



Participatory process for marine spatial planning: perception of Mar del Plata's residents on offshore hydrocarbon exploration in the North Argentina Basin (Argentina)

Eleonora M. Verón^{1,2} · Juliana Socrate² · Mónica C. García²

Received: 15 March 2022 / Revised: 10 May 2022 / Accepted: 24 September 2022 / Published online: 5 October 2022
© The Author(s), under exclusive licence to Springer Nature B.V. 2022

Abstract

Offshore hydrocarbon exploration and exploitation are activities developed internationally in the advance of the energy industry. Conflicts generated by incompatibility with others or with social actors, make the approach from Marine Spatial Planning necessary. In Argentina, although it is a process that has been developing since the middle of the 20th century, it was not until 2014 when the National Government promoted the activity. The North Argentine Basin (NAB) constitutes a hydrocarbon exploration area that was delimited in 2018 by Resolution 65/2018. This activity in the NAB has given rise to conflicts between intervening social actors, which was manifested in the Public Hearing (AP1/21) held in July 2021. That is why the objective of this work was to analyze the results of the AP1/21 and contrast them with the opinion of Mar del Plata's residents. For this, 682 semi-open surveys were carried out, where they were asked about the activity and the AP1/21. As a result, it was obtained that 373 people were expressed in favor (4%) and against (96%) of the project. Topics such as climate change, energy planning, and disagreement with the steps of the participatory process and the environmental impact study were presented. In the case of the surveys, opinions similar to those expressed in the audience were found, corroborating results and conclusions between both processes. In summary, the work allowed us to know not only the opinion of Mar del Plata's population but also the type of information available on the economic activity analyzed.

Keywords Offshore hydrocarbon exploration · Public audience · North Argentina Basin · Marine spatial planning

Introduction

Marine Spatial Planning (MSP) constitutes a public process that aims to analyze and assign the spatial and temporal distribution of human activities in marine areas to achieve previously defined ecological, economic and social objectives (Ehler and Douvère 2009). Being a political process, MSP must necessarily be based on governance and governability schemes, present from the first stages of the analysis. This is essential to achieve its success, since the social and political viability of the initiatives that are implemented depends on

it (Díaz Merlano and Jiménez Ramón 2021). In this way, cooperation between the authorities (at different scales), representatives of the uses and activities present within the considered area and all those people who are affected, directly and indirectly by the MSP, should be included in the analysis. Therefore, citizen participation is fundamental in an MSP process because it allows opening the space for dialogue to all the actors involved (Díaz Merlano and Jiménez Ramón 2021; García Sanabria et al. 2021; Elrick-Barr et al. 2022).

MSP is a strategic process that allows studying and assigning uses to specific areas of the ocean in order to minimize conflicts between the activities that are carried out. This is to achieve the greatest benefit, while guaranteeing the recovery of marine ecosystems (IOC-UNESCO 2022). In this way, MSP must manage both spatially and temporally uses and activities involved and analyze the accumulated impacts, to anticipate measures that will manage the areas or resources. Among these, it can be mentioning the provision

✉ Eleonora M. Verón
eleonorav@mdp.edu.ar

¹ National Council for Scientific and Technical Research – CONICET - CCT/MDP, Mar del Plata, Argentina

² Geographic and Socio-Environmental Research Center - CIGSA, National University of Mar del Plata, Funes, 3350 Mar del Plata, Argentina

of spaces (or the exclusion) of certain uses, or specific conditions for these to be carried out (IOC-UNESCO 2022).

As a participatory, adaptive, dynamic and holistic process, MSP is a complement to existing marine management structures. It should not function as a sectorized tool for a particular activity, but should allow them to be included across the board. MSP takes sectoral management into account and uses it as the basis for its planning process. Therefore, the analysis of the uses and activities involved in a study area in a sectorized manner is recommended, but without losing sight of the fact that MSP must collect this information to unify it in a global system of marine governance (IOC-UNESCO 2022).

