



FULL REPORT

HEADING SOUTH

REPORT / MAY 2014



THE DASH FOR
UNCONVENTIONAL FOSSIL
FUELS IN **ARGENTINA**



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We campaign on today's most urgent environmental and social issues. We challenge the current model of economic and corporate globalization, and promote solutions that will help to create environmentally sustainable and socially just societies. We promote environmentally sustainable societies on the local, national, regional and global levels. We seek to increase public participation and democratic decision-making. Greater democracy is both an end in itself and is vital to the protection of the environment and the sound management of natural resources. We work towards environmental, social, economic and political justice and equal access to resources and opportunities on the local, national, regional and international levels.

This report was written in May 2014 after a series of field visits made by Friends of the Earth France and Observatorio Petrolero Sur. Coordination and editing: Juliette Renaud (Les Amis de la Terre France) – Antoine Simon (Friends of the Earth Europe) – Ike Teuling (MilieuDefensie). **Authors:** Diego di Risio and Fernando Cabrera (Observatorio Petrolero Sur). **Editing:** Rachel Tansey, Emma Jayne Geraghty. **Design:** www.onehemisphere.se **Cover image:** Gas flaring in the Neuquén Province, Argentina. © Observatorio Petrolero Sur. www.foeeurope.org



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EXECUTIVE SUMMARY

The growth of unconventional fossil fuels (UFF)¹ has led to unprecedented changes in the geopolitics of the global oil and gas sector. Following the North American experience, many countries have taken steps towards the exploitation of these potentially important resources, at a time when conventional oil and gas resources are rapidly depleting. The economic impact of unconventional fossil fuels in Argentina is presented as particularly important because, according to the United States Energy Information Agency (EIA), Argentina is a global power in shale resources. In terms of worldwide access to unconventional resources, it is host to the second most unconventional gas and fourth most unconventional oil. Argentina's Vaca Muerta formation is considered by the EIA as the biggest potential shale basin outside North America.

As a result, Argentina has seen a significant increase in interest from the major multinational players in the sector, who have placed a particular focus on northern Patagonia. Chevron, Total, Shell, ExxonMobil, Wintershall, Petrobras and others have already advanced various projects, and announcements of new developments are made almost daily. Many industry actors have been pressing for changes in the legal framework regarding UFF development, resulting in measures to make it easier and more profitable for oil and gas companies to develop UFF in Argentina, often at the expense of the public interest and the interest of local communities, workers and the environment.

The growing imports of fuel into Argentina, due to the decline of domestic conventional fossil fuels production prior to 2012, led to the partial re-nationalization of Yacimientos Petrolíferos Fiscales (YPF), Argentina's largest oil company. State intervention has however opened the door to UFF, perpetuating an energy mix based almost entirely on fossil fuels, with significant technological and financial input from transnationals.

This was made possible by legal gaps and a lack of state regulatory capacity against the introduction of a mass-scale technology known as high-volume hydraulic fracturing (also known as 'fracking'), which has provided more lucrative opportunities to

companies such as Chevron, Total and Shell – three companies that this report will focus on in particular. The development of UFF in Argentina is also linked to legal reforms that have restricted public consultation and popular participation, this coincided with violations of environmental and indigenous communities' collective rights, including the introduction of UFF developments in protected areas. This has resulted in both direct and indirect violence, as well as the suppression of the self-determination of the population and reducing the genuine search for alternative and clean energy sources. These first developments in Argentina reflect the destructive and polluting pattern of this industry² using numerous chemicals, many of which are toxic, produces large amounts of hazardous and heavily polluted flowback waste water and consumes vast areas of local and indigenous land. This has a detrimental impact on local communities, as these operations can damage both the surrounding environment and people's health, increase competition for land and water, destroy regional economies, damage infrastructure and affect local culture.

A series of field visits and thorough investigations were undertaken to establish how quickly this UFF development was occurring, and how multinational (and notably European) companies such as Chevron, Total and Shell were operating in the country.

1 'Unconventional fossil fuels' is a term used to define a number of extreme energies (shale oil and gas, tight gas, coal bed methane, tar sands). While Argentina is currently exploiting tight gas and has potential resources of coal bed methane, the report will primarily focus on the shale gas and oil sources of energies as they have the greatest potential and as they systematically require the use of hydraulic fracturing.
2 <http://www.foeeurope.org/foee-unconventional-and-unwanted-the-case-against-shale-gas-sept2012>

We found that:

- **The oil and gas sector has captured the political debate:** Multinational companies have pressured and blackmailed national and regional authorities into making decisions that go against the public interest (increasing the price of gas, the obtention of numerous subsidies, tax exemptions, the reduction of percentage revenues for the government, the anarchic extension of concession terms), arguing that they were necessary conditions to invest in the country.
- **Drilling is occurring in natural protected areas:** Total and Shell are using legal vacuums to drill in several natural protected areas where drilling is normally prohibited.
- **The public agencies in charge of monitoring UFF production are understaffed** and jobs are precarious. Often the opinions of these agencies are simply ignored, but if not they are **threatened by administrative measures** when critically remarking on oil and gas companies' poor environmental practices. Some concessions were also granted to Total against the recommendation of the Department of Natural Protected Areas (DNPA).
- **Untransparent contracts have been signed between Chevron and the state-owned YPF:** National and regional authorities are unaware of the full content of a contract signed without the consultation of indigenous communities, tailored by Chevron, which will lead to the drilling of 1,562 multi-well pads each containing 2 to 4 wells.
- **Drilling operations are surrounded by secretive processes:** Environmental reports made by companies cannot be accessed even by competent environmental agencies. Local communities have not been consulted before new operations, nor were local farmers compensated for the direct environmental degradation of their land. Shell and Total have poorly communicated, amongst others, about the techniques they used during drilling, the amount of chemicals used, the scope of their permits and the fracking waste water treatment.
- **Lax environmental reporting:** Environmental assessments made by companies (Total in particular) are full of inconsistencies; they mention flora and fauna that do not even exist in the concession areas. Environmental damages observed and acknowledged by environmental agencies have never been cleaned up by companies (Total in particular).

Faced with this reality, a large number of organizations have started to resist UFF development. Citizens' demands have focused on the environmental risks, the insignificant local benefits brought by the income generated, the lack of participation and consultation, and the loss of sovereignty. Opposition has grown nationally, and today more than 30 municipalities have declared themselves 'fracking-free zones'. They follow a growing opposition to fracking all around the world.



THESE INDUSTRIAL OPERATIONS CAN DAMAGE THE ENVIRONMENT AND PEOPLE'S HEALTH, DESTROY REGIONAL ECONOMIES AND AFFECT LOCAL CULTURE.



1

ARGENTINA: AN UNCONVENTIONAL POWER

Yacimientos Petrolíferos Fiscales (YPF) is an Argentinian partially State-owned company that for decades was involved in oil exploitation. From its inception in 1929 to its privatization starting in 1990, the company virtually monopolized the Argentinian market, creating a strong identity with over 50,000 workers, and in many cases building entire villages. With its privatization however, when Repsol purchased 98% of the company shares in 1999, these villages suffered from deep economic and social crises. The partial re-nationalization of YPF, finalized in May 2012, aimed not only to sustain the country's expensive social welfare policies, but also to drive the development of UFF.



THE NATIONAL CONTEXT

The Energy 'Crisis'

In 2011, Argentina saw the end of a long period of surplus in its energy trade balance, with a deficit of US\$ 3.4 billion. This followed a trend of increasing energy imports since 2002. By 2011, energy represented 12.7% of Argentina's total imports (Pérez Roig, 2013).

Although part of the reason for this was an increase in energy consumption, growing by 30% between 2001 and 2011, the primary cause was the steady decline of domestic fossil fuels production. This trend was a crucial one for the Argentinean economy, which has a primary energy mix of 90% fossil fuels, mostly gas.

This declining trend in production was largely due to the natural maturation of Argentina's conventional fossil fuel reservoirs. This went hand in hand with an increased focus on exports. **From 1989 to 2001, oil production increased by more than 66% while, in an unprecedented move, exports quadrupled.** In the case of gas, the production boom occurred just after the construction of gas pipelines for exports.

These changing trends did not however come about by chance; they were the consequences of a paradigm shift in the industry since the neoliberal reforms of the early '90s. With privatization, hydrocarbons ceased to be considered as a strategic resource, and soon became a commodity to be merely cashed in on.



THE ARGENTINEAN ECONOMY [...] HAS A PRIMARY ENERGY MIX OF 90% FOSSIL FUELS, MOSTLY GAS.



Extraction site on the Mapuche Gelay Ko community's territory .
© Observatorio Petrolero Sur

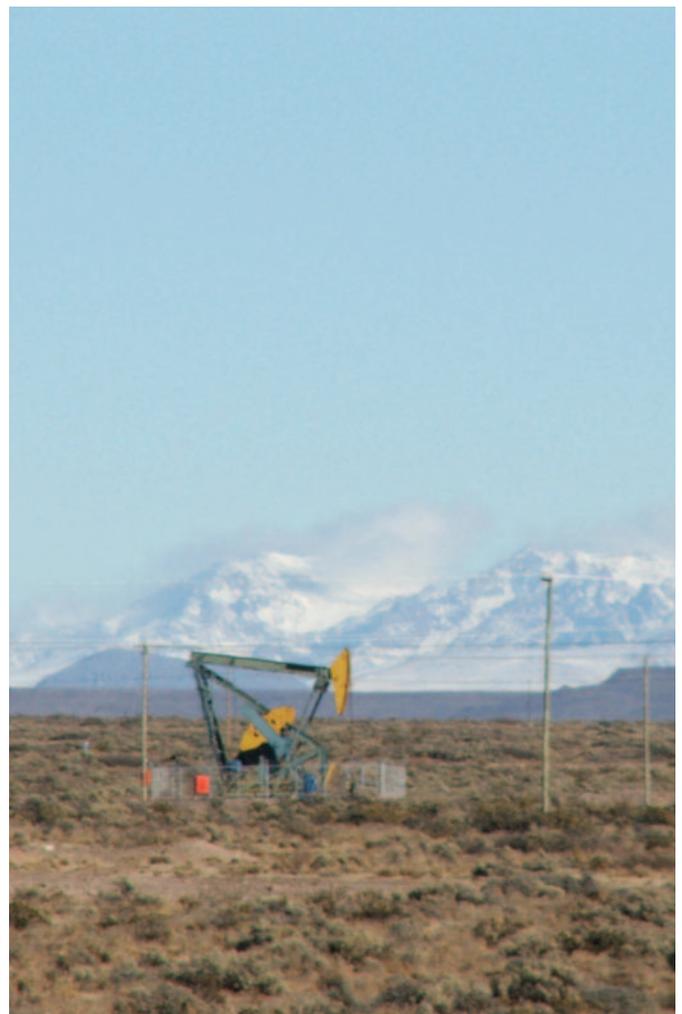
The Neoliberal Model Emerges

The dismantling of public enterprises, especially YPF, in the early '90s corresponded to major changes in the extraction regions. YPF had formerly guaranteed employment as well as a series of very particular rights and insurances for its workers. During the privatization process, some estimates show that nearly 85% of staff, about 50,000 employees, were fired (Muniz Terra, 2008).

Over the course of a decade, private capital pushed for legal and policy changes intended to strengthen their role as planners, regulators and managers of the country's resources. At the same time, while the oil and gas sector was liberalized, the national public sphere was stripped of most of its specific mechanisms for strategic decision-making and income appropriation. This severely reduced its capacity to negotiate with the corporate sector.

In 2011, 72% of the oil produced in Argentina was extracted by four companies: Repsol-YPF, Pan American Energy (a joint venture between CNOOC, Bidas and BP), Petrobras and Chevron. 83% of the gas was produced by five companies: Total, Repsol-YPF, Pan American Energy, Petrobras and Apache. Four companies, Repsol-YPF, Shell, ExxonMobil and Oil Combustibles, were furthermore responsible for almost 87% of the refinement activities (Secretary of Energy).

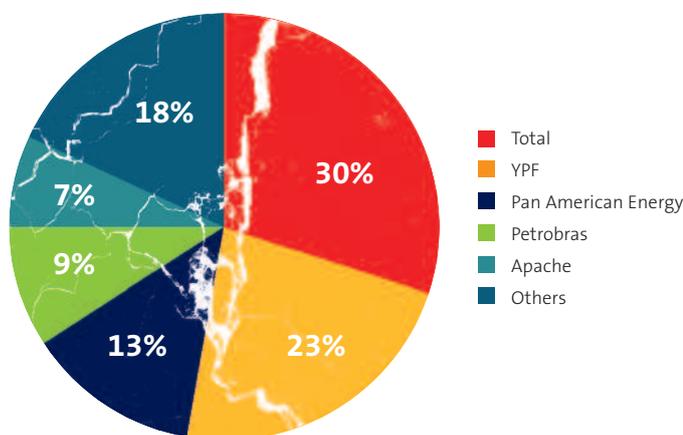
Another part of the picture however is that, because ownership of the subsoil was transferred to the provinces, they became direct interlocutors of the industry. They were also bestowed with the policing power over hydrocarbons-related production and environmental matters. However, they were lacking necessary negotiation capacities: small provinces with small budgets were effectively forced to agree with major oil and gas companies. The provinces, lacking the necessary financial resources and in need of compensation for their recurring budget deficits, became reliable allies of the oil and gas companies.



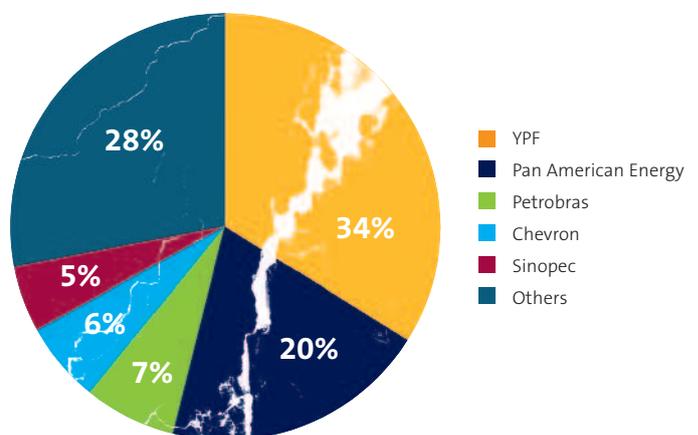
Pumping equipment on a Mapuche territory, Nequén.
© Observatorio Petrolero Sur



GAS PRODUCTION (2011)



OIL PRODUCTION (2011)



Source: Secretary of Energy of Argentina.

The Re-Nationalization of YPF

The substantial deficit in the energy balance explains the change of political direction taken since 2012. Following a government initiative, with significant popular support, the Congress passed a law entitled “Hydrocarbon Sovereignty” (No 26.741). With this regulatory decree (1277-1212) the **national government tried to regain and centralize strategic and policy decision-making processes for the energy sector.**

This legal package led to three important changes: (1) it declared the sector to be of national public interest and defined energy self-sufficiency as a priority aim for the country; (2) it repealed laws giving the market a self-regulatory capacity; and (3), it expropriated 51% of YPF shares to carry out the guiding principle of the law, to achieve self-sufficiency.

