **reduced capacity to respond** to any possible oil spill in the region:

In 2010, this company had 14 ships in the region of this large island able to deal with any oil spill, a figure far from the deployment that BP needed in the response to its catastrophic oil spill in the Gulf of Mexico in 2010: British Petroleum required the use of over 6,300 boats and almost 50,000 people. This British multinational spent precisely 1.2 billion pounds in drilling test wells in waters off Greenland in 2010 and 2011 and it is looking to continue its programme in 2014<sup>33</sup> in the “Pitu” block to the northeast of Greenland together with the Norwegian Statoil<sup>34</sup>.

In 2011, **Greenpeace scaled Cairn Energy’s platform Leiv Eiriksson** in a non-violent action for five days in the Arctic to prevent it from operating. The company’s response was to try and silence the protest with a strong legal demand against Greenpeace International. Cairn Energy applied for protective measures against Greenpeace in a Dutch court and to fine it two million euros for each day’s disruption to work on each of the company’s drilling platforms in the Arctic. An Amsterdam court also issued a court order stating that the environmental organisation must stay away from Cairn’s installations in this polar region. If it does not abide by this it will seek to fine Greenpeace between 50,000 and one million euros for each “infringement”<sup>35</sup>.

However, **the judge recognised the public benefit of the Greenpeace protest** in revealing the danger of exploration in the Arctic and made special mention in the verdict of the fact that Cairn Energy refused to make public its contingency plans in the event of an oil spill. The race to extract the most inaccessible oil has begun and **Cairn is the same company to whom the Spanish government granted a licence** to explore for oil in deep waters between Valencia and Ibiza.

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## Why Greenpeace opposes oil prospecting

In most parts of the world, and particularly in Spain, new crude extractions are not the answer to solve the problem of foreign energy dependency, but quite the opposite: it is a step backwards in the search for alternatives to oil such as renewables and energy efficiency.

Not only does prospecting **not solve the problem of energy dependency**, it also exacerbates other environmental problems, such as climate change, and has a huge local impact in the regions where it is carried out, environmental as well as economical.

Burning hydrocarbons is the **biggest cause of climate change** in the planet. If the worst impacts of this (detailed by **experts from the United Nations** in its latest publication)<sup>36</sup> are to be avoided, the global rise in temperature has to remain below 2°C. To this end, two thirds of combustible fossil reserves that are underground must be left undeveloped, according to the latest report from the International Energy Agency (IEA)<sup>37</sup>.

However and despite these recommendations, the demand for oil continues to rise and due to the finite nature of this resource, oil companies continue to look for crude in ever more remote and least accessible regions, facing **technical difficulties and ever greater risks**. This is the case for extracting in deep waters or other techniques to exploit oil from unconventional sources, such as tar sands (with bitumen), oil shale or extra heavy oil.

**There is NO safe way to extract oil in deep waters.** This type of well poses enormous risks in terms of spills, fires and pollution. Although the impacts are not confined to the crude extraction phase, the different investigation phases in the search for hydrocarbons in the sea produce different environmental impacts<sup>38</sup>. Nevertheless, it stays without doubt that the most dangerous phase is the oil extraction, due to the ongoing risk of significant spills and systematic pollution by hydrocarbons in bordering areas.

**The safety valves (BOP) used on offshore oil platforms suffer from serious design defects.** These valves are standard, which is why a similar problem to that which took place on BP's Deepwater Horizon platform in the Gulf of Mexico could happen again on any deep water well faced with a loss of control.

Oil extraction **further erodes marine ecosystems and biodiversity**, which is already very vulnerable due to human activities (overfishing, pollution, waste, climate change, acidification...). It also increases pressure and risks in other economic sectors such as **fishing<sup>39</sup> and tourism<sup>40</sup>** and seriously damages local communities.

Oil is a polluting resource that is becoming increasingly scarce. In contrast, renewable energies, energy saving and efficiency are clean technologies that could cover the whole global energy demand without risk and at a lower cost than dirty fuels.



## The solution to our dependency on fossil fuels: renewables and energy efficiency

### Dependency on fossil fuels

The current energy system is heavily based on fossil fuels, which creates a huge foreign energy dependency for countries. Europe currently spends over 500 billion euros in energy imports and most of this money ends up in Russia<sup>41</sup>. Europe imports 90% of the crude oil it consumes, 66% of its gas, 42% of solid fuels and 40% of its nuclear fuel. **Spain imports 86.2% of its primary energy**<sup>42</sup> which includes virtually all of its oil, around 95%. A study by the European Commission predicts that, if no new policies are conducted, Europe will continue to import most of its energy needs<sup>43</sup>.