Offshore hydrocarbon exploration and exploitation are activities developed worldwide in the advancement of the energy industry. Offshore exploration refers to prospecting activities, that is, those that are carried out in an area in a preliminary, investigative way, in order to determine the presence or not of hydrocarbon resources in the seafloor. Offshore exploitation, for its part, refers to the extraction of hydrocarbons through platforms and / or vessels, according to the depth to which it must be accessed. They are long-term activities whose practice extends throughout the planet (Radovich 2018).

Hydrocarbon exploration involves seismic actions that affect the seafloor. It consists of a device that injects energy into the medium in the form of seismic waves. The compressed air energy source is the most commonly used in marine exploration, which since the 70s has been the most widely used system in the industry (Serman and Asoc. 2021). Once emitted on the water column, this energy in wave form is projected horizontally and vertically on the medium. Their response, structured as seismic signals, is captured through specific receivers found on board the same ships that released the energy in the first place. These data are interpreted and the presence or absence of the resource is thus determined (Serman and Asoc. 2021).

In Argentina, natural gas and oil constitute the energy resources with the highest participation in the national energy matrix (Ceppi 2018). During the 90s, starting with the process of opening up and liberalizing the economy, energy policy underwent a process of privatization (Kozulj 2005). With this, the oil companies focused on maximizing their profits through the intensive exploitation of land reserves already discovered and not in the exploratory phase, leading to the abrupt fall of reserves (Campodónico 2004; Ceppi 2018; Kozulj 2005; Jensen et al. 2019). Starting in 2003, a series of measures were carried out that evidenced a change in energy policy. The partial modification of the hydrocarbon regulations in 2014 to promote oil exploration in new areas and unconventional hydrocarbons (National Law 27007/2014), constituted a significant fact in the

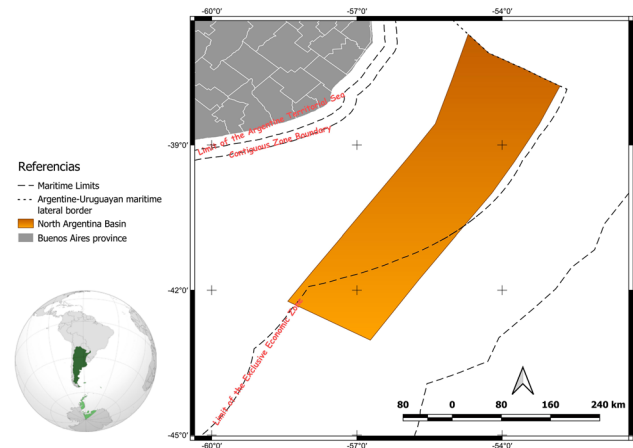


Fig. 1 Location of the North Argentina Basin (NAB). Source: own elaboration (2022)

forementioned policy change (Bravo 2015; Radovich 2016; Villalba 2018).

The country has five productive hydrocarbon sedimentary basins, in addition to which, others have been discovered, related to technological improvements, such as new sensors and greater depth capacity in drilling (Villalba 2018). Among the latter are offshore basins. Although its study began in the 50s, it was at the end of the 70s and in the course of the 80 and 90 s when the activity actually began to develop in the Colorado, San Jorge Gulf and Austral basins (Palomeque 2008). However, as of 2006 and especially in 2015, the project to search for offshore resources on the Argentine continental margin began. In total, there are approximately 11 possible marine basins that are available (some in exploration and others in exploitation)¹, among which is the Argentine Basin (Pucci 2006).

The North Argentina Basin (NAB), is part of the Argentina Basin and was delimited in 2018, through Resolution 65/2018 of the Ministry of Finance and the Secretary of Energy of the Nation, by the 37° and 43° S and the 56° and 60° W (Fig. 1). This responds to the call for the Costa Afuera International Public Tender No. 1, for the award of hydrocarbon exploration permits. This is framed, according to the legal text, in policies carried out by the National Executive Power that sought to promote the incorporation of new reserves to meet the needs of these fuels throughout the country. With this, the seismic and exploratory prospecting activity in general was encouraged by companies that have the technical and financial capacity required for this

¹ The Offshore Basins are: the Salado, Colorado, Rawson Basin, offshore the San Jorge Gulf, San Julián, Austral, Malvinas, Eastern Malvinas, South Malvinas, North Malvinas and Argentina (Pucci 2006).

type of undertaking. Not only were the necessary equipment and machinery included, but also that the companies have such solvency that allows them to pay the permit for exploration and, in addition, "... assume remediation actions for environmental liabilities that may arise of the activity" (Resolution 65/2018. Article 14.4). In general terms, the resolution sought to select companies "... in order to be awarded exclusive rights for exploration within the perimeter of each of the areas, and in the event of commercial exploitable hydrocarbon discovery, grant them exploitation concessions ..." (Resolution 65/2018. Article 1.1).