However, at the same time, some decisions were taken that conflicted with the public company’s new goals, decisions which enabled YPF to continue acting as a private, profit-seeking company that puts the interests of its shareholders before the public interest. On the one hand, obtaining exportable surpluses to improve the balance of payments was defined as a strategic objective. On the other hand, YPF retained its status as a limited company, with the objective of generating revenues for shareholders. The government also promoted the idea of partnerships with other companies, regardless of their origin or status (e.g. public, private or mixed).

Furthermore, territorial disputes as well as complaints about environmental degradation were routinely not taken into account in YPF’s activities, and most crucially, **the go-ahead was given to open-up the market to unconventional fossil fuels.**



Drilling equipment on the Loma Campana concession owned by YPF and Chevron.
© Observatorio Petrolero Sur

UNCONVENTIONAL FOSSIL FUELS: LEADING THE WAY TO DESTRUCTION

Big oil and gas corporations are leading the development of UFF, and at the national level they drive the objectives to be reached. The public sector adapts as much as it can and, in the best cases, fights to obtain revenues from UFF exploitation.

First Public Announcements

The first announcements to slowly introduce UFF into the public agenda of Argentina were made in October 2009, by **Repsol-YPF**. The company announced that it would invest in shale gas in the Loma La Lata field, in the province of Neuquén. The following year, **the North American company Apache drilled the first horizontal multi-fractured well in Latin America** (Petrotecnica, 2011a). Neither the press nor the industry mentioned a crucial aspect of these first operations: both developments took place on indigenous communities’ territories of the Mapuche people, Kaxypayñ and Gelay Ko respectively.

In April 2011, the emergence of UFF in Argentina was given another dimension when the US EIA (Energy Information Administration) published a study placing Argentina second in technically recoverable shale gas resources, following China, and estimating it to have 802 trillion cubic feet (TCF).³ In June 2013, the EIA released another study which confirmed the leading position of the country in global shale gas and shale oil resources. According to this report, the **Vaca Muerta formation has the highest UFF potential outside of North America.** In the following months, nearly all South American countries announced their intentions to explore their UFF potential.

Even though the EIA consultants reiterated that their findings were just the first steps and resulted from a superficial and general study, the impact on the country’s political agenda did not take long to be felt. The dash for UFF ignored reports questioning this scenario of abundance and alerts about the environmental risks of its exploitation.

A Regulatory Framework adapted for the Private Sector

The oil and gas industry is not only concerned with the amount of resources potentially and technically recoverable, but also with the political decisions that impact the sector. **This is why the industry has been pushing for policies to defend its autonomy and to obtain higher prices, which are set by the National Government, presenting them as necessary conditions to invest in the country.** The Argentinian Government has responded favourably to these requests by modifying and adjusting their policies and regulations. Outlined below are the main political decisions related to UFF, all of them demanded by the oil and gas industry:

- **Prices and subsidies increase:** Through different programs, companies were able to obtain important incentives and subsidies. Nowadays, the gas price in Argentina is around US\$ 7.5 per million British Thermal Unit (MMBTU), almost 300% more than the “old” gas price (Scandizzo, 2014). Since 2011, prices have gradually increased.

3 1 Tcf = 28 billion cubic meters.

- **Costs reduction:** one of the industry's bottlenecks is equipment availability for new operations. This is why taxes on imports of capital goods have been lifted (in a period of economic crisis, when imports are strongly controlled for all sectors and types of products). Moreover, the National Government committed to invest one billion pesos (€ 135 million) for road infrastructure and services in the northern part of the Neuquén province.
- **Retentions reduction:** Since 2002, companies have managed to reduce the revenue percentage of the National Government for oil and gas exports that they have to pay.
- **Closure of the dispute with Repsol:** Repsol filed several complaints after the partial nationalization of YPF. Several groups from different sectors (including Repsol shareholders such as La Caixa and Pemex) called for a conflict resolution in order to do business with YPF. Recently, the National Government agreed on the payment of a compensatory amount of US\$ 5 billion in bonds.

July 2013 marked a turning point for these various measures and demands, with the publication of National Decree 929, which installed the framework demanded by companies. This decree created the “*Régimen de Promoción de Inversión para la Explotación de Hidrocarburos*” (Investment Promotion Regime for Hydrocarbons Exploitation) for projects aiming at investing more than US\$ 1 billion.

Key points of the Decree 929:

- After five years of production, 20% of the extracted reserves will be traded at international prices both in the international and local market. If these reserves are exported, they are exempted from all customs taxes.
- The Decree creates the status of Unconventional Exploitation Concession. The creation of new unconventional areas is facilitated by the subdivision of the already existing concession areas and the fusion with other ones from the same holder. This allows companies to start unconventional projects without having to go through new tender processes.
- Automatic extension of concession terms to 35 years, which violates Hydrocarbons Laws that establish a maximum of 25 years.

Finally, the sector has launched a ‘communications war’, as it was dubbed by the governor of Neuquén. The industry spends millions of dollars on green washing and advertising in mass media, websites, leaflets, etc. However, as we will see later, the intensive industry lobby efforts to communicate on issues around the improvement of extraction conditions have never been accompanied by a push for actual improvements in terms of environmental protection or increased public participation.

Key role for YPF S.A.

So far no progress has been made to adapt environmental regulation to the development of UFF, as no norm has been established nationally. Local legislation has not been matched to international requirements for prior, free and informed consultation with indigenous communities regarding proposed new developments.

Following its re-nationalisation, YPF's appointed Miguel Galuccio as its director, a former official at Schlumberger, one of the leading services companies in the unconventional sector. According to its five-year plan, YPF's short-term goal was to reduce imports, in the medium term to reach self-sufficiency, and in the long term, “*to turn Argentina into a net energy exporter*”. In pursuit of these goals, the company proposed to improve the recovery techniques of mature fields, to develop its refining capacity, to expand production zones to high-risk areas (onshore and offshore) and, finally, to massively develop unconventional fields (OPSur, 4/11/2012). The company projects that by 2017, **investments in UFF should represent 40% of total investments** (YPF, 2012).

In its ambiguity, YPF has not only acted as a bridge between the Government and private companies, but has also successfully promoted some private sector wishes: YPF boosted subsidy programs and secured the increase of wellhead and fuel prices. This strategy enabled YPF to fund up to 70% of its required investment into UFF, while the other 30% would come, among other sources, from teaming up with private companies, like Chevron (OPSur, 4/11/2012). As a result, YPF is the most advanced fracking company in Argentina and has become the symbol of the country's UFF development. Whilst most of the drilling is taking place in the Neuquén Basin, as will be seen later, other areas have also been targeted, such as the D-129 formation on the Golfo San Jorge Basin.



Demonstration of a Mapuche group in front of a conventional well owned by Apache.
© Observatorio Petrolero Sur



EMERGING "FRACK-FREE" ZONES

UFF are presented as a *necessary evil* in Argentina's 'crisis' context, which attempts to forestall in-depth discussions or criticism about its exploitation. Nonetheless, a counter-movement has been developing, resisting UFF operations and urging alternative energy solutions. In early 2012, this growing resistance was intensified thanks to the rapid dissemination of information about fracking operations, and the sharing of experience from years of struggles to protect socio-environmental rights against mega-mining projects, agribusiness and urban expansion. Furthermore, the major opposition and complaints that the UFF industry was facing in many parts of the world acted as a basis for a new frontline mobilisation against fracking in Argentina, as will be seen in the case of Neuquén.

One of the key strategies of the resistance movement has been to promote the enactment of local regulations that prohibit fracking. One year after the first such measure was approved (December 2012) in the Patagonian province of Río Negro, more than 30 similar local decrees had been registered across the entire country. In some cases, these decrees emerged from popular initiatives and social organizations and, in others, from local councillors.

One striking case was the response to a fracking prohibition in the city of Allen, in the province of Río Negro. In this pear farming region, intensive drilling activities were already taking place in the middle of the orchards. The local population – organized in assemblies and associations of fruit farmers – pushed the local council to approve a decree prohibiting fracking. A few days later, the provincial authority filed a complaint against this decision to the Supreme Court of Justice. The Court quickly accepted the regional government's complaint, against the local population's will.

Cases of collective mobilizations, fracking prohibition and court actions have since multiplied. One thing they repeatedly show is that the fight against the UFF industry is not restricted to ecologists, environmentalists or conservationists, nor is it focusing solely on the economic aspects.

CHRONOLOGY OF THE RISE OF SHALE GAS IN ARGENTINA

- | | |
|----------------------|---|
| 1990's | <ul style="list-style-type: none"> • Neo-liberal state reform and YPF privatization, bought by Repsol. • Negative energy trade balance, increase of energy exports. • Constitutional reform: natural resources control transferred to provinces. |
| End of 2009 | <ul style="list-style-type: none"> • First Repsol-YPF announcements about shale gas projects. |
| 2010-2011 | <ul style="list-style-type: none"> • First gas producer of the country, Total, becomes a major UFF actor, with 11 permits, including 6 as operator. |
| Early 2011 | <ul style="list-style-type: none"> • First horizontal unconventional multi-fractured wells drilled by Apache. • One study by the US EIA ranks Argentina as having the world's third biggest UFF potential. |
| May 2012 | <ul style="list-style-type: none"> • YPF renationalisation with conflicting objectives of self-sufficiency and increase in exports, emphasising UFF. • Partnerships with foreign companies are encouraged for UFF production. |
| December 2012 | <ul style="list-style-type: none"> • First local decree prohibiting the use of fracking. |
| July 2013 | <ul style="list-style-type: none"> • National decree 929: regime promoting UFF investments and offering important benefits to oil and gas companies. • The following day, the first agreement between YPF and Chevron. |

2

THE BOOM OF UNCONVENTIONAL RESOURCES IN NEUQUÉN

The Neuquén Basin extends from the South of the province of Mendoza, to the West of La Pampa, Neuquén and Rio Negro. 92% of its 124,640 km² belongs to the province of Neuquén. This basin is the primary area of conventional hydrocarbon production in Argentina: it generates almost 40% of nationally produced oil, 50% of gas, and is the focus of almost all new investments into UFF.

According to Argentinian law, the provinces have control over their subsoil resources. In other words, they are responsible for granting exploitation permits. Recently, Neuquén has faced a steep decline in its hydrocarbons production, mainly due to the depletion of its mature conventional reservoirs. UFF therefore has been presented as the solution and strongly promoted by the government. There are now 155 operating shale oil and shale gas wells, while 323 new wells are set to be drilled in 2014 (Rio Negro, 28/12/1013).

This however is only the tip of the iceberg, and much more is at stake. According to the US EIA report of June 2013, out of the 802 TCF (trillion cubic feet) potential resources attributed to Argentina, 583 TCF (72%) are in the Vaca Muerta and Los Molles formations. These early analyses, and results in the Neuquén Basin, have encouraged companies to invest more heavily, and already existing infrastructure in the region has allowed for quick development of operations (Credit Suisse, 2012).



INACCESSIBLE PUBLIC INFORMATION

Access to public information in Argentina is very difficult, especially in Neuquén, despite this right being enshrined in international law, a national decree and the national environmental regulatory framework. The environmental reports for unconventional wells mentioned in this report were obtained thanks to the actions of the workers of the Protected Natural Areas Agency, by the provincial MP Beatriz Kreitman and by residents affected by Total activities.



PROVINCIAL CONTEXT

Landscape and geography

The Neuquén Province is made up of two major natural regions, the East and the West. In the Eastern region, low and variable precipitation has resulted in years of drought that threatens the activities of small livestock, Criollos and Mapuches farmers. This is where the main shale formations are located.

There are three main hydrological sources in the region, namely the Colorado, Neuquén and Limay Rivers, but beyond their lush surrounding areas, the region is very arid.

From a geological perspective, there are five hydrocarbon formations in the Neuquén Basin that may contain shale resources: Precuyano, the lower and upper Agrio formation, and the two most significant formations, Vaca Muerta and Los Molles, which cover more than half of the province (Chebli et al, 2011). Vaca Muerta, the region with the highest UFF potential, has a low population density, with fewer than three people per square kilometre. It is however the provincial region that has grown most in recent years, mostly because of the increase in hydrocarbon activities, which compete with the traditional small livestock farming activities. After the 1990s deregulation, oil and gas production very quickly developed in this area. Vaca Muerta sits on one of the biggest gas fields in Latin America, Loma de la Lata, operated by YPF, and on one of the main oil fields in the country, El Trapial, currently operated by Chevron.⁴



THE CONTINUOUS INEQUALITIES ASSOCIATED WITH THIS INDUSTRY LINK THE PROVINCE WITH WHAT SOME CALL THE "HYDROCARBONS CURSE"



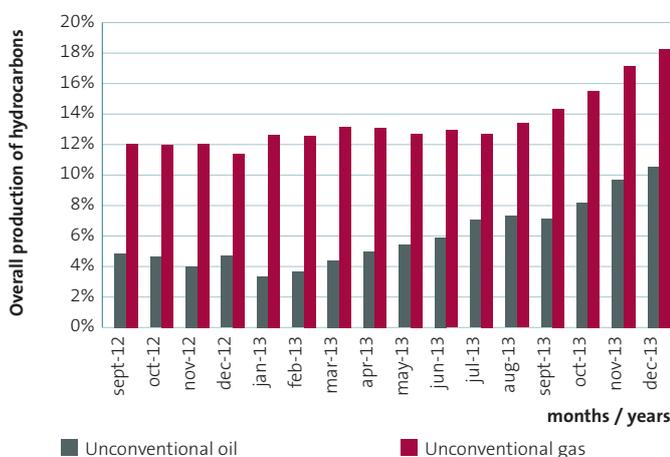
⁴ See map at the end of this chapter.

History, identity creation and energy dependency

At the end of the nineteenth century, the National Government consolidated its power in this region through bloody military operations against the Mapuche community. The survivors developed different strategies to remain in their region; private ownership, occupation of public lands, and the creation of collective settlements. Simultaneously, other social groups settled in the region, alongside state development. Since 1960 its population has steadily grown and in 2010 the province registered around 551,000 inhabitants.

The political party **Movimiento Popular Neuquino (MPN)** has held power at the provincial level since the early 1960s, having won consecutive elections. The MPN's political line is in opposition to the National Government, which has contributed to the creation of a particular 'Neuquén identity' (Favaro, 2001: 19). Since the development of the conventional Loma la Lata field, discovered by YPF in 1977, the province has associated its image with hydrocarbons activities (Favaro, 2001).⁵ The Argentine economy is structurally reliant on royalties from the fossil fuel sector (Petruccelli, 2005) and in 2008, 47.6% of the gross provincial product came from the extracting sector, mainly hydrocarbons (Giuliani, 2013: 135). Because of the way fossil fuels are locked-in, analysts define the province's economy as an enclave; it involves minimal linkages with other sectors, weak demand for jobs, and the benefits flow out of the region. This is a classic pattern for multinational oil and gas corporations, who are the main operators in the region (Giuliani, 2011). Although social indicators are better than in other provinces, the continuous inequalities associated with this industry link the province with what some call the "hydrocarbons curse".

PRODUCTION OF UNCONVENTIONAL FOSSIL FUELS IN NEUQUÉN



Source: Ministry of Energy and Public Services, Neuquén Province, 2014.