This weakness has left Europe exposed to threats of shortages in times of conflict, such as the one caused by the current Russian threat to cut off the gas supply to Europe via its pipeline in Ukraine.

To solve problems like this one, several political options are being considered including diversifying supply routes and using domestic fossil fuels, as is the case with oil exploration in different parts of Spain. As well as leading to an increase in energy costs, these short-term measures to diversify fossil fuel supply sources would not help Europe nor Spain to achieve their targets of reducing their dependency on energy imports, nor protect the climate. It would also block the real solution, based on renewables and energy efficiency.

According to a report<sup>44</sup> by ACIEP, the Spanish association of hydrocarbon research, exploration and production companies and underground storage, deposits in the Gulf of Valencia, the Ebro Delta and Gulf of Leon could amount to 272 million barrels of crude oil at best. **Spain consumes 1.5 million a day, so it would be equivalent to just half a year's supply at the most!** In the Canary Islands, although there are estimated deposits, the reality is that as yet they have not been found.

A strategy that prioritises **energy saving and the development of renewable energies would significantly reduce Europe's dependency** on energy imports in the short and long term. Also, it would end the environmental problems arising from the use of fossil fuels. This strategy **would also create more jobs** than investments in the supply of fossil fuels<sup>45</sup>.

### Is it possible to get by without fossil fuels?

Some time ago Greenpeace raised this question and carried out various studies to see whether ALL the energy needs of ALL sectors (transport, construction and industry) could be covered exclusively by a renewable energy model. The **Greenpeace Energy 3.0**<sup>46</sup> study shows that **it is technically and economically possible by 2050** in an energy model scenario without fossil fuels nor nuclear energy, using energy sources that are **100% renewable**. The study also indicates how to achieve this in an easy, quick, sustainable and affordable way, thanks to smart and efficient energy.

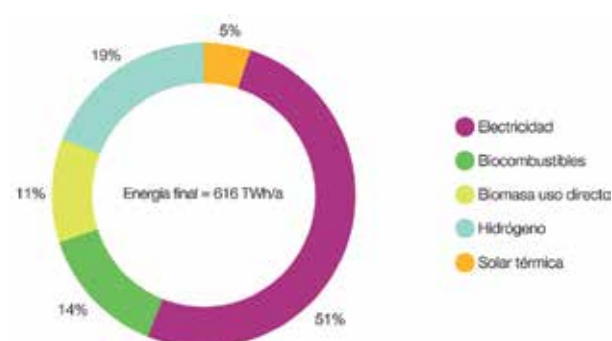
The integration of all sectors and the **electrification** of the energy system would bring about an important reduction in final energy demand and optimise its generation through renewables. To substitute fossil fuels in cases where electrification is not viable, two available options would be used: **biomass and hydrogen**.

Figure 7 shows how the whole final energy demand would be covered exclusively with renewables in an efficiency scenario without the need for fossil fuels. Figure 8 shows what renewable technologies would be needed to meet this demand.

**Figure 7. Final energy demand structure in the 2050 efficiency scenario**

**Figure 8. Electricity generation by technologies needed to cover total consumption in the 2050 efficiency scenario involving demand management.**

**European 2030 energy and climate targets, a great opportunity to make progress in renewables, energy efficiency and independence**



The potential for renewable energies in Spain is enormous. It has enough renewable resources to supply 10 times the country's energy demand in 2050<sup>47</sup>. Also in Europe, studies show that renewable energy could cover almost half of its energy demand in 2030<sup>48</sup>.

Furthermore **the cost of renewable energies is falling, making** it an even more competitive and profitable option. Spain is proof of this: in 2013 it achieved "grid parity" for clean energies with the market price when a photovoltaic plant in Seville started to sell its electricity in the wholesale market like other conventional electricity producers without the need for bonuses<sup>49</sup>.

According to figures worldwide, the cost of solar energy has fallen by 80% since 2008 and wind power by 29%<sup>50</sup>. The Economist claims that the cost of solar technology has fallen by 99% since the 1970s<sup>51</sup>. DONG, the largest United Kingdom wind power developer, claims that offshore wind power will be cheaper than nuclear energy and possibly gas by 2020<sup>52</sup>. However, renewables have come to a **huge standstill in Spain due to the policies of the current government**.