At the end of 2009, as of the XIX Ibero-American Summit of Heads of State and Government, the *Ibero-American Charter for Citizen Participation in Public Management* came into force. It recognizes the need for contemporary societies to expand and deepen their civil rights within the political system, and in particular, in public management. Thus, different mechanisms arose that seek to guarantee a full democracy based on the fulfillment of the rights to information, participation, association and expression regarding the public (CLAD 2009). Citizen participation is defined as the process of social construction of public policies that channels, responds to, or expands the rights of individuals and of the organizations or groups in which they belong (CLAD 2009). It allows citizens to reaffirm their autonomy as holders of power and those responsible for their actions (Ortiz 1998). Citizen participation, according to the Ibero-American Charter for Citizen Participation in Public Management is based on the principles of constitutionalization, equality, autonomy, gratuity, institutionalization, non-discrimination and technological adaptation. In any case, access to information of general interest, its active dissemination through open and permanent communication channels, and the possibility of consultations through different media must be guaranteed (CLAD 2009).

At the regional level, since 2018 the Escazú Regional Agreement has been in force, which deals with Access to Information and Justice in Environmental Matters in Latin America and the Caribbean for Public Participation. Its objective is to guarantee the right of access to information in a timely and adequate manner. Likewise, it seeks that citizen participate in a meaningful way in the decisions that affect their lives and their environment, and access to justice when their rights are violated (CEPAL 2018). In Article 7 of the Agreement, the role of public participation in environmental decision-making processes is specified. In this way, it affirms that the right of public participation must be ensured and guaranteed in all stages of the processes, with the Enforcement Authority being the one that previously provides the necessary information in a clear, timely and understandable manner.

In Argentina, citizen participation was included in the 1994 constitutional reform, although it was not put into practice in that decade. Currently, it is regulated from two legal elements.

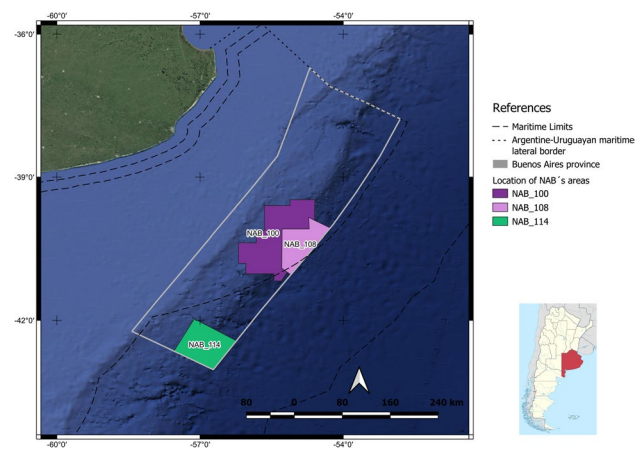


Fig. 2 Location of NAB 108, NAB 100 and NAB 114 areas. Source: own elaboration (2022)

On the one hand, National Decree 1172/2003, which recognizes the importance and objective of the Administration to strengthen the relationship between the State and Civil Society, considering it a strategic alliance to develop a legitimate, transparent and efficient democracy. In this Decree, public hearings (AP) are defined as a process that "enables citizen participation in the decision-making process through an institutional space in which all those who may feel affected, express their knowledge or experience and present their individual, group or collective perspective regarding the decision to be made. Said decisions - despite their non-binding nature - must be considered adequately, establishing the obligation of the authority to substantiate their rejections" (Considering 4, Decree 1172/2003). In the same, in addition, the general conditions that must be met before, during and after carrying out an AP are determined, especially regulating the activities carried out by the Enforcement Authority.