THE UNCONVENTIONAL FOSSIL FUELS PROTAGONISTS

A wide range of actors have contributed to the promotion of UFF developments: the National and Provincial governments, joint ventures with state-owned enterprises, and private companies, both multinational and, to a lesser extent, national.

Provincial government

Provincial budgets have been suffering from a significant decline due to the decrease in recent hydrocarbon production: while royalties represented 46% of overall revenues of the Neuquén Province in 2007, this proportion decreased to 28% in 2011 (Giuliani, 2013: 174). However, this income is vital for the provincial coffers. The push for UFF, helped by the partial re-nationalization of YPF, was strongly welcomed by the province, which became one of the primary promoters of this 'solution' to the "energy crisis".

Faced with growing concerns about environmental issues, the province created new regulations for hydrocarbons production. The use of water, a crucial resource for fracking, was regulated in August 2012, with the "Standards and procedures for the exploration and exploitation of unconventional reservoirs" (provincial Decree No. 1483). These standards allow for the use of surface water and prohibit the use of groundwater, unless it is not drinkable. Moreover, the standards require the reuse of flowback water, or its final storage in a disposal well. Parallel to this, the government widely disseminated figures downplaying the amount of water necessary for the process: their estimation showed that only 0.1% of the Neuquén River's flow would be used for fracking.

Designed to reassure the population, this Decree actually created new problems, as detailed by several peer-reviewed scientific studies from renowned US Universities. At present, it is widely recognized that each fracking operation requires the average use of 15 million litres of fresh water, whilst only a tiny fraction of the water returns to the surface with flowback.⁶ Therefore, even if the flowback water is reused, the need for fresh water will remain constant and extremely high. Furthermore, the issue of final re-injection of flowback in disposal wells is also controversial, as it could be the source of important seismic activities. In the USA, several independent academic studies (Keranen et al, 2013; van del Elst et al, 2013; Ellsworth et al, 2013; Sumy et al, 2014) have demonstrated that re-injection of flowback had caused significant earthquakes, even in seismically inactive regions.⁷

5 In 1929, oil was obtained for the first time in the province, where the YPF-founded city Plaza Huincul now sits. Since then, the relative importance of this industry has gradually risen.
 6 In 2013, studies of the U.S. Geological Survey (USGS) (Kappel and Zoltan Szabo, 2013) and Downstream Strategies (Hansen and Mulvaney, 2013) confirmed that on average, only 10% of the water used returns to the surface.
 7 While the scientific community considers the seismicity risk during fracking operations as limited (but not absent), the risk is much higher with flowback re-injection wells. Among dozens of other cases, it was confirmed that an earthquake with a 5.7 magnitude which occurred in November 2011 in Oklahoma was triggered by a project of injection of fracking flowback. It caused the destruction of 14 houses.

Several months after this Decree, in April 2013 the Neuquén Province amended Law No. 1875, on “*Preservation, Conservation & Protection of Environment*”, making the conditions required to run UFF projects more flexible, and in turn weakening the whole process. The revised law replaces the obligation to submit an Environmental Impact Assessment study with the requirement for a more simple and less stringent Environmental Report (provincial Decree No. 422). In practice, this eliminates the requirement for public hearings. This legislation clearly shows the provincial authority prioritising corporate needs over the public interest.

The increasing lack of public participation during project approval is combined with the job insecurity faced by workers from the State’s Secretariat of the Environment and Sustainable Development. This body is supposed to wield the powers of an environmental policing agency but does not have the operational capacity to perform its mission adequately. It currently has 131 employees, 106 of which hold precarious short term contracts, with contract extensions depending solely on the Provincial Government’s will.

The provincial authority has nonetheless been forced to adapt its legislation intended to assess the risks and impacts of UFF activities, towards better monitoring and regulating the industry. 2014 has seen the province discussing three new laws:⁸ a new “*Provincial Hydrocarbons Law*”, a regulation on “*Environmental Protection for the exploration and exploitation of unconventional reservoirs*”, and the main legislative innovation, the “*Social, environmental and community responsibility regime*”, which would push companies to invest a proportion of their income into local environmental and community benefits.

Meanwhile, Neuquén Governor, Jorge Sapag, has been proudly boasting of his achievements in spreading unconventional oil activities. In November 2013, in a speech to the Oil Club, the Governor said that in Neuquén, 400 UFF wells were already being drilled and that almost 10% of the province’s oil production was coming from that source (Sapag, 12/11/2013). The legislation regulating these activities, however, has not yet been discussed.

Territory of the Mapuche community Gelay Ko, Neuquén.
© Observatorio Petrolero Sur



Public private joint ventures

Neuquén authorities discovered a way to build up their oil and gas revenues, by creating a public energy utility company which effectively operates as a private, profit-seeking corporation: Gas y Petroleo del Neuquén SA (GyP). The company has already signed joint-ventures with Wintershall, Shell and Petrobras.

GyP’s main role is the holding of exploitation permits.⁹ **The province pulls all the strings to achieve higher returns for itself: it legislates, grants permits to itself, controls the operations, earns profits from the income and curtails public participation.**

This obvious conflict of interest raises a number of concerns, notably about the “real” intentions to control the UFF industry and limit its environmental impacts. Especially when the main priorities of the government seem to be seeking to both offset the depletion of conventional reserves, while simultaneously increasing production levels in a time of economic crisis. This is all the more relevant knowing that GyP has awarded (through direct contracts without formal tendering processes) permits to private companies like Total, Shell and Pan American Energy.

The new YPF management has also been looking after its private partners’ interests, supporting their objective of massively developing the country’s UFF potential. YPF states that more than 150 UFF wells have already been drilled in Vaca Muerta, 19 drilling rigs are in operation, and the average daily production is now above 20,000 oil and gas barrels of oil equivalent (YPF, 18/02/2014).

The first real success of the new YPF management was the agreement founded with Chevron, in which a new legal framework was established to better reflect corporate demands. YPF also recently bought Apache,¹⁰ the fifth largest gas producer in the country. This acquisition allowed YPF to become, together with Total, the main gas producers in the country. This position was consolidated with the company gaining ownership of the largest production area in the Neuquén region, of some 15 000 km². Despite this, the partly re-nationalised oil and gas company has not obtained the investments it was expecting, mostly due to its unsuccessful battle against Repsol,¹¹ following the company’s re-nationalisation. In February 2014 however, according to the YPF management, an agreement with Repsol was finally reached, lifting the obstacles in attracting new investments (Télam, 02/25/2014).

Furthermore, YPF, in coordination with the national government, has been working towards reducing tensions with civil society through huge investment in corporate social responsibility (CSR), and agreements with the provincial government.¹² The provincial government has made multiple announcements about how this CSR fund would be spent; purchasing machinery, investments in rural infrastructure, and even funding for a forensic laboratory sponsored by the FBI! (Neuquén Informa, 02/24/2014).

8 The drafts of these laws had still not been officially presented, at this report’s time of writing when that report was written, in April 2014.

9 In mid-2013, GyP owned 73 areas, of which 54 were active: three under exploitation license and 51 with exploration permits (Ministry of Energy and Public Utilities, 2013).

10 Apache was operating in Argentina since 2001 and was present in Neuquén, Rio Negro, Tierra del Fuego and Mendoza. The operations in the Anticlinal Campamento and Loma Negra areas affected indigenous territories. No public consultation was organised, violating the ILO Convention n°169. Today, in the Fernández Oro Station area (town of Allen, Rio Negro), it is exploiting conventional and unconventional tight sands reservoirs. The affected area is one of the main orchards of the country. In its permit of Alto Verde (Mendoza), Apache conducted seismic tests in the middle of vineyards.

11 Repsol found some support from other multinational oil and gas companies, and claimed for US\$10 billion in compensation from the International Centre for Settlement of Investment Disputes (ICSID).

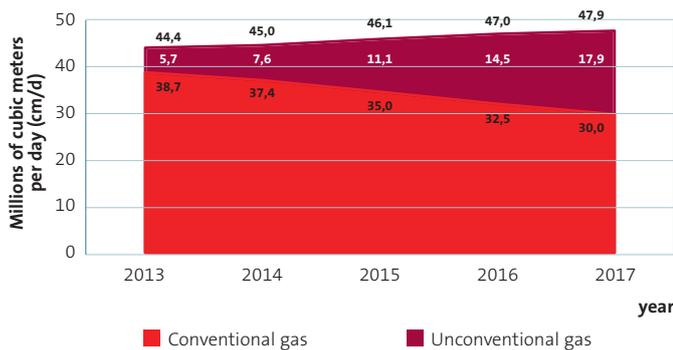
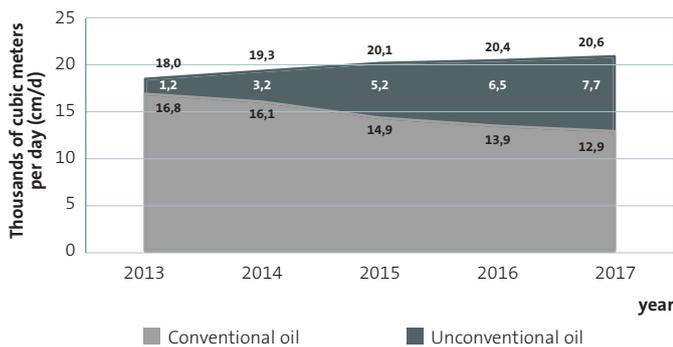
12 In Loma Campana, Chevron and YPF committed to pay about 350 million pesos to the province for CSR activities.

Transnational operators

The recent UFF developments in Neuquén are mostly based on a network of interconnected actors “whose commands are highly concentrated and centralized in the hands of a core group of transnational companies with both regional and global strategies” (Landriscini, 2008). In the Neuquén Basin, the areas with highest potential were licensed to major multinational companies such as YPF, Petrobras, Chevron, Total and Pluspetrol. Other actors also stand out for the vast areas of land they own. Amongst them we find companies such as; Pluspetrol, GYP, ExxonMobil, Jet, PAE (joint venture between BP, Bidas and CNOOC), Wintershall and Shell (Credit Suisse, 2012).



FORECASTS OF THE DAILY PRODUCTION OF HYDROCARBONS IN NEUQUÉN



Source: Ministry of Energy and Public Services, Neuquén Province, 2014.

SOCIAL MOVEMENTS AGAINST FRACKING AND UNCONVENTIONAL FOSSIL FUELS

The short history of Vaca Muerta is similar to other extractive territories, where small companies managed to open up and pave the way for subsequent sales to major companies. In this way, all the main multinationals (e.g. Shell, Total, ExxonMobil) purchased or increased their participation in Vaca Muerta since 2011, opening it up to global oil and gas markets.

The UFF developments are coming on top of already ongoing extractive developments that have created massive impacts of the oil and gas industry.¹³ In Neuquén, the industry faces opposition from three types of organization: indigenous populations, social and environmental movements, and trade unions. In a province where oil and gas production has long been the tradition, this degree of opposition against such a major regional activity, which generates many direct and indirect jobs, is both unprecedented and revealing.

One of the longest-standing conflicts is between the Mapuche community and fossil fuel and UFF operators. This stems from the unsolicited occupation of Mapuche territory. After the military occupation of the late nineteenth century, the native communities were displaced to outlying areas, where, in many cases, the arid conditions made life extremely difficult. Eventually however, oil and gas companies also wanted to occupy this unfriendly but carbon-rich territory. Today, according to a survey conducted by the Centre for Human Rights of Indigenous Peoples, more than a third of the communities in the province are directly affected by struggles relating to oil and gas permits granted on their territories (Scandizzo, 2014).

One iconic case concerns the Kaxipayiñ and Paynemil communities, whose territory overlaps the Loma de la Lata area (operated nowadays by YPF), which was the main conventional gas field in the country until the late 90s. It remains one of the major gas fields in Latin America today. Members of the communities began to take action in 1996, denouncing the contamination of their drinking water, which could actually be set alight due to the high concentration of oil residues. Through the occupation of industry facilities, demonstrations and legal actions, they began a struggle that has continued to the present day. A legal action has even been launched against the national government. The case came before the Inter-American Commission on Human Rights. In 1998, the province of Neuquén was convicted of failing to provide safe and sustainable water and a healthy environment for communities.

During this long process, the laboratory of the National University of Comahue refused to conduct water testing, in order not to lose its funding from Repsol-YPF. The Ministry of Health for the province took measures to hide early studies with alarming results.¹⁴ Furthermore, and on several occasions, the government refused to undertake health impact studies (Gavaldá and

13 When YPF was re-nationalised, many officials tried to quantify the damages generated by Repsol. Guillermo Coco, Minister of Energy, Environment and Public Services of Neuquén, assessed the provincial environmental and social damages caused by Repsol-YPF activities to have cost around US\$ 1,500 million (Rio Negro, 14/05/2012).

Scandizzo, 2008). The studies, which clearly showed the negative impacts on the health of indigenous communities, were conducted only thanks to a collective struggle.¹⁵

The oil and gas industry has had a significant negative impact on the Mapuche subsistence economy. This economy relies heavily on goat rearing, which is already made difficult in a dry region with limited access to water and pasture. The arrival of the oil and gas companies generated land and water conflicts. The construction of roads and large drilling sites caused deforestation and significantly contributed to desertification (Scandizzo, 2014).

This situation was publicly denounced in 2012 by United Nations Special Rapporteur on the Rights of Indigenous Peoples, James Anaya. His report highlighted *“the legal uncertainty of indigenous peoples on their traditional lands”*, especially in the face of industrial agricultural and extractive projects. It also echoes the concerns of the communities about fracking, which he described as *“particularly risky”* (Anaya, 2012).

The problems however go beyond the local impact in these territories. On behalf of the government of Neuquén, the United Nations Program for Development (UNDP) found that 65% of the province was affected by oil and gas exploitation. It assessed the damages caused between 1991 and 1997 to have cost around US \$ 900 million. In addition, the study showed that the 550,000 most affected hectares were within areas owned or operated by YPF (then Repsol-YPF, now YPF again), Perez Compac (then Petrobras) and San Jorge (later Chevron), and that the damages made there were estimated to be around US \$ 350 million. The acknowledged environmental damages, especially those in the oil and gas production areas, were so severe that the then governor, Felipe Sapag, recognized for the first time a severe environmental emergency and declared it be a state of emergency (Sejenovich, 2012: 80).

However, no concrete measures were taken and the environmental impacts were gradually forgotten. The situation has since deteriorated. In June 2000, the then governor, Jorge Sobisch, extended the concession for Repsol-YPF in Loma la Lata by 10 years, basing his decision on a promising *“strategic partnership”*. And recently, as noted above, the current provincial authority has compounded the issue by weakening environmental controls.

Argentine civil society has fought for over a decade against projects concerning mega-mining, agribusiness, pulp mills, etc., which has in no small way built up their capacity to rise up and take action against UFF. These social movements are structured in assemblies that emerged during the Argentinian economic crisis in 2001, when harsh confrontations took place in Patagonia and Neuquén.

The trade unions have also made demands which play an important part in the opposition against UFF. They have a renowned history of resistance to the implementation of neoliberal policies, which they now have focussed onto the struggle against fracking, organising mass demonstrations led by teachers and public sector workers.