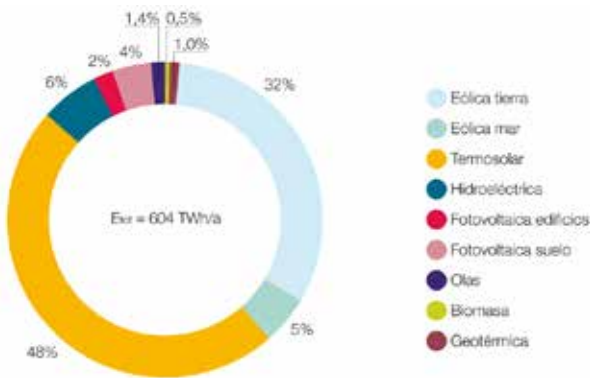
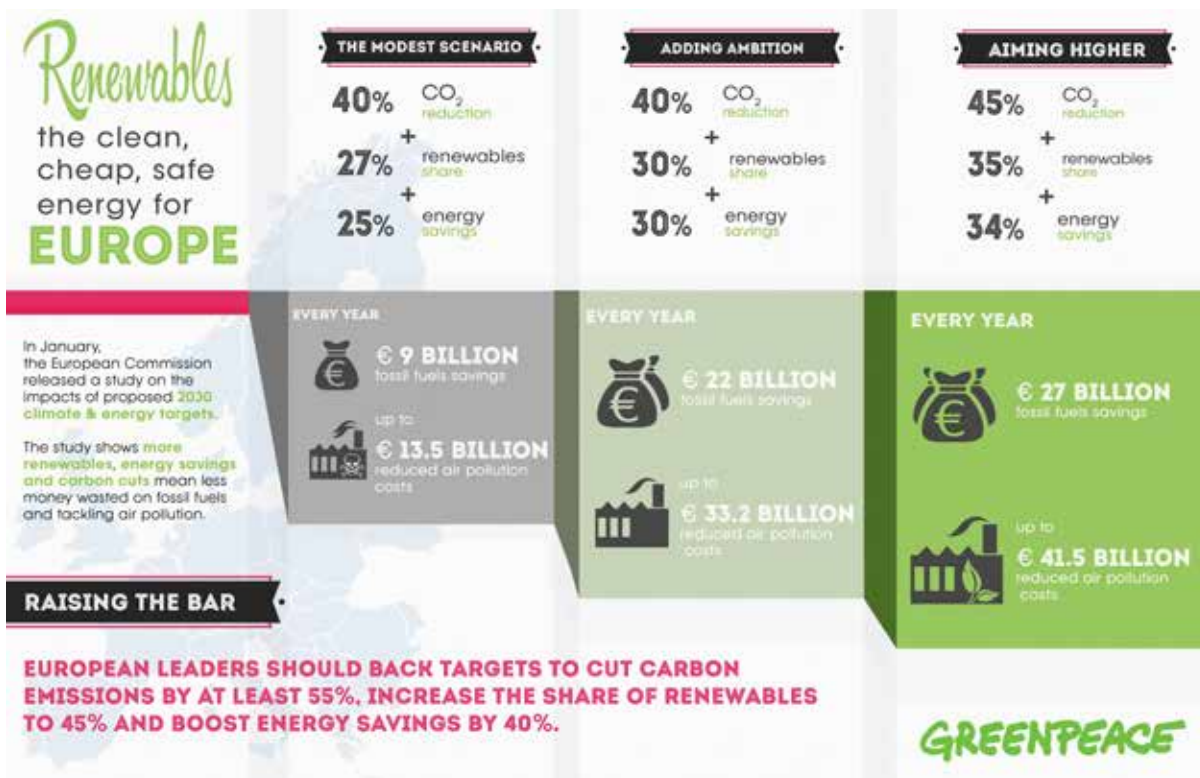


Figure 9. Economic impacts of energy target scenarios proposed by the European Commission





Europe now presents a major opportunity to make progress towards a sustainable energy model. In 2014 **the European commitments on climate and energy for 2030** will be decided. If we really want to have energy independence and combat the problems of fossil fuels, governments should support three binding targets for the EU including:

- a **55% reduction in greenhouse gas emissions** as a minimum (compared with 1990)
- a **renewable energy supply of 45%**
- a **40% reduction in final energy consumption** (compared with 2005).

In the long term, renewable energy and energy efficiency can offer even greater reductions in imports. The European Commission is proposing more conservative targets, of note being the 35% renewables' target for the whole of the EU. The EC's own impact evaluation of its proposed targets for 2030, together with ambitious energy efficiency policies, would help to reduce net energy imports to over half in 2050. The decision that is taken on a European level for climate and energy targets in Europe for 2030 is therefore very important, as the more ambitious they are, the more the continent will see imports fall and have greater energy independence (see figure 9).

It must be made clear that **none of these scenarios correspond the one proposed by Greenpeace**, but at least these scenarios – whose impact has been assessed by the Commission– serve to show that the higher the targets for renewables and efficiency, the greater the saving in fossil fuels. This is a great opportunity for Europe. Not only to drastically reduce dependence, but also to protect the climate, reduce energy costs and air pollution.