On the other hand, the General Law of the Environment (National Law 25675/2002) establishes that the national environmental policy must comply with the objective of promoting social participation in decision-making processes, whether environmental or in a corresponding area (art. 2). In addition, this legislation affirms that any person has the right to be consulted and have an opinion in administrative procedures related to the preservation and protection of the environment (art. 19, 20 and 21).

On this basis, on June 29, 2021, Public Hearing 1/21 (AP1 / 21) was held by the Ministry of Environment and Sustainable Development of the Argentine Nation (MAyDS). The purpose of the meeting was to bring into consideration the Environmental Impact Assessment (EIA) of the project "Argentine Offshore Seismic Acquisition Campaign; Argentina North Basin (CAN 108, CAN 100 and CAN 114 areas)" (Fig. 2). In these areas, the company EQUINOR SA was a concessionaire. The registry of participants was open from

June 13, 2021 to June 29 of the same year and 522 people signed up, of which 350 presented orally and others sent their position previously to the hearing. Exhibitions were held on their own behalf, but also on behalf of legal entities.

Studies on the importance of citizen participation in relation to environmental projects are numerous in the world: in the United States (Cohen 1995; Osawa 1993; Busenberg 2000; Oloyede et al. 2010), Europe (Martínez Iglesias et al. 2008; García Sanabria et al. 2021) and in Latin America (Conroy and Evans Cowley 2006; Sánchez-Cortez et al. 2018). In particular, its usefulness as a first approach to public opinion to guide government policies is highlighted (Withycombe Keeler et al. 2015). In contrast, perspectives have been identified that question the effectiveness of public participation processes on environmental issues (Irvin and Stansbury 2004; Calle and Ryan 2016; Soto Barrientos and Cordella 2019). The authors affirm that it is necessary, as a first measure, that citizens, technicians and governments have information so that decision-making is appropriate and adapted to the particular needs of a community. In this sense, they argue that citizen participation processes do not allow a real involvement of society in public decision-making on environmental matters (Calle and Ryan 2016; Harring 2018).

In relation to citizen participation and offshore exploration and exploitation projects in the world, it is essential to understand the attitudes of coastal residents towards offshore drilling (Chen and Martens 2021). Numerous conflicts related to the form, place and activities that involve offshore drilling have been evidenced in different parts of the world (Haavik 2012; Mukherjee and Rahman 2016; Chen and Martens 2021). Studies have been conducted on the perception of risk to this activity in the United States (Bishop 2014; Mukherjee and Rahman 2016); Spain (Ruiz et al. 2018) and China (Chen and Martens 2021), where society's positions have been found in favor of offshore hydrocarbon exploitation (Gramling and Freudenburg 2006) and against (Bishop 2014; Mukherjee and Rahman 2016; Ruiz et al. 2018). This have been related to proximity to exploitation sites (Chen and Martens 2021) or to moments after an environmental disaster caused by spills, such as the case of British Petroleum's Deepwater Horizon² on the coasts of the Gulf of Mexico in 2010 (Bishop 2014; Lilley and Firestone 2013; Mukherjee and Rahman 2016). Likewise, the population's level of trust in offshore exploitation projects has been studied, concluding that the position and sayings of environmental groups generate greater security for them than the oil companies themselves (Carlisle et al. 2010). Also, studies have been carried out that address the perception of local

people in relation to hydrocarbon drilling in the sea that relates it to the position "not in my backyard" (NIMBY)³ (Burningham et al. 2006). However, there are positions that reject this statement as the analyzes consider it partial (Michaud et al. 2008; Devine-Wright 2013).

Taking into account what has been presented up to here, the objective of the work is to analyze the perception of the residents of Mar del Plata about the possible hydrocarbon exploration in the NAB and the official participatory process associated with it (Public Hearing 1/21), as an instrument fundamental of an MSP process.