These various resistance approaches have led to the convergence of different sectors. The Mapuche communities and organizations are fighting for a real nationalization of YPF and for the social appropriation of oil and gas incomes. Environmentalists, feminists, trade unionists, political parties, religious groups, students, intellectuals, legislators, etc., are fighting for various approaches to combat UFF, in assemblies and networks such as the *“Multisectoral against Hydraulic Fracturing”*. With this diversity of groups, ways of combating UFF vary, from occupation of oil and gas sites and mass mobilizations to enactments of local frack-free decrees, legal complaints, and awareness-raising activities (debates, workshops, documentary screenings, concerts, etc.). These links are not always sustained over time, and ruptures sometimes occur because of ideological differences, but the collective struggle persists.

“There’s no development possible in a destroyed territory.”
© Observatorio Petrolero Sur



Home in the Mapuche community Gelay Ko.
© Observatorio Petrolero Sur



14 One of the studies, which was eventually released, noted, for example, that Loma La Lata has “triggered a complex chain of environmental impacts” that have worsened the living conditions of its inhabitants. There are 40 wells drilled with 37 km of pipelines, 20 km of electricity lines and 50 ha for runways. Alarming amounts of air emissions (50,000 m3/day), contamination of soil, rivers and groundwater were detected (Lisi, 1996).

15 The study conducted by the consulting firm Umweltschutz Argentina (2001) found significantly high levels of lead, cadmium, arsenic and nickel; and it links these values with hydrocarbons. Meanwhile, Falaschi et al (2001) concluded that “the data analyzed are a serious indication that the levels of exposure to elements such as hydrocarbons in general, lead and mercury, beyond the amounts found in their bodies, represent a serious harm for physical health, aggravated by the uncertainty created by the inaction of the provincial health system which systematically denied the information”.



Members of the Multisectoral against hydraulic fracturing.
© Multisectoral against hydraulic fracturing

history in the province has failed to bring development, but rather desolated the area and caused irreparable contamination.

Auca Mahuida territory is a Natural Protected Area that is rich with hydrocarbon fields. Total operates in Pampas las Yeguas, Rincon la Ceniza and San Roque areas. Shell's subsidiary, O & G Developments, operates in Aguila Mora. YPF and the provincial Gas y Petroleo also have areas that cross over the territory that hosts one of the largest biodiversity areas in arid Patagonia.

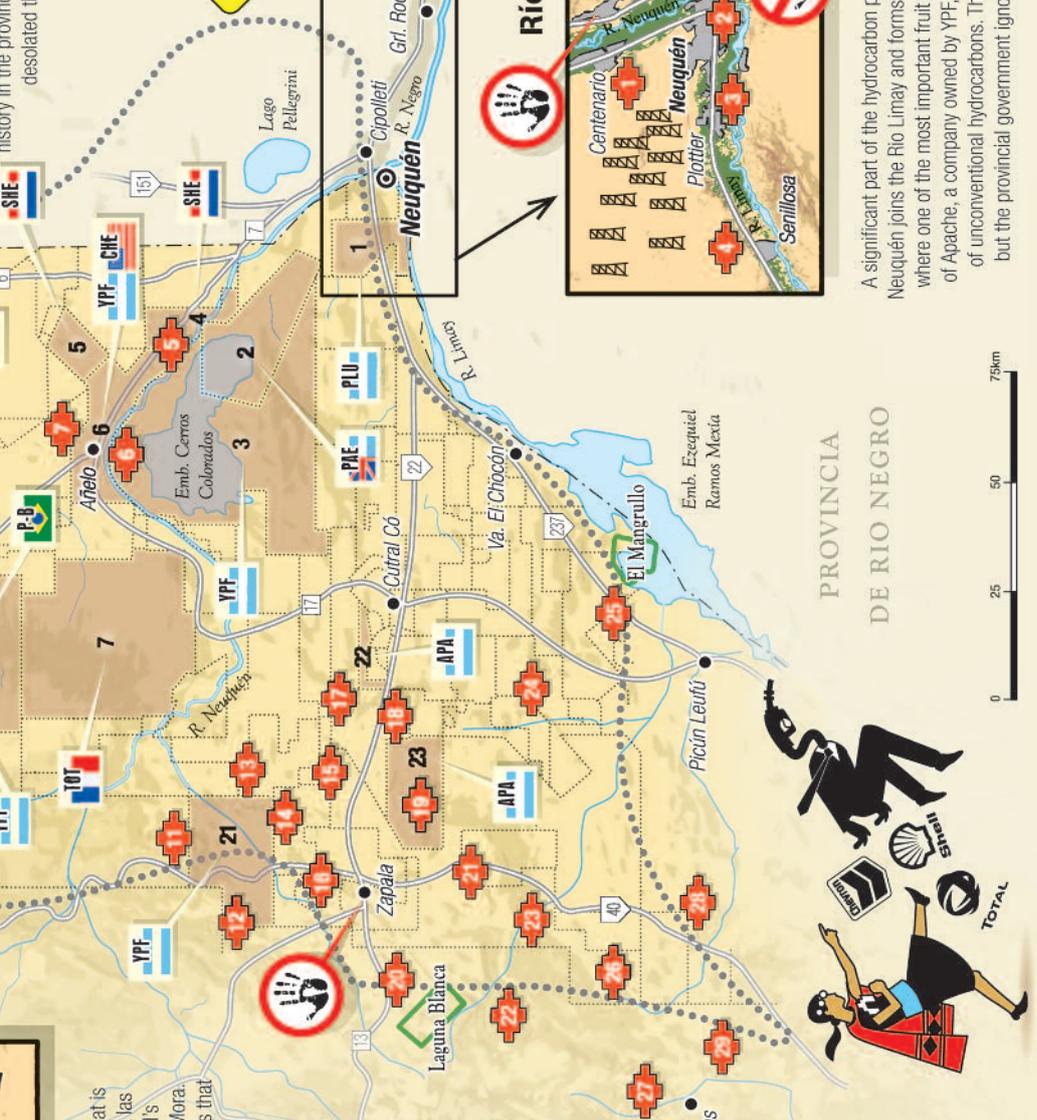
Environmental issues

Biodiversity loss / Greenhouse gases / Contamination risks



Social issues

Rupture of original cultures / Land occupation / Evictions / Social protest criminalization



Río Negro's Upper Valley



A significant part of the hydrocarbon production, is located in the area where the Río Neuquén joins the Río Limay and forms the Río Negro. It is precisely in the confluence where one of the most important fruit valleys in the country is situated. In this region of Apache, a company owned by YPF, occupies vast areas of land for the production of unconventional hydrocarbons. The municipality of Allen banned these activities, but the provincial government ignored the mobilisation of the people and allowed for further development to go ahead.

Suppression

As Neuquén's Parliament approved the first massive shale gas development between YPF and Chevron, five thousand people protested in the streets. The police responded to the mobilization aggressively using tear gas and rubber/lead bullets. The law was passed in spite of their efforts. Two days later, houses in the Campo Maripue community, whose territory crosses the areas approved for exploitation, were burnt down by anonymous hands.

Resistances

Cinco Saltos Municipality, on the bank of the Neuquén river, was the first area in the country to declare itself fracking-free. The movement has obtained bans in over 30 local towns, with Zapala being the only one to get one in Neuquén.

References

- Vaca Muerta and Los Molles shale formations
- Natural Protected Areas
- Well
- Park rangers
- Fracking well
- Localidades antifracking
- Approved ban
- Ban declared unconstitutional

Selection of hydrocarbon areas and operator

1. Centenario: Pluspetrol, 2. Lindero Atravesado: Pan American Energy, 3. Loma La Lata: YPF,
4. Sierras Blancas: Shell, 5. Cruz de Lorena: Shell,
6. Loma Campana: YPF - Chevron, 7. Aguada Pichana: Total, 8. Sierra Chataz: Petrobbras, 9. El Ojeano: YPF,
10. Pampo de Las Vegas - Bloque II: Total,
11. Rincon La Ceniza: Total, 12. San Roque: Total,
13. Aguada Federal: Wintershall, 14. Veta Escondida: Petrobbras, 15. Bajo del Choique: ExxonMobil,
16. La Escalonada: Total, 17. Aguila Mora: Shell,
18. Puesto Hernández: YPF, 19. El Tropicel: Chevron,
20. Parva Negra: Petrobbras, 21. Cerro Partido: YPF,
22. Loma Negra: Apache, 23. Anticinal Campamento: Apache.

Mapuce communities

1. Nueven Mapu, 2. Puel Puy, 3. We Kyen, 4. Regifit Ko,
5. Kaxpayit, 6. Paynemil,
7. Campo Maripue,
8. Kilaci, 9. Huayquillán,
10. Millán Curical, 11. Cheuquel,
12. Millaqueo, 13. Winroy Foll,
14. Tuwun Kipaimo Maliqueo,
15. Gelay Ko, 16. Quinchao,
17. Logko Purán, 18. Antipán,
19. Kallikurá, 20. Zapala,
21. Gramajo, 22. Filipin, 23. Cayupán,
24. Marifit Limay, 25. Wenku Xawm Leufú, 26. Paineo, 27. Ramis,
28. Cayulef, 29. Zufiiga.

Research: Observatorio Petrolero Sur. Design: Iconoclastas. Sources: Observatorio de Derechos Humanos de Pueblos Indígenas (ODHPi), Neuquén's Provincial Protected Areas Direction and Undersecretary of Mining and Hydrocarbons, among others.

3

CHEVRON, THE FRACKING PIONEER

Chevron is one of the largest global oil and gas companies, and is also the main investor in the energy sector in Latin America (YPF, 24/08/2012). Its activities have long been associated with devastating environmental impacts, not least in the Ecuadorian Amazon. This experience is unfortunately, as will be seen, closely linked to current progress in Argentina.

Chevron has played a prominent role in the development of UFF in Argentina. It has managed to obtain concessions in the richest area of the Vaca Muerta formation, through a 'secret' agreement with YPF, the details of which have not been publicly disclosed. To ensure its operations would be viable, Chevron demanded changes in legislation and public policies that granted the US company legal protection, an increased share of the profits and business-friendly dispute settlement mechanisms. This controversial agreement was brutally defended by public authorities in the face of enormous public opposition, even resorting to riot police forces to crush resistance. Five thousand people from various organizations who had mobilized in protest were victims of police brutality.

Chevron's groundwork prepared the way for other oil and gas companies to follow. As stated by YPF, "the project will encourage other companies to accelerate their investment decisions, in order not to be late or left out; massive drilling associated with this project will help validate the characteristics of Vaca Muerta as a producer of Shale Oil & Gas and test their marketability; companies like ExxonMobil, Shell, Apache, Total etc., have their own acreage and could also accelerate their development of Shale Oil & Gas, having a favourable framework of conditions generated by this project" (YPF, s / n).



Chevron unconventional gas drilling site in Loma Campana.
© Observatorio Petrolero Sur



CHEVRON DEMANDED CHANGES IN LEGISLATION THAT GRANTED THE US COMPANY LEGAL PROTECTION, AN INCREASED SHARE OF THE PROFITS AND BUSINESS-FRIENDLY DISPUTE SETTLEMENT MECHANISMS





A LONG HISTORY IN ARGENTINA: CONVENTIONAL TO UNCONVENTIONAL

As noted on its corporate website, Chevron settled in Argentina in the first half of the 20th century to market fuels and lubricants. From the 1980s it began operating in the upstream stage and, finally, after acquiring Petrolera Argentina San Jorge S.A. in 1999, it consolidated its current operating portfolio (Chevron, April 2013).

In terms of production, Chevron was the sixth largest oil extractor at national level in 2013, and the second at provincial level in Neuquén (Secretary of Energy). Its activities are mostly focused on the Neuquén Basin, with four permits to extract oil, three in the province of Río Negro (La Yesera, Puesto Flores and Loma Negra) and one in the province of Neuquén (El Trapial). Chevron also holds 14% of Oleoductos del Valle S.A., a crude oil carrier from the Neuquén Basin to the Atlantic (Chevron, 2013). Most crucially however, the company signed an agreement with YPF in mid-2013 to launch the first shale gas pilot production project in South America.

Chevron's main asset is the El Trapial concession, the second biggest crude oil extraction location nationally, and where the company has extracted more than 80% of its production (Energy Department). Since 1999, Chevron has owned 85% of the concession's rights, with the other 15% owned by the International Finance Corporation (IFC), which is in charge of promoting the private sector for the World Bank Group. In 2011, Chevron managed to extend the concession period, which was supposed to end in 2022, by ten more years. That same year, Vaca Muerta started to attract more attention, which is why Chevron's demand for a contract extension was tied to a guarantee to access these new unconventional resources without having to go through a public bidding process, which would involve both competition with other bidders and public participation.



**Chevron
unconventional gas
drilling site in Loma
Campana.**
© Observatorio
Petrolero Sur

Chevron's shift to UFF in Argentina

Chevron's conventional production in Argentina has been in decline; between 2004 and 2012 oil production in El Trapial fell by 43.6% and gas production in all of its areas was reduced by almost 78%. Meanwhile, stocks fell by 64% (Sabbatella, 2013). The company therefore decided to focus on its UFF business, via two main projects: the El Trapial and Loma Campana permits. The company's well-established presence in the Neuquén Basin, its financial solvency and its knowledge of fracking technology have turned Chevron into a central actor in UFF development in Argentina.

In 2012, Chevron drilled the first two shale oil wells in El Trapial, which proved potentially promising. The following year, a third well was drilled and three more are planned (Chevron, 2013). In recent press statements, Chevron announced it has so far invested around US\$75 million and that before the end of the concession's period, 200 new wells would be drilled (La Mañana, 24/03/2013). To fracture these three wells, 70 million litres of water was needed, transported by truck from Río Colorado, with the flow-back injected 3000 meters deep in flowback disposal wells, which pose severe risks for the environment and local communities' health (Río Negro, 24/03/2013).

YPF help sweep Chevron activities in Ecuador under the carpet

YPF had been superficially studying the UFF source rocks in Argentina since 2007. Located in the area known as Loma La Lata Norte, YPF was using hydraulic fracturing, and by July 2013, 64 wells had been drilled in the region, mostly vertical, with fifty subject to massive hydraulic stimulation (YPF, 2013).

YPF's short-term needs pushed the national government to accelerate its approval process for new projects. YPF also required a strong international partner that could compensate and counter the legal campaigns initiated by Repsol after the re-nationalization (including a US\$10 billion compensation claim filed to the CIADI). The new YPF CEO therefore met with Chevron representatives (YPF, 24/04/2012) and in July 2013 sealed an agreement. Their primary objective was to conduct the first shale oil pilot project in the south of Río Bravo.

However, other important events were occurring in parallel to this which directly affected Chevron's UFF development in Argentina. In Ecuador, the Unión de Afectados y Afectadas por Chevron-Texaco del Ecuador (Union of People Affected by Chevron-Texaco Ecuador) had been fighting Texaco (acquired by Chevron in 2001) over the massive environmental and sanitary damages it had caused in the Amazon region. The company admitted they had dumped more than 60 million cubic meters of toxic water into nearby rivers and streams. As a result of these actions, Chevron was sentenced in Ecuador to pay more than US\$ 8 billion in compensation. The North American company led an aggressive defence that included the removal of their assets from Ecuador, and a campaign to denounce the 'plot' against them orchestrated by the attorneys and the Ecuadorian government.