## Greenpeace requests

Greenpeace is asking the Spanish government for a profound change in the country's energy policy to have an efficient, smart and 100% renewable system, whose viability has already been proven by Greenpeace in its Energy 3.0 report. It has therefore specifically asked for:

- a **law to ban conventional and unconventional hydrocarbon** prospecting and exploration throughout Spain .
- **to support the three binding objectives for 2030** in the European Union, including a climate target of, at least, a 55% reduction in domestic greenhouse gas emissions (compared with 1990), a renewable energies target of 45% and an energy efficiency target of 40% (compared with 2005)
- **to end subsidies to dirty energies**
- to support the creation of a **Sanctuary in the international waters of the Arctic** which prohibits, amongst other aspects, oil extraction in the area.

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# Appendix

## Oil investigation phases and their impacts on the sea

Investigations in the search for hydrocarbons in the sea comprise three phases and each one of these has different environmental impacts, described as follows:

### First phase

Oil companies seek seismic, magnetic, gravimetric surveys and geological information not only within permitted areas, but also anything that may be relevant for regional studies, including satellite and geology data of land neighbouring permitted areas. Environmental studies are carried out prior to seismic acquisition.

### Second phase

This comprises the acoustic surveys required in seismic acquisition and those that determine the physical characteristics of the seabed and establish the degree of probability of finding hydrocarbons. To do this, sound waves are emitted via a high-pressure barrel with a sound level of 215-265 decibels (the pain threshold for humans for noise emission is 120 decibels) and a frequency between 10-250Hz. The scientific community has adopted 180 decibels as a sound intensity level that **can produce irreversible physical damage in cetaceans**.

Due to the seismic impact of the waves, the practice also generates slime and mud, as well as the **possible release of pollutants from the subsoil**: arsenic, lead or benzene. Likewise, it produces changes in the behaviour of fauna due to the sound stress in the environment that leads to, for example, a **reduction in fish catches**.

It is very important that the impact that oil prospecting and exploration can have on fisheries is recognised as this is an economic activity that generates important social and economic benefits, both local and national.

### Third phase

Drilling takes place on the seabed in order for samples to be taken. This is frequently the cause of pollution accidents and hydrocarbon waste ends up on beaches. Earlier instances of accidents related to drilling in the exploration phase include the **BP platform in the Gulf of Mexico** in April 2010 and the **Repsol spills in 2009** in the exploration phase of the Lubina-1 and Montanazo-D51 wells, close to the coast of Tarragona (Catalonia).

In this phase, sludge compression is used that puts pressure on the oil pocket and thus avoids explosions when drilling due to the gas contained within it. It is also used to lubricate the drills and strengthen the walls of the well. The sludge contains varying amounts of highly polluting materials such as barium sulphate and other chemical compounds and polymers, including heavy metals and polycyclic aromatic compounds.

Likewise, materials used in the injection process include dispersants, corrosion inhibitors and biocides. Through routine contamination during exploration, polycyclic aromatic compounds and heavy metals **can enter the food chain** and their toxicity would thus generate health problems related to the consumption of fish products.

Además, los escombros generados por la perforación se vierten normalmente al mar y en su fondo permanecen, contaminados por los lodos de compactación. El incremento de la concentración de hidrocarburos inducido alrededor de una plataforma de perforación es significativo y puede llegar a alcanzar hasta 10.000 veces los niveles naturales. Esto causa una contaminación crónica así como un incremento de la llegada de crudo meteorizado (“chapapote”) a las costas, lo que daña la calidad de las playas para el turismo.

In addition, the debris generated by the drilling is normally dumped in the sea and stays on the seabed, contaminated by the sludge compaction. The increase in the induced concentration of hydrocarbons around a drilling platform is significant and can reach up to 10,000 times natural levels. This causes chronic pollution as well as increasing the amount of weathered crude (“chapapote”) that reaches the shore, affecting the quality of beaches for tourists.



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This sector would be hit even harder in the event of accidents from spills in the exploration phase, as happened on the Deepwater Horizon platform in 2010<sup>53</sup> or, on a different order of magnitude, during the drilling of wells by Repsol off the coast of Tarragona (Catalonia)<sup>54</sup>.

**Exploitation**

In the event that companies find hydrocarbons of sufficient quantity and quality, they may request authorisation to undertake the last phase, which would be to commercially exploit the oil or gas. This is possibly the most dangerous phase of all, due to the ongoing risk of significant spills and systematic pollution by hydrocarbons in bordering areas.

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