Materials and methods

Study area

The study area includes a sector of the Argentine Sea, called the North Argentina Basin (NAB). It is located on two important underwater geomorphological complexes: the continental slope and the rise or foot of the slope. The continental margin is an area within the ocean floor that develops immediately after the landmass. Both, the continental shelf and the slope and rise, are part of it. In the Argentine case, and given the low slope that the continent has on the coast of Buenos Aires province, the development of the continental shelf is similar, having to advance several kilometers to notice any change in depth (Tarbuck and Lutgens 2013).

From the oceanographic point of view, the NAB is dominated by the Cold Malvinas Current, a detachment of the Antarctic Circumpolar Current, which surrounds the continent of the same name and is one of the few that border the entire planet (Tarbuck and Lutgens 2013). The Malvinas Current takes a northerly direction at the Drake Passage. Depending on the time of year, the encounter between it and the one from Brazil varies. It has cold waters, rich in nutrients and it moves along the continental slope. In this way, it endows some sectors of the Argentine Sea with great fish wealth (Campagna et al. 2005; Balech and Ehrlich 2008). The Brazilian Current, unlike the previous one, is warm and is born in the equatorial zone. Enter the country in a North-South direction. Its latitudinal descent is interrupted by its conjunction with the Malvinas Current, in what is known as the Confluence Zone. The confrontation of both bodies of water with different physical-chemical characteristics, generate thermal and saline gradients that lead to the formation of fronts (Wildlife Conservation Society, and BirdLife and International 2021). Specifically, the so-called Slope Front is

² The Deepwater Horizon accident increased interest in offshore oil drilling among the mass public in the United States while temporarily inducing public opinion into an anti-drilling stance (Bishop 2014).

³ This perspective associates the opposition of local communities to projects that, although they consider necessary, are not desired in the vicinity of their residences (cities) (Burningham et al. 2006; Chen and Martens 2021).

developed. Its characteristics allow the main fishing grounds of Argentine squid (*Illex argentinus*), common hake (*Merluccius hubbsi*), Polish (*Micromesistius australis*), austral (*Merluccius australis*) and black (*Dissostichus eleginoides*) to extend along it, and Patagonian scallop (*Zygochlamyz patagónica*) (Allega et al. 2020). However, not all of them are presented under the same intensity. It has been recorded that species generate habitats for the deposition of eggs and the rearing of their juveniles. Others are present in the area in a dispersed way, while the others are found in a specific place (Allega et al. 2020).

Perception of offshore oil exploration in the CAN and Public hearing 1/21

To analyze the perception of Mar del Plata's residents about the possible offshore exploration in the NAB and the Public Hearing 1/21 (AP1/21) of the MAyDS, a survey with open and closed questions was carried out, by the Google Forms platform (Knapp and Kirk 2003; Chen and Martens 2021). 682 surveys were conducted, in a total of 21 days, between 08-06-2021 to 08-26-2021 and the non-probabilistic snowball method was applied. According to the number of surveys carried out ($n = 682$), the sample is above the minimum estimated size, with a margin of error of 5% and a confidence level of 99% (Williams and Micallef 2009). This is calculated on an estimated local population universe of 1,000,000 inhabitants (MGP 2021). Therefore, this number of surveys was considered adequate for data analysis.

In order to achieve a greater reach, the questionnaire was shared in various ways: the most popular social networks (Facebook®, Instagram®, Twitter®), personal and institutional, as well as various WhatsApp® groups. In all cases, efforts were made to reach populations of different ages, sectors, and interests by sharing the survey in groups, pages, profiles, and requesting a reply in all cases. In parallel, it was sent by email to previously identified key social actors and specialists on the subject. Due to the number of surveys carried out, the method chosen, the dissemination carried out and the responses obtained, it is considered that they are valid to infer the perception of the Mar del Plata population on the subject, even more so considering that virtual surveys constitute the appropriate propagation strategy in a pandemic context (Bustos et al. 2021).

The survey was divided into two sections. In the first part, the surveyed population was characterized, asking questions about age, highest educational level attained, occupation / profession and marine-coastal sector of belonging or interest. Likewise, participation in some NGO, association and / or environmental collective group was surveyed. Finally, the knowledge about the existence of oil reserves in the sub-soil of the Argentine Sea, the need to explore it to identify

exactly areas of presence, and their opinion on whether or not the activity could generate environmental problems was consulted. In the second part of the survey, the questions were directed towards the opinion about participatory processes in general and then specifically, about AP1/21.