As Chevron refused to heed the sentence, the Union of affected Ecuadorians undertook actions in Brazil, Canada and Argentina to ensure the enforcement of the Court's decision. Notably, they undertook a garnishment -or debt payment - action in the Argentinian Courts to seize 40% of Chevron's cash flow in

Argentina. In November 2012, a judge in the trial judge seized Chevron Argentina's accounts, and was awaiting confirmation from a higher level court.

Conditions imposed in the YPF-Chevron deals

Following the dispute between YPF and Repsol, many multinational companies had put their activities on hold in the region, despite their keen interest in Vaca Meurta's UFF potential. Chevron however decided to go ahead with their project plans. Aside from the project requirements however, Chevron insisted it would only sign the agreement with YPF if YPF met two conditions: (1) to get an end to the debt payment procedure against Chevron obtained by the affected Ecuadorians, and (2) to set up a tax exemption regime and to allow UFF production for export.

With respect to the first condition, in early March 2013, Chevron's vice-president, George Kirkland bluntly declared that the company *"cannot move forward as long as it remains outstanding"* (Financial Times, 13/03/2013). As YPF's final agreement with Chevron was imminent, its CEO, Miguel Galuccio, publicly supported Kirkland and condemned the Ecuadorian action for its *"negative effect on investment and employment in the country"* (La Nación, 28/03/2013). The province of Neuquén and the Union of Private Oilmen also used their influence to obtain a favourable verdict for the company. The Attorney General

of Argentina, Alejandra Gils Carbó, then declared that the seizure of Chevron's accounts was going against the interests of the oil industry, which was considered as a *"national public interest"* (OPSur, 30/05/2013). Finally, in June 2013, the Supreme Court rejected the debt payment, thereby legitimatising Chevron's corporate impunity in both Ecuador and Argentina.

Regarding the second condition, Chevron did indeed obtain a favourable regime promoting corporate investments in the hydrocarbon sector (Decree 929/13). This was released a day before the Chevron-YPF agreement was signed, and featured conditions imposed exclusively by Chevron: in return for investing in the country, Chevron had demanded extensive benefits for operators, including price increases, extension of concessions' duration, freedom to export, and foreign exchange. Chevron was thus able to reverse the decision-making process of a country by forcing its government to legislate based on corporate interests rather than general welfare.

It should also be noted that Chevron obtained investment guarantees from the national government for investments in certain infrastructure and services, which were equivalent to subsidies of around 1 billion pesos.¹⁶ The state therefore effectively paid for the construction of schools, hospitals, road infrastructure developments, etc, that will ultimately facilitate UFF exploitation in Vaca Muerta as a whole.



Chevron unconventional gas drilling site in Loma Campana.

© Observatorio Petrolero Sur

¹⁶ 1 billion pesos = € 135 million

YPF-CHEVRON AGREEMENT AND LOMA CAMPANA PROJECT

YPF and Chevron's agreement was initially limited¹⁷ to the Loma Campana concession, to which a zone called Loma La Lata Norte was annexed at the request of YPF (authority granted by the 929/13). The agreement consists of a shale oil pilot project during the first year, subject to possible large-scale development by Chevron over the remaining 34 years, in the event of successful results from the exploration stage. The investment and profits would be shared equally between Chevron and YPF. Beyond this information, which was reported by the companies, the full scope of the deal remains unknown. Whilst the agreement between YPF and the province of Neuquén, which enabled YPF's UFF production with Chevron, was publicly announced, very little detail has been given about the deal between YPF and Chevron. YPF have said that this "confidentiality is in compliance with the rules that apply to a publicly traded company" (YPF). At the national political level, Senator Rubén Giustiniani (Socialist Party) and Deputy Claudio Lozano (Unidad Popular), among others, have made access-to-documents requests to the government, but all requests have so far been rejected.

The Loma Campana concession

The Loma Campana concession covers 395 km² and is located at the north of the Mari Menuco and Los Barreales lakes, which are the main water sources for most of the population located in the valley. The pilot project area occupies about 20 km² but overlaps the territory of the Mapuche community Campo Maripe who, as usual, were not included in the decision-making process.

While the project only covers 1.4% of the oil region of Vaca Muerta (YPF, 2013), its scale has been a turning point in the operation of the oil and gas industry in Argentina: the amount of drilling equipment required for the project is equivalent to a quarter of all the equipment in the country. At the peak of production, it would be extracting a volume equivalent to 74% of oil, and 7% of gas, from all current production in Neuquén. The investment for the first year, approximately US\$ 1.1 billion, is equal to the total sector investment made in 2011 in the province.

The total investment will be around US\$16 billion, out of which the largest expenditure will be drilling, with an expected cumulative profit for the operators of more than US\$ 22.6 billion. The Loma Campana area mainly produces oil, which is significantly more profitable than the production of gas, which Argentina currently spends millions of pesos importing.

Regarding the profit margins, independent analysis calculated an Internal Rate of Return (IRR) of 24% per annum, numbers much higher than in any other industrial sector (Llorens, Cafiero, s/n).¹⁸ According to these calculations, Chevron would obtain profits nine times higher than the amount invested, recovering within 8 years the amount allocated to the overall project. The State, for its part, will have a low rent capture, of about US\$8 billion, according to YPF. The provincial royalties, set at 12%, are among the lowest on the continent.¹⁹ The tax on the gross revenues, which is around 3%, is lower than that of a car dealership. Each of these amounts is paid based on the company's tax returns, and there is little-to-no tax auditing carried out by the State.

In relation to production, the proposed pilot project will consist of 115 new vertical wells in the first year, along with eleven permanent rigs. The second year of the project will see the comprehensive development stage begin. During this period, a total of 1,562 additional wells will be drilled, most of them in multi-well pads containing 2 to 4 wells each. This will require non-stop activity, with up to 19 wells being drilled simultaneously. At the end of this massive development, the average number of operating wells per km² will be around 4.25. This is approaching twice the average of 2.6 wells per km² in United States, and demonstrates the extreme intensity of the planned exploitation (Llorens, Cafiero, s / n).



Chevron unconventional gas drilling site in Loma Campana.
© Observatorio Petrolero Sur

¹⁷ In various press releases, YPF said other projects were in the pipeline, both in the province of Neuquén and Mendoza.

¹⁸ With profits so high, the Loma Campana's project could have been self-financed by the profits from the project. It is therefore questionable why the national government so keenly looked for foreign investment.

¹⁹ In Bolivia, for example, royalties are around 18%; in Colombia between 5 and 25%; in El Salvador between 15 and 17% (OLADE, 2010).

ENVIRONMENT, CONTROL AND ARBITRATION

The transfer of 50% ownership of the Loma Campana pilot project to Chevron was permitted by an agreement between the province and YPF (Decree 1208/13), and ratified by the provincial Assembly (Law N° 2867).

There are several important comments to make about this agreement, the first of which is that the details of it are barely known even by the person responsible for overseeing it. The Minister of Energy and Environment, Guillermo Coco, in his statement during the legislative debate, said that he only knew the parts of the contract that the government had asked specific details about (Legislature of Neuquén Province, 14/08/2013), indicating his ignorance of the contract as a whole.

Secondly, the process was full of procedural irregularities. The agreement did not go through the Assembly's Committee of Environment, the procedure instead being fast-tracked to last barely a month. In addition, the project did not comply with all the required laws: there was no consultation with indigenous communities; poor and incomplete environmental control (as recognized by the Minister); and, as will be seen later, illegal extension of the concession's duration. In this regard, Minister Coco said: *"This project doesn't give us enough time to have our legislative tools one hundred per cent ready"* (op cit: 13). He added that while they had *"agreed the economic feasibility of the project, [they] had not yet approved the environmental feasibility one hundred per cent"*.

Thirdly, the project agreement results from terms and conditions imposed by Chevron. Coco was clear about who really led the discussions: *"Based on discussion of how we were going to enforce the guarantees and conditions requested by YPF SA, we suggested this administrative act [the debate in the Assembly]. These conditions were necessary due to the need for a financial partner [Chevron]"* (op cit: 6).



Chevron unconventional gas drilling site in Loma Campana.
© Observatorio Petrolero Sur

The conditions set by Chevron were as follows:

- **Arbitration:** The dispute shall be settled ultimately by the International Chamber of Commerce (ICC), the world's largest business organization, located in Paris, France.
- **Supervisors and environmental control:** Environmental control, and oversight of the work plans will be undertaken "by the stakeholders", which implies a role for the company equal to the auditor's.
- **Extension of contracts:** The agreement introduces an extension of the concession until 2048, which contradicts the Hydrocarbons Laws (maximum period of 25 years).
- **Tax benefits:** The province agrees neither to levy new taxes to the project nor to increase existing taxes.
- **Corporate Social Responsibility:** The Company will spend US\$ 45 million on the Trust Fund for CSR. The use of these amounts will be subject to an agreement between officials and the YPF Foundation, which, once again, creates conflicts of interest and corporate capture of the decision-making process.

The environmental risks of the project are repeatedly denied by officials. According to the Environmental Impact Assessment (EIA) submitted for the Loma Campana pilot project, activities required to carry out fracking have only low or moderate impacts on the environment (YPF, 2012b). Today, it is not known how many of the 115 vertical wells planned for the first year have already been drilled, although it was reported by the media that the completion of the first stage was imminent. Each of these wells, the EIA states, consumes about 10 million litres of water per fracture. In each of the multiple locations (180 x 150m³), with four wells, each one with 40 pools of 80 m³ will be installed. These are transportable and are used throughout the fracturing process.

The return water will be treated in a special plant (PIA 2), through a process that consists of removing oils, softening and filtration. The EIA says the resulting water, *"under the condition that it complies with the quality required, will be used for the fracturing of wells"* (YPF, 2012b: 41). Although the project does not specify where the water that does not meet the required quality will be deposited, the environmental legislation of the province (Decree No. 1483) requires it be injected into flowback disposal wells.

Regarding the handling of sludges and cuttings, the EIA states that a *"dry drilling location will be used, which consists of a circuit of sludges especially designed for draining water from drill cuttings, wherein the "drained" cuttings shall be deposited in metal containers, which will then be transferred by an authorized company to the Repository Bajo Añelo in the Oilfield LLL [Loma de la Lata], where it will be disposed temporarily"* (YPF, 2012b:12). There is no reference to its final disposal.

Reports in Argentina have categorised methane leakage in fracking as only a moderate impact, although field studies in the USA have revealed that methane leakage in unconventional projects was between 6 to 12% (Karion et al., 2013).

RESISTANCE AND HUMAN RIGHTS VIOLATIONS

The agreement between YPF and Chevron was ratified on August 28, 2013, by the Neuquén Parliament. On that date, numerous organizations called for a mobilization against this “*pact of plunder, pollution and death*”. The main objections were against fracking and its unavoidable environmental impacts, against the loss of sovereignty of local authorities and communities, and against the export-orientated nature of the project.

This mobilization was preceded by the occupation of the oil field El Trapial by the Multisectoral Against Hydraulic Fracturing, because the “*pollution [was] already heavy, and those responsible for causing it are those who are making the decision to promote hydrofracking*” (8300, 22 / 08/2013). At the same time, several organizations called for a referendum to enable citizens to express their views on the issue. This proposal was ignored (Gaceta Mercantil, 25/07/2013). The 28 August brought more than 5,000 people onto the streets in protest, to which riot police were brutally deployed. More than twenty people were wounded by rubber bullets and several people were arrested. A teacher who was shot in the chest remained hospitalized for several days. Although there was no definitive official report, the man claimed that the projectile was shot by the police (8300, 02/12/2014). Multiple government agencies branded the protesters ‘undemocratic’ and ‘misfits’ (OPSur, 02/09/2013). The next day, in response, various unions called for a strike and ten thousand people once more occupied the streets (8300, 8/29/2013).

Indigenous rights trampled, again

The UFF YPF-Chevron project is based in the territory of the Mapuche community Campo Maripe. It is however required by Agreement 169 of the ILO and other international treaties, that in cases where industrial projects are planned on indigenous territories, consent of the community must be obtained prior to project approval. The violation of the Mapuche territory is a direct offence to their collective and human rights. According to the International Legal Framework, which Argentina has signed (CEPPAS, 2011), this offence is considered ethnocide. The Province of Neuquén has never complied with the treaties, with apparent impunity.

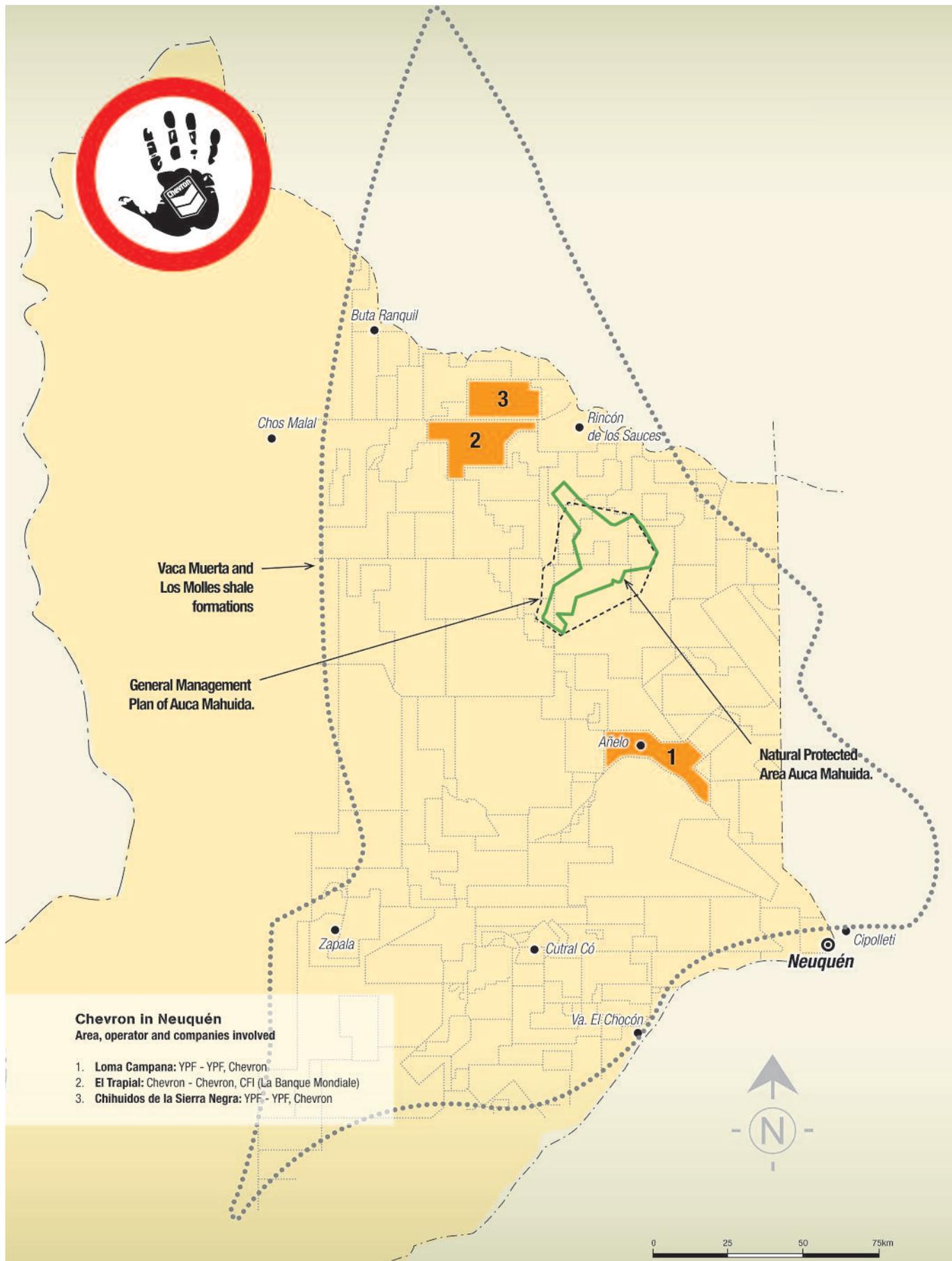
Although the prior, free and informed consultation was not undertaken, days after the legislative session, the community accepted 60 hectares of land as compensation for the oil company’s intervention in its territory. However, by March 2014, there was still no progress on or recognition of the human rights violations, while more than 13 drilling rigs were operating on the site.



Demonstration against Chevron by the Mapuche community.
© Pepe Delloro, Télam



MAP OF CONCESSIONS OWNED BY CHEVRON IN THE NEUQUÉN PROVINCE



4

TOTAL, HISTORIC ACTOR, NEW FRACKING PLAYER

Present in Argentina since 1978, through its subsidiary Total Austral SA, Total was Argentina's largest producer of gas between 2009 and 2012, representing nearly 30% of national production (National Energy Secretariat). In the Neuquén fields of Aguada Pichana and San Roque, Total has drilled nine shale gas wells, which account for 56% of Total's production in Argentina. Its second production zone is in Tierra del Fuego, in southern Patagonia, where onshore and offshore wells are in operation. Total also contributes to the development of gas pipeline networks in the region.

Recently, the company has been aggressively expanding into new territories: Total now owns two exploration permits in Uruguay (Total, 2013). In addition, Total announced major investments of around US\$1.3 billion for the development of

offshore unconventional projects (El Inversor Online, 23/10/2013). These developments however are generating significant conflicts, as is characteristic of UFF activities.



Total unconventional well on the San Roque concession along the Auca Mahuida area.
© Observatorio Petrolero Sur



TOTAL AND UNCONVENTIONAL FOSSIL FUELS IN NEUQUÉN

The French company has focused its Argentinian operations on gas extraction and is, after YPF, the second biggest producer at provincial level; according to the National Energy Department Total produced over 30% of gas produced in the Neuquén Province in 2013. The major part of its production comes from the Aguada Pichana and San Roque areas, in operation since 1997, which it shares with other major companies: YPF, Pan American Energy (Bridas, CNOOC and BP) and Wintershall. In these areas, which are among the country's most important, **Total has obtained significant benefits and legislative modifications.** While its concession period was due to expire in 2017, it managed in 2009 to **extend it for 10 more years** (until 2027, by provincial decree No. 235), which was in violation of the national Hydrocarbons Law. The company also has a smaller share in the unconventional gas exploitation areas in Sierra Chata, Rincón de Aranda and the exploration area of Veta Escondida (all of them operated by Petrobras).

Since 2011, Total's strategy for unconventional gas has focused on known exploitation sites, improving the existing infrastructure and extending its concession periods. For instance, four wells have so far been drilled on San Roque, and five in Aguada Pichana (Sub secretariat for Hydrocarbons and Mining of Neuquén). Seven other drillings for tight gas²⁰ were also performed. For the Aguada Pichana permit, an investment of US\$ 400 million was announced for two shale pilot projects which would require the construction of 20 wells (La Mañana Neuquén, 10/10/2013). Total expects to enter into the production stage for these fields before the end of 2014 (Total, 2013).



TOTAL EXPANDED AGGRESSIVELY OVER THE NEUQUÉN SHALE BASIN BEFORE ALL THE OTHER COMPANIES



Wellhead on a site owned by Total in Auca Mahuida.
© Observatorio Petrolero Sur



Fauna of Auca Mahuida - Lama guanicoe.
© Sergio Goitia

²⁰ Tight gas is classified amongst the unconventional fossil fuels because the geology in which it is trapped, characterized by a low permeability and porosity, requires the use of fracking.

However, Total's focus on UFF went beyond these traditional areas and **expanded aggressively over the Neuquén shale basin**, even before the first announcements about Vaca Muerta were made by Repsol-YPF in 2010. Total purchased shares for the La Escalonada and Rincón Ceniza areas, then in January 2011 acquired part of the Aguada de Castro, Pampa Las Yeguas II, Cerro Las Minas and Cerro Partido concessions (Total, 14/01/2011). So far, according to information gathered by the Sub-Secretariat for Hydrocarbons and Mining, **Total has drilled and fractured seven unconventional wells** on these concessions. The French company recently sold 42.5% of the La Escalonada and Rincón Ceniza areas to Shell, but it kept important operating rights (El Inversor Online, 31/03/2014). Total has therefore quickly become a major actor in Argentina, with its presence growing **from 5 to 11 concessions in a matter of months**, 6 of which are under its direct operation. Today, **its influence area covers almost 5,300 km²**, which represents over 26 times the area of Buenos Aires, and almost 6% of the province of Neuquén.

The contracts signed with UFF operators have been done without any formal information or tender process, which explains why the conditions and limits imposed by Total (and other operators) are not completely disclosed. The lack of data made available by public bodies is compounded by corporate silence, as Total does not openly communicate the techniques used and the scope of its permits. The information made available by Total on its website is only in English and concerns its worldwide investments. On its Argentinian website, there is no information about its exploration activities, though a considerable amount about its sponsorship of sports!

The limited access to information and the discretionary management by Total have become particularly obvious **with the unconventional well on the Pampa Las Yeguas II area, conducted within the Natural Protected Area of Auca Mahuida**. Its northern part has already been affected by a conventional oil development, with significant detrimental social and environmental impacts. The drilling incited strong social opposition, notably due to the **numerous irregularities** in the environmental report submitted by Total.



Flora of Auca Mahuida.
© Sergio Goitia

AUCA MAHUIDA: PROTECTED AREA UNDER THREAT

Auca Mahuida was declared a natural protected area in 1996 (Provincial Decree No. 1446), but this only became legally binding in 2008 when the Law on Natural Protected Areas (N^o 2594) was ratified and officially recognized the existence of 11 protected areas in the Neuquén province. However, conservation policies are not a priority for the Neuquén government, as demonstrated by the lax implementation of the law and its appetite for new extractive activities in these protected areas.

The importance of conservation

The Auca Mahuida Natural Protected Area is **one of the most precious biodiversity centres of the Patagonian Steppe, with an exceptionally diverse mammal population**. The area is extremely rich and hosts a number of species that have disappeared or are very rare in other parts of the province. It has one of the largest populations of guanaco, cougars, red and grey foxes, Geoffroy's cats and Pampas cats, Patagonian weasels and ferrets, skunks, maras, pichis, hairy armadillos and chinchilla rats. Little is known about the reptile fauna, with potentially numerous but yet undiscovered endemic species of lizards. Dozens of species of birds have been registered, including the rhea, whose population has declined by more than 80% in some places in Neuquén. The area also hosts recently discovered condors. This is why Auca Mahuida has been declared an **"Important Bird Area" (IBA)** by BirdLife International and Aves Argentinas.

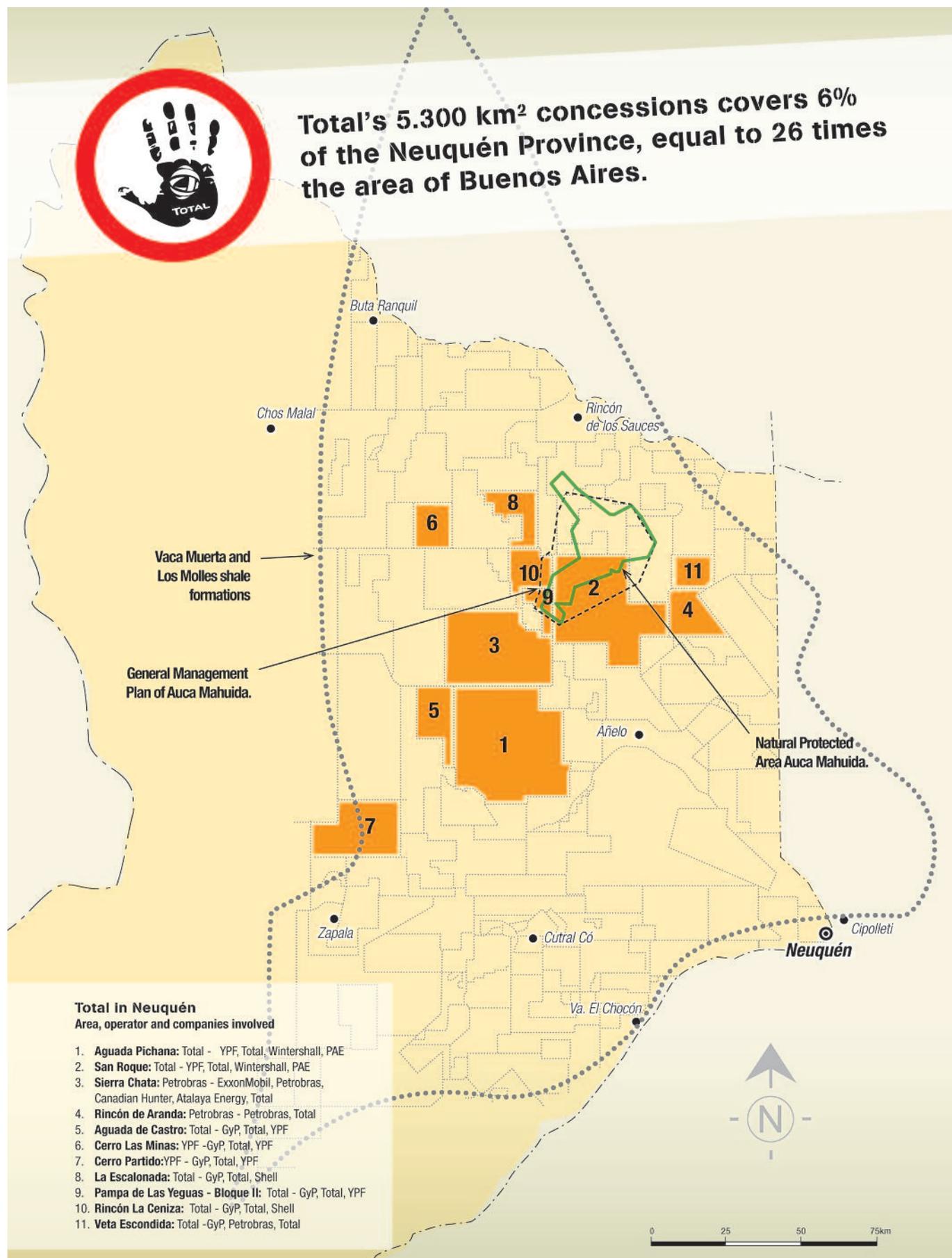
The Auca Mahuida area also hosts important flora diversity, with species ranging from the mountain shrub steppe, Patagonia grasslands in the Payunia district and traditional Andean highlands flowers. Fourteen endemic plant species have also been found in the Payunia area.

Additionally, the **Mount Auca Mahuida is a mythological-ritual-ceremonial site for Mapuches** and native people. There are several archaeological sites, in which petroglyphs and rock paintings can be found. From a paleontological point of view, the area also has a **high potential for dinosaur fossils**.



Fauna of Auca Mahuida
- *Oncifelis geoffroyi*.
© Sergio Goitia

MAP OF CONCESSIONS OWNED BY TOTAL IN THE NEUQUÉN PROVINCE



Hydrocarbon extraction and legal vacuum

These protected regions are facing several challenges, including the **problematic lack of a regulatory framework to adequately protect them**. This serious legislative shortcoming hinders the action of the competent authority itself, the Department of Natural Protected Areas (DNPA), in terms of control over and regulation of the mining activities operating in the area.

Firstly, the Law on Natural Protected Areas cannot be applied as it still lacks a regulatory decree, which should have been made within 180 days of the law's enactment, almost 6 years ago. The decree proposal, which was sent on time by the DNPA technical team, the body in charge of prohibiting mining activities, was never addressed. Secondly, the General Management Plan of the area, which was finalized in 2000, has never been approved by the provincial executive, thereby generating a 'legal vacuum'. The Plan sets out an extension of the protected area from 77,000 to 120,000 hectares, and establishes the zoning of activities within the reserve. This is important because if the Plan had been approved, nearby wells recently drilled by ExxonMobil, Shell and Total would be entirely inside the Auca Mahuida area. This 'legal vacuum' therefore increases the lack of accessible information for DNPA technicians, who are unable to access the Environmental Reports of companies operating in these immediately surrounding areas.

This lack of accessibility is further compounded by the significant underfunding of staff. The technical teams argue that they do not have the necessary resources to undertake their work, including for example no working vehicle. There are only two inadequately trained park rangers for the entire area, one of which has a precarious contract. Nonetheless, in an interview, one of the park rangers noted the warnings he had sent to his managers about the environmental impacts generated by Total's new unconventional wells, particularly regarding its location on the condor nesting area. This was never taken into consideration. Despite these significant limitations, the DNPA staff provides knowledge of the environmental situation in the area, unlike most other zones.

A 2012 DNPA report recorded 11 hydrocarbon concessions directly affecting the region of Auca Mahuida. Based on their limited data, there are over 69 wells and associated infrastructure and roads that cover over a thousand kilometres, all affecting the protected flora and fauna. These activities involve YPF, Shell, Total, ExxonMobil, Wintershall, Pan American Energy (Flanges, BP, CNOOC), GyP, Medanito (working with national and World Bank capital) and EOG Resources, as operators and/ or owners. During the field visits made in preparation of that DNPA report, environmental violations were observed at almost all wells, and the companies were then required to take concrete steps to clean up the damage. More than two years after that report, the situation has not changed.

It is important to note that despite previous and current **environmental damage caused by the industry, its expansion continues**. Environmental technicians (interviewed by the authors) indicated the problematic treatment of Environmental Reports, which are conducted by agencies but paid for by UFF companies. These technicians argue that authorities do not take into account their opinions regarding malpractice by the consulting firms, hired by the oil and gas companies, which use and indiscriminately copy generic information from other works without undertaking full field research. Technicians also report that the Secretariat of Environment and Sustainable Development, the government bureau with policing power in these matters, is systematically approving unconventional licenses "conditionally": with the condition that errors and absent information are corrected. Juan Fittipaldi, a lawyer specialized in environmental law and involved in several cases against Total, reports that **this practice is contrary to the stipulations of the existing legal framework** (Article 12 of the General Law of the Environment No. 25,675) which requires Environmental Reports to be approved or rejected in their entirety (Río Negro, 05.01.2013).