The analysis of the aforementioned hearing was carried out from the listening and deduction of the same. The AP1/21 took place virtually on July 01, 02 and 05, 2021. It was carried out with a specific platform used by the 350 speakers, who entered it in the order of registration and in turn, everything the procedure was broadcast (and is recorded) on the YouTube platform. This happened in this way, given the context of the health emergency generated by the COVID-19 pandemic that was going through the country at the time it occurred. Participations were grouped according to representation and position on the subject for processing and analysis. Likewise, the shorthand version and the final report of AP1/21 that is available on the MAyDS website was used as support (available in: <https://www.argentina.gob.ar/ambiente/cambio-climatico/audiencia-publica-012021>).

Finally, an analysis of the MAyDS Resolutions was carried out on the hearing, the temporary stoppage of the actions and the subsequent approval of the activity, as well as the manifestations to them. For the latter, journalistic clippings and publications on social networks of environmental organizations (Greenpeace, Association for a Free Sea of Oil, Patagonian Environmental Forum, among others) were analyzed.

Results

Characterization of the surveyed population

The surveyed population represented all age groups (Fig. 3a). Although some were preponderant (30–45 and 46–60 years), the fact of having respondents in all intervals, guaranteed the effectiveness of the sampling method. This situation was repeated with the “highest educational level reached”. In this question, the distribution of the people who carried out the survey was relatively equitable, allowing to know the opinion of different actors with different academic backgrounds (Fig. 3b). In relation to occupation, the majority responses were “professional”, “teacher”, “student” and “employee”. However, respondents were registered in the other categories (Fig. 3c). Regarding the marine-coastal sector of interest (or representation), it was consulted through a multiple-choice question. The results show that the most representative sectors were “Environment”, “Education”, “Fishing” and “Tourism”, followed by “Port”, “Health” and “Research” (Fig. 3d).