In summary, **the enforcement authority makes no attempt to comply with the Law on Natural Protected Areas**, aimed at the conservation of biodiversity. The incomplete policies create a 'legal vacuum' as well as maintaining the underfunding of staff, which reflects the difficulty of safeguarding a protected area in a UFF boom. Although the exploitation of fossil fuels was occurring prior to the creation of these protected zones, since their establishment there has been little progress towards its withdrawal. Instead, the continued territorial expansion of UFF activities is still being supported. Efforts to carry out an appropriate and effective conservation policy would no doubt come up against an array of powerful vested interests, primarily from the oil and gas industry.



Entry of the Pampa Las Yeguas drilling site owned by Total.
© Observatorio Petrolero Sur

TOTAL'S PROGRESS IN THE UNTOUCHED REGION OF PAMPA LAS YEGUAS

In September 2012, Total began the legal process towards drilling a well in Pampa Las Yeguas II, an area that until then had not been affected by industrial activities. The permit for the project was owned by GyP, the operations handled by Total, but the contract shared between Total and YPF. The development of the PLY.x-1 well has become iconic; **because of the multiple errors and illegalities committed**, as described below, even the usually very permissive enforcement authority made objections.

Water: The permit for the PLY.x-1 project, issued by the Ministry of Environment, did not allow fracking during the initial stage of the process; instead, a specific 'conditional license' – a temporary permit - was issued. The main reason for this was that the source of groundwater provided had not been authorized: groundwater as a feedstock is only allowed when the water is not safe for drinking, and the quality of the water had not been reported. Total however reported multiple uses of fracking, each **requiring around 8 million litres of water**, transported by truck to on-site storage tanks. Total assessed the **amount of flowback water at 2.8 million litres**, also transported by truck to re-injection wells.

Chemicals: Despite a list of chemicals' trade names being provided by Halliburton, **the total amount of injected chemicals at PLY.x-1 was not reported**. Among the chemicals listed, **naphthalene stands out because of its toxicity**. The International Agency for Research on Cancer, part of the World Health Organization, classified naphthalene as having human carcinogenic potential, with animals reacting with nasal and lung tumours. Short-term exposure to naphthalene in humans is also associated with haemolytic anaemia (abnormal breakdown of red blood cells), as well as liver and neurological damage. Despite a lack of data on human intake of naphthalene, the detection of its metabolites in workers' urine indicates that absorption does occur. Studies with animals suggest that it is absorbed by inhalation or oral consumption (INCHEM, 2002).

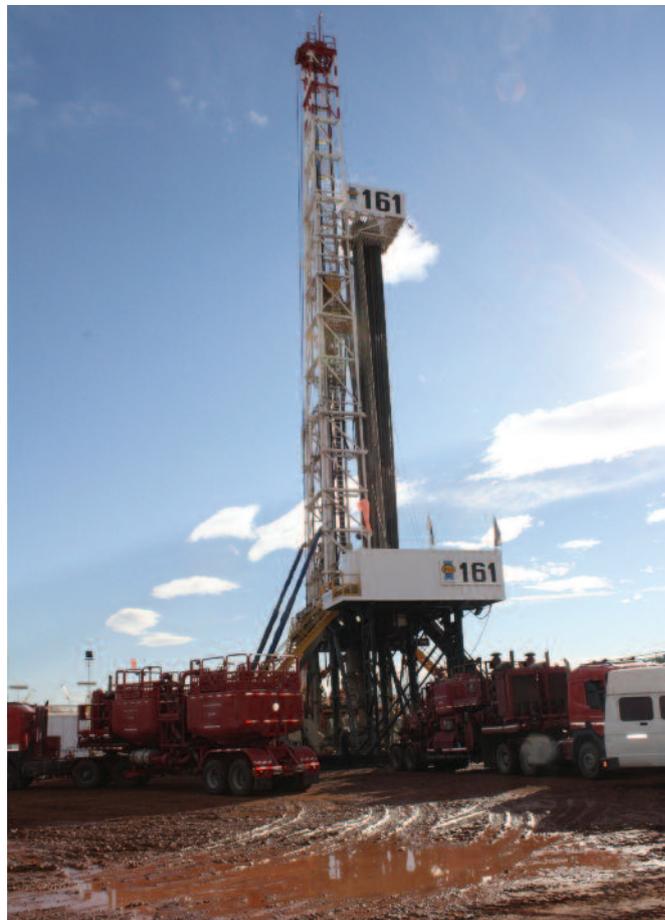
Climate: The **climate impact of the PLY.x-1 project is very high**. Tests carried out by Total on the well have led to estimates that 300,000 cubic meters of gas will be leaked over its lifetime. Methane, one of the most potent greenhouse gases, comprises 92% of this estimate, whilst the other gases include ethane, propane, butane, carbon dioxide and nitrogen.

Regulations: Beside the fact that fracking operations in the initial phase were not authorized, a second irregularity occurred, one which seriously undermined the regulatory capacity of the Department of Natural Protected Areas (DNPA). Because Pampa Las Yeguas is a protected area, a technical opinion from the DNPA is normally required before a license can be granted. However, not only was the environmental licence granted by the State's Secretariat of the Environment before the technical opinion was sent, but the DNPA opinion actually called for the rejection of Total's application. Thus, **Total's operations began without all the necessary administrative authorisations, and against the opinion of the main technical experts**.

The DNPA's technical experts, including environmental engineers and experts in environmental sanitation, rejected the PLY.x-1 well because Total's application was, in places:

- Incomplete - notably on hydrogeological and fauna related issues;
- Incorrect - it mentioned species that are not even present in the area;
- Too lax - it lacked preventive measures to avoid or mitigate the potential negative impacts, talking instead about how to "minimize" them.

Despite this, the provincial Director for Natural Resources, Enrique Schaljo, under whose direct authority the DNPA falls, approved the PLY.x-1 project and dismissed any further considerations.



Total unconventional well on the San Roque concession, Auca Mahuida.
© Observatorio Petrolero Sur

Legal cases against the irregularities

The anomalies in the approval process for PLY.x-1 became public when Total informed a local villager that it would be extending a pathway across her field. After investigating the matter, her lawyer, John Fittipaldi, found that the company also had plans to build a flowback re-injection well and treatment facility on her land. The villager decided to take Total to court.

The legal action was based on a number of grounds. Firstly, Total had violated the obligation to organise a public hearing before the drilling of its first well. Secondly, **no information was given about the fracking wastewater treatment**. Thirdly, the origin of the freshwater was different from what had originally been agreed. Finally, Total did not have any environmental liability insurance, despite this being compulsory. Fittipaldi also stressed that **Total's Environmental Report lacked data on the aquifers in the area of the well** (Río Negro, 05.01.2013), which violates the requirement for a *"study of the geology, the depth and characteristics of the various strata, including the aquifers"* (File 5390-000919-12, 2012: 12). According to Fittipaldi, the geology, and aquifers, of Total's site was already well-known, raising questions about the reliability and seriousness of Total's report.

The publicity around these events seemed to encourage the State to act. In early 2013, it was reported in local media that Total would be penalized for failing to report the start of its operations, for having deforested the area in order to illegally build a fracking tailing pond, and for failing to build a bridge over a canyon forming the border with the natural protected area (Río Negro, 01/02/2013). However, a field visit made in December 2013 by the authors of this report revealed that **this latter work has not yet been done and that the final amount of the penalty still remains to be set**.

The publicity and seriousness of the allegations does not seem to have had any impact on Total, which, one year after being challenged, gave its own answer to the problem by moving its flowback re-injection well and treatment plant outside of the field of the claimant. The well had however already been fractured at this point (Río Negro, 18/12/2013). A more general legal complaint against Total is still pending, focussing on the **incompatibility between natural protected areas and hydrocarbons production**, an industrial activity that is contrary to the conservation goal of the natural protected areas. The claim also focuses on the legal and practical **implementation of the precautionary principle**, on which the environmental law is based. Other legal actions, initiated by the provincial Congresswoman Beatriz Kreitman, have been dismissed (Río Negro, 21/03/2013).

Open tailing pond on a Total unconventional gas drilling site in Aguada Pichana.
© Observatorio Petrolero Sur



Restriction of visits, resistance of the authority and public sanctions

In March 2013, DNPA workers organised a visit to Auca Mahuida in order to raise local people's awareness about the situation. In response, just days before the event, the Department of Natural Resources limited access to the area, claiming that it was a *"security measure"* against *"poaching"* (Río Negro, 12/03/2013). Whilst poaching has been a historical problem in the area, the government had never before taken such a measure. Despite the ban however, the DNPA visit went ahead.

The subsequent public uproar pushed the Provincial Assembly's Environment Committee to request information from the government concerning the control of the area. The president of the Committee, Graciela Muniz Saavedra, publicly highlighted the restrictions on industrial activities set out in the management plan (Río Negro, 28/03/2013). Despite this lip service being paid, nothing concrete followed to effectively implement the long-delayed management plan.

The corporate permeability of the government has been highlighted by its dealings with the DNPA. In an interview with the authors of this report, a member of the DNPA technical team revealed that its members have faced harassment from government officials. In early 2013, a few months after DNPA issued its negative opinion, an administrative action was taken out against members of the team, who now face possible sanctions, based on claims made by Total alleging their misconduct. Whilst the DNPA staff reject the accusations as baseless, and have emphasised their growing inability to carry out their mission, the investigation is ongoing.

The risk of sanctions the DNPA now faces further hampers its ability to effectively achieve the objectives of its role as an environmental conservation body. Sadly, this illustrates how a protected and sensitive natural area like Vaca Muerta can, through the silencing of public regulatory and monitoring bodies, face industrialisation.

It should also be noted that aside from the PLY.x-1 well, other new unconventional wells are being developed nearby, including in San Roque (**Total**), Rincón de la Ceniza (**Total**), Bajo del Choique (ExxonMobil) and Aguila Mora (Shell). Once again, **the conservation workers in the area have not had proper access to the appropriate environmental reports**.



Total unconventional well on the San Roque concession, Auca Mahuida.
© Observatorio Petrolero Sur



CONVENTIONAL OIL AND GAS: GENERATING INEQUALITIES

The San Roque permit, operated by Total since 1994, is one of the company's main concessions, accounting for almost 22% of its Argentinian gas production in 2013 (Secretary of Energy of the Nation). **Whilst lucrative for Total, the situation for the surrounding communities of Aguada San Roque is very different.**

In an interview with the authors of this report, Viviana Moyano, chairman of the Committee for the Promotion of Aguada San Roque, explained that local inhabitants have not been part of the development. After several requests, it was only last year that the community succeeded in getting Total to hire two people from the town. In response to this, the company replied that the local people didn't have sufficient skills or expertise; despite several

training courses, this remains unchanged. Moyano also **noted that the list of unresolved issues with Total has been continuously growing.** The provision of water and gas supplies to the community is inadequate, even though they sit on one of the country's largest gas basins. The road to the city, which is maintained by the company, is blocked during rainy periods, which, as a consequence, isolates the surrounding towns. In this sense, Moyano is sceptical about the so-called 'UFF revolution' and the potential changes it could bring, after twenty years of conventional oil and gas extraction failing to bring corresponding employment and social benefits to their community.

The lack of appropriate communication with, and participation of, local communities affected by both conventional and unconventional fossil fuels in Argentina is contrasted by the high-profile and profitable communication between Total and the Argentinian President, Cristina Fernández de Kirchner. In an official visit to France in March 2014, Fernández de Kirchner only had one business meeting in Paris, with none other than Total's CEO Christophe de Margerie, to explore future projects together. According to the media, de Margerie, describing his company's future objectives, stated that *"it is necessary to boost unconventional exploitation in Neuquén and Tierra del Fuego, which is the challenge for the next decade!"*. At the same time, he announced his intention to invest in factories to reduce the amount of imported equipment and the costs of new projects in Argentina (Telam, 19/03/2014).



Home in Aguada San Roque, inside the Total concession, Auca Mahuida.
© Carolina García

5

SHELL, A LAX DASH FOR SHALE GAS IN PATAGONIA

Shell has a long history in Argentina, established there since 1914. The company is primarily focused on oil refining, controlling one of the country's largest refineries, located in the Dock Sud petrochemical complex. On the consumer market it has over 300 service stations scattered around the country. In the past two years however, the company has changed its corporate strategy to focus more specifically on the extraction of unconventional hydrocarbons in the Vaca Muerta shale formation. Although Shell had already been pursuing gas extraction projects in the north of the country, its new investments in unconventional hydrocarbons made in late 2011 had the objective of ensuring the company a presence in all stages of the market, from gas production and oil refining to the distribution of petrol.





SHELL AND UNCONVENTIONAL FOSSIL FUELS IN NEUQUÉN

Shell's interest in shale gas in Argentina is part of the company's global strategy to ensure worldwide access to unconventional resources (Heinrich Böll Stiftung et al., 2011). To achieve this, Shell has initiated projects in the USA, Canada, South Africa, Algeria, Tunisia, Egypt, China, Australia and Ukraine, amongst others. In parallel, it has funded "research" centres in Europe and the USA, seeking to justify the safety of fracking and provide answers to the growing criticisms and questions about the technique (Platform, 2013).

Shell has expanded its activities exponentially in Argentina since late 2011, particularly in the Patagonian territory, following the first news about the potential of the Vaca Muerta shale basin. Shell is participating in five exploration concessions, which total about 1,000 km². So far, Shell has drilled and fractured 11 wells, 7 of which are operated by them directly, with the remaining operated by Total. In all cases, with the exception of the Cruz de Lorena concession, Shell is operating through a subsidiary known as O & G Developments SA.

In recent years, Shell formed a joint venture with the provincial company Gas y Petroleo (GyP), and the Argentine company Medanito, but still retained a majority in the share package, as well as in the operations. This venture aimed to explore the Sierras Blancas (166 km²) and Águila Mora (176 km²) concessions in Río Negro (15/12/2011). Meanwhile, in March 2013, Shell bought the Cruz de Lorena concession (158 km²), close to the Sierras Blancas, and then signed an agreement with GyP to drill three exploratory wells (Río Negro 29/3/2012). In March 2014, Shell acquired 42.5% of the La Escalonada (241 km²) and Rincón de las Cenizas (221 km²) concessions from Total. Total still operates with 42.5% ownership, the remaining 15% being owned by GyP (El Inversor Online, 31/03/2014).