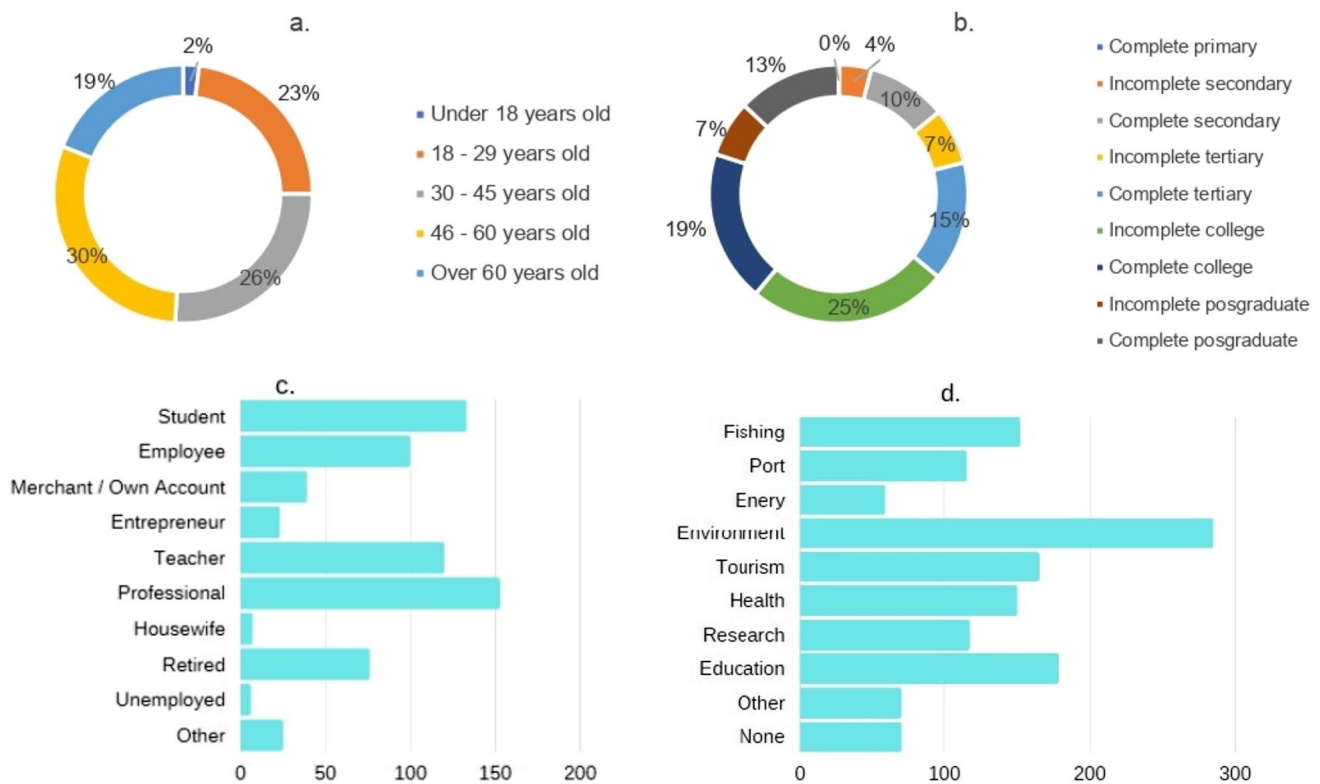


Fig. 3 Characterization of the surveyed population: **a** age of the surveyed individuals; **b** highest educational level achieved; **c** occupation; **d** marine-coastal sector that are represent or are interested in. Source: own elaboration (2022)

Perception of offshore hydrocarbon activity in the NAB and the Public hearing 1/21

In section one, the respondents were also asked about their participation in an NGO, association and / or environmental group. The purpose of this question was to know the degree of organization of the society and above all, to know the themes under which this occurred. As a result, it was obtained that 9 out of 10 respondents do not participate in any NGO. However, those that do, responded to a wide variety of organizations. The most named were “Greenpeace” (16.0%), “Youth for the climate” (9.8%), “Assembly LET’S STOP THE GREEN DESERT” (4.9%) and “Assembly for a Free Sea of Oil Companies” (4.9%). In the “Various” category, those people who were part of more than one organization at the same time were included (Fig. 4).

To finalize the section, we specifically consulted on hydrocarbon exploration / exploitation. In the first place, it was inquired about the knowledge of the existence of offshore oil reserves in the subsoil of the Argentine Sea. 87% of those surveyed answered that they had knowledge. Regarding the source of the same, the majority affirmed that it came from the audiovisual information provided by the media and social networks. Other of the selected options were some of the levels of the educational system (Fig. 5).

Then, two questions were asked related to the seismic exploration process. On the one hand, the need and importance of the activity in the Argentine Sea was consulted. On the other, it was inquired about the possibility that it generates environmental problems.

For the first question, six possible answers were offered, five of which stated that it was necessary to explore and know the existence of the offshore oil resource but for different reasons; and only one, denied it. Of the total of those surveyed, this last one prevailed, with 63%. Then they were followed by the answers “Yes, it is necessary for the growth of the country” (11.6%) and “Yes, it is necessary, but not for exploitation purposes” (9.5%). The results can be seen in Fig. 6.

For the second question, related to environmental problems, although the respondents were given a series of options (from which they could choose several), they were also allowed to express themselves, through an open option. The choices offered in the questionnaire were taken from the Environmental Impact Report made by the consulting firm Searman Asoc. SA. hired by the EQUINOR Company. Of the total respondents, 93% answered that offshore exploration creates environmental problems. The most chosen option was “Seismic noises that disturb the life of mammals, fish, turtles and seabirds” (74%), but “Accidental discharge