SHELL RECENTLY ANNOUNCED A TRIPLING OF ITS SHALE GAS INVESTMENT IN THE AREA, RISING TO US\$ 500 MILLION BY 2014



Drilling tower in Ricón la Ceniza.
© Ike Teuling



Entrance to Águila Mora.
© Ike Teuling

By mid-2013, Shell reported successful UFF extraction from its Sierras Blancas concession, following the completion of the wells earlier that year (La Mañana, Neuquén, 25/05/2013). According to the Under-Secretariat for Mining and Hydrocarbons in the province, Shell had by that time drilled and fractured four others wells; three in Águila Mora and one in Cruz de Lorena. Based on these promising results, Shell decided to increase its investments, and soon announced a tripling of its shale gas investment in the area, rising to US\$ 500 million by 2014 (Bloomberg News, 10/12/2013). This made Shell into a central player in the Vaca Muerta basin. The longer-term investment strategy of Shell however remains unknown. Whilst Shell issued a press release in 2012 about its investments into “exploration and further exploitation of unconventional

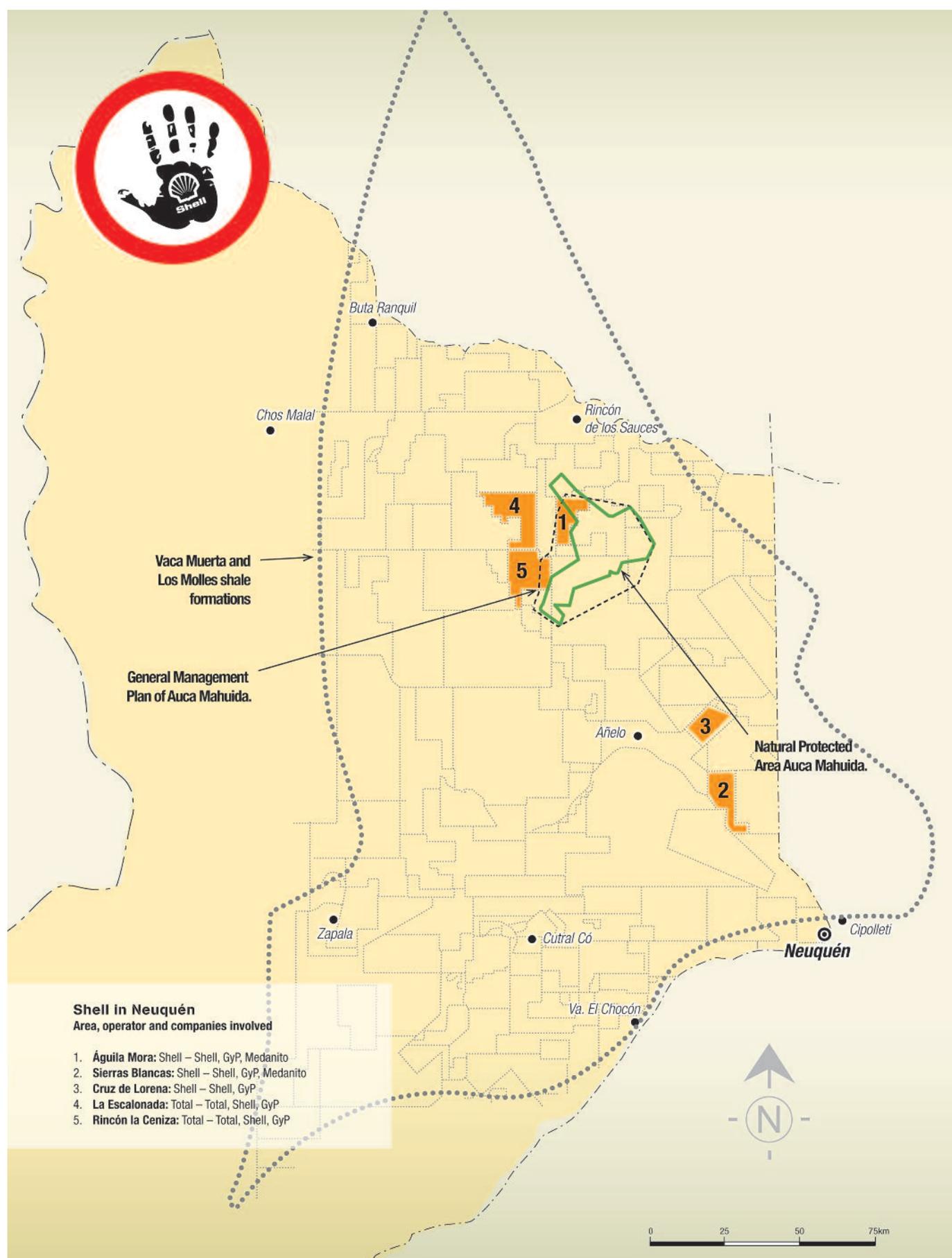
reservoirs of oil and gas in the Neuquén Basin” (Shell, 08/06/2012), Shell Argentina’s website provides no information about this project, nor about the technologies used for its UFF extraction, or any measures being taken to mitigate the social and environmental impacts.

It is also worth noting that the official holder of Shell’s concessions is the provincial company GyP, whose full operations and accounts are unknown. Shell has signed contracts with other operators without providing public information and without a public tender process, so the conditions or limits imposed by it (or other operators) in the contracts remain undisclosed.



Shell well in Águila Mora.
© Ike Teuling

MAP OF CONCESSIONS OWNED BY SHELL IN THE NEUQUÉN PROVINCE



DRILLING FOR SHALE GAS IN THE LAND OF WINE, FRUIT AND CATTLE

One of the richest spots in the Vaca Muerta field is the Loma Campana concession, owned by YPF-Chevron, close to the city of San Patricio del Chañar. Shell is active in two concessions close to Loma Campana: the Cruz de Lorena and Sierras Blancas concessions, the latter of which has already seen four wells fractured by Shell. The construction and operations of these wells however have had a serious impact on the agricultural activities of the San Patricio del Chañar region, an agricultural area where the oil industry had previously been absent. The history of the city of San Patricio del Chañar is, since the late 1960s, one of agricultural activity fed by water from the Neuquén River. Although early developments were mostly focused on potato plantations, vineyards and orchards now dominate. The city, along with the neighbouring town of Añelo, is part of the 'Patagonian wine corridor'.

These agricultural activities however are now threatened by UFF development. Shell has been promoting this as an "economic transition", funding training courses for work in the oil and gas industry, as part of its Corporate Social Responsibility program. Within this framework, and in agreement with the Municipality, Shell has organized workshops which attempt to win over local residents (La Mañana Neuquén, 17/12/2013).

Shell fails to pay heed to the impact that its activities have on other local sectors. One stark example of this is the plight of the Criollo farmers, families that have traditionally used the Patagonian steppe for small-scale livestock farming. Interviews with the community revealed that Shell neither carried out a consultation process with local farmers, nor took into consideration the impacts of its drilling activities on their fields. One farmer, Ceferino Flores, whose home is a few hundred meters from the wells, listed some of the everyday problems experienced since Shell's arrival: *"They opened several roads here, the field has become unmanageable, we do not know who enters and who exits. We had 5000 animals when my dad was alive [some years ago], we have only 260 today."*

In order for a drilling site to be constructed, land must be cleared for roads extensions and the installation of infrastructure such as pipelines, tailing ponds and compressor stations. These activities increase truck traffic and produce airborne dust, lead to water shortages in nearby woodland and reduce the available pasture for cattle. In the case of the Flores family, a large pool was also built on their territory to store fresh water supplied by aqueducts running from San Patricio del Chañar. Even though the family is not connected to the water grid, they are forbidden from using the water Shell is storing on their territory.

Although Shell notes the location of small farmers in its Environmental Impact Assessment reports, it has not established any kind of relationship with them up to now. Nor were the farmers compensated for the direct environmental degradation of their land as a result of Shell's drilling activities. Despite the fact that some of the small farmers showed a willingness to negotiate an agreement with Shell, the Flores family highlighted both the lack of dialogue with the company

and the few benefits obtained. Shell could have, for instance, supplied them with access to basic services like water and electricity, services which the company had already developed at drilling sites close to the farmers' homes. According to the Flores family, apart from impacts from the deforestation of woodlands, they also suffer the effects of operational failures such as leakage from tailing ponds, spillages of unknown liquids from trucks and visible oil spills at the drilling sites.

Any discussions that did take place between Shell and the local farmers were carried out in the absence of state representatives. Villagers claim that no government officials have come to their territory. Dossiers on the construction and operation of Shell's first wells confirm this, showing only a single tour of inspectors from the Sub-Secretariat of Environment in the entire area.

San Patricio del Chañar's development as a wine and fruit cultivation region was part of a strategy for the productive diversification of the province. The expansion of the oil and gas industry now endangers food sovereignty and traditional livelihoods. Although Shell has organized training programs for local residents, the limited capacity of the UFF sector to absorb the labour force means that full and sustainable employment of the residents of San Patricio del Chañar in the oil and gas industry is unlikely.



Dead bird in a container at a Shell well in Sierras Blancas.
© Ike Teuling

SHELL'S PROGRESS IN AUCA MAHUIDA

Shell has drilled three unconventional wells in the Águila Mora concession, which partly overlaps the protected area of Auca Mahuida, while three other sites remain under construction. As noted in the section on Total, this development is taking place in an area with no previous UFF extraction.

The wells are located close to the current boundaries of the nature reserve, but had the General Management Plan been adopted, they would have fallen inside it. This region is a highly significant conservation area, and the General Management Plan, although never approved, notes that Auca Mahuida contains areas “of maximum fragility and high risk of erosion”, high water storage capacity and the main permanent spring in the reserve, Aguada Antigua, as well as important habitats for populations of guanaco, rhea, mara and chinchilla rats, and probable nesting sites for condors and other Andean birds (2000: 8). Activity in these protected habit areas is highly restricted: “productive and extractive activities may not be developed” and “scientific activities are excluded... except those relevant for the management of the reserve” (2000:7). While the EIA submitted by Shell (2013) mentions these protected habitat areas, it refers only to the current boundaries, ignoring those set in the General Management Plan, and so taking advantage of the above mentioned ‘legal vacuum’.

More information about Auca Mahuida can be found in the chapter on Total.

Fauna of Auca Mahuida
- Vultur gryphus.
© Sergio Goitia



Well head on a Shell drilling site in Sierras Blancas.
© Observatorio Petroleo Sur

LAX AND INCORRECT ENVIRONMENTAL IMPACT ASSESSMENT REPORTS

Shell has had to prepare a total of seven Environmental Impact Assessment (EIA) reports for its various projects in Argentina. These reports reveal how laxly Shell approaches the legal and regulatory framework it is supposed to conform to, as illustrated by the EIAs for its first two wells in the Sierras Blancas concession.

Illegal division of drilling and fracturing stages

Shell’s Sierras Blancas EIAs separate its planned activities into two stages: the drilling phase and the fracturing phase, with the impact of each dealt with separately. Thus, the reports fail to provide a comprehensive evaluation of the projects, as they do not take the cumulative impacts of the different operations into account. By separating the phases in the EIA, Shell is able to address the hydraulic fracturing activities as a modification to the original plan, which in effect results in inconsistencies and contradictory information.

As reported by Juan Fittipaldi, this practice in fact violates the existing legal framework (Article 12 of the General Law of the Environment No. 25.675) which requires the reports to be approved or rejected in their entirety (Río Negro, 05/01/2013).

Incomplete or missing information

Shell’s first EIA was criticised by the Sub-Secretariat for the Environment and the Provincial Directorate of Water Resources for missing basic documentation and several other shortcomings:

- Inaccuracies regarding the distribution and location of facilities;
- Lack of information about the origin of aggregates and water;
- Absence of information about the waste management methodology;
- Absence of data on water disposal wells;
- Lack of municipal authorisations;
- Lack of information about the volume of, and method to dispose, flowback water; and,
- Unclear or missing safety data sheets for chemicals.

Shell, in its answer to the Sub-Secretariat, declined to provide further details on many of the points raised. Yet the enforcement authority then agreed to the license without any further objections. Shell's second EIA, submitted several months later, also failed to comply with the legal requirements.

Alongside the above omissions, Shell also frequently reported activities to the regulatory bodies only after they were undertaken, which is against current legislation. Nonetheless, the Sub-Secretariat for the Environment approved Shell's belatedly updated plans, stating only that *"for future submissions it is requested that amendments be attached before performing the tasks"* (Ministry of Energy, Environment and Public Services, 2012: 34).

Shell's EIA for its first well in Sierras Blancas is astonishingly blasé regarding attention to detail about its hydraulic fracturing activities in the Vaca Muerta formation. For example, the report describes the technique on page 22 as *"typically using about 3000m³ of water per frack"*, then two pages later, on page 24, stating that *"the amount of water used is approximately 4000m³"* per frack. A one-million-litre difference in two pages!

Another illustration of the lack of proper enforcement is the fact that the dimensions of the pool for water storage, as described in Shell's August 2012 EIA, differs significantly from the dimensions recorded by the Sub-Secretariat for the Environment in October of the same year. This discrepancy was not noticed by the enforcement authority and no action was taken.

In sum, analysis of three of Shell's seven EIAs (two in the Sierras Blancas concession and one in the Águila Mora concession) shows the company's complete lack of seriousness, including reporting different and inconsistent volumes of water to be used in the fracturing stage, referring to multiple conflicting methods to manage flowback water, refusing to give details about the quantity or composition of chemicals to be injected, and keeping information on the type and amount of gas flared secret.



Shell well with waste at Sierras Blancas.
© Ike Teuling

RECOMMENDATIONS

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RECOMMENDATIONS TO FRENCH, DUTCH, EUROPEAN AND ARGENTINIAN PUBLIC AUTHORITIES

Concerning the activities of European multinationals:

- Adopt binding legislation that imposes legal responsibilities on companies, including the activities of their foreign subsidiaries. This legislative framework should include a due diligence obligation that prescribes that companies have to identify, prevent and mitigate their adverse HR impacts.
- Put in place requirements for financial and extra-financial reporting, on a country-by-country basis, so that multinationals stop taking advantage of the regulatory, tax and legal havens that facilitate their appropriation of natural resources.
- Guarantee that no public funding will be given to companies and projects that violate human rights, workers' rights or the environment, and make independent human rights and environmental impact assessments compulsory *prior* to the approval and/or funding of projects, as well as ensuring a follow-up process, that includes sanctions in case of damage or breach of standards, after projects have started.

Concerning the extractive industries:

- Guarantee full access to all available information on oil and gas projects. Introduce mechanisms to enable local, national or international legal action, where necessary.
- Respect community rights and the central role of communities in decision-making regarding the natural resources of their territories. Obtain full, prior and informed consent before granting any oil and/or gas license.
- Where regional or national bans cannot be obtained, oil and gas projects should at the very least be banned in protected natural areas, World Heritage Sites and areas of specific cultural or religious value.
- Take the various kinds of impacts from unconventional oil and gas into specific consideration in national and European legislation, and recognise the high carbon-intensity of the extraction process of these unconventional fuels.
- Adopt and implement binding policies at a European level that lead to a phase-out of fossil fuels, and encourage ambitious energy efficiency policies.
- Impose a moratorium on the funding of all mining and energy extraction projects by the European Investment Bank, to be extended until the Bank has fully adopted all the recommendations of the Review of Extractive Industries.²¹ Also ensure that appropriate mechanisms are put in place to guarantee their implementation.

2

RECOMMENDATIONS TO EXTRACTIVE COMPANIES AND PRIVATE BANKS

- Suspend and stop investments in the most controversial fossil fuel projects, particularly those where unconventional oil and gas are being exploited, and where people's health and their means of subsistence are affected.
- Make ambitious commitments to invest in clean renewable energy, and implement these projects.
- Develop a long term strategy towards the complete phase-out of investment in, and extraction of, fossil fuels.

21 http://www.eib.europa.eu/attachments/thematic/extractive_industries_en.pdf

www.foeeurope.org