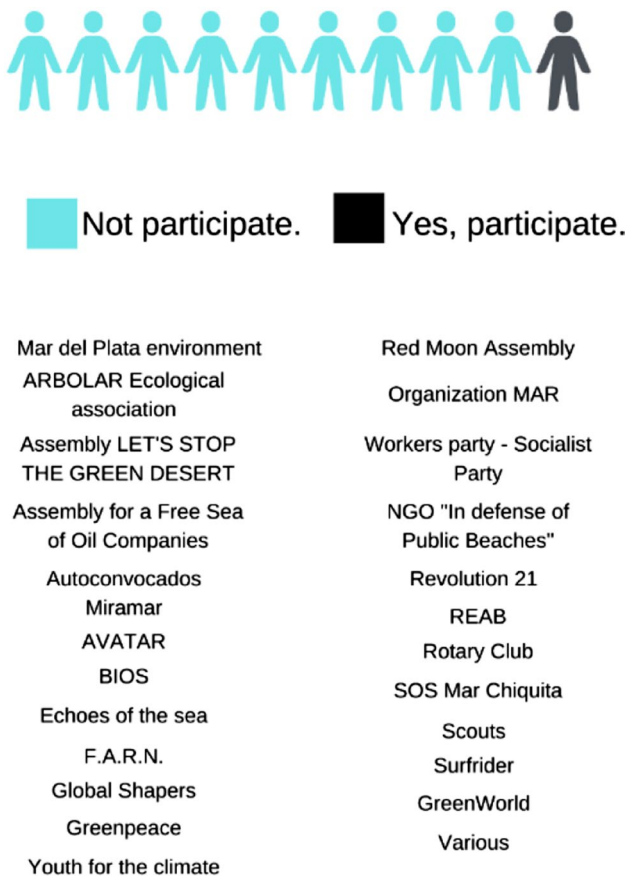
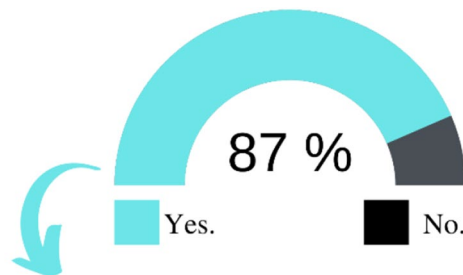


Fig. 4 Participation in an NGO, association and / or environmental group and main groups mentioned. Source: own elaboration (2022)

of chemical substances and / or solid waste product of the activity of exploration ships” and “Oil Spill” were selected by 72.5% and 72% of the people respectively (Fig. 7).

In the second section of the survey, it was asked about the knowledge and participation of the respondents in participatory processes in general and in AP1/21 in particular. Regarding the first of the questions, of the total number of respondents, 85% answered that they did not participate and their reasons generally related to not knowing when they were asked and lack of time. Of the 15% that answered yes, the majority were part of the AP1/21. “Consultations at the local level” were also mentioned, including the installation of hypermarkets and the proliferation of supermarkets in the city; discussion on urban waste, teacher salary, etc. In the “Various” category, those people who have participated in more than one Public Hearing were included (Fig. 8).

Regarding the knowledge of the respondents about the AP1/21, organized by the MAyDS in July 2021, of the total, 56% answered that they did not know about it. The remaining 44% who answered yes, learned about the participatory process through social networks and the media. Very few of them found out from official bulletin (Fig. 9).



How did you find out?

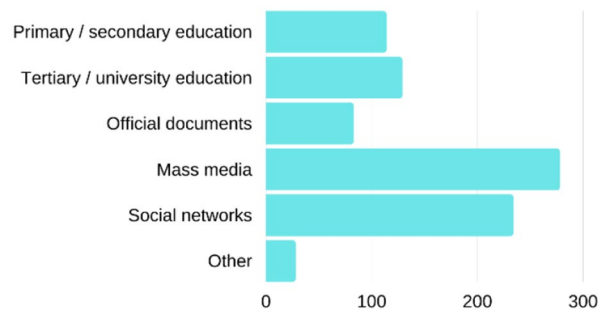


Fig. 5 Knowledge of the existence of oil reserves in the subsoil of the Argentine Sea. Source: own elaboration (2022)

In the following question, the participation in AP1/21 was asked. Of the total of those consulted, 91% answered that “no”, being their reasons, not having information about the participatory process and “Personal Issues” including lack of time, schedule of the audience coinciding with the work, health questions, lack of academic training to justify a position, among others. The 9% who did participate, did so to express themselves in favor of conservation (3%) or for their own motivation (2.9%). In turn, they also participated as listeners or because they considered it a civic responsibility to participate in these types of events (Fig. 10).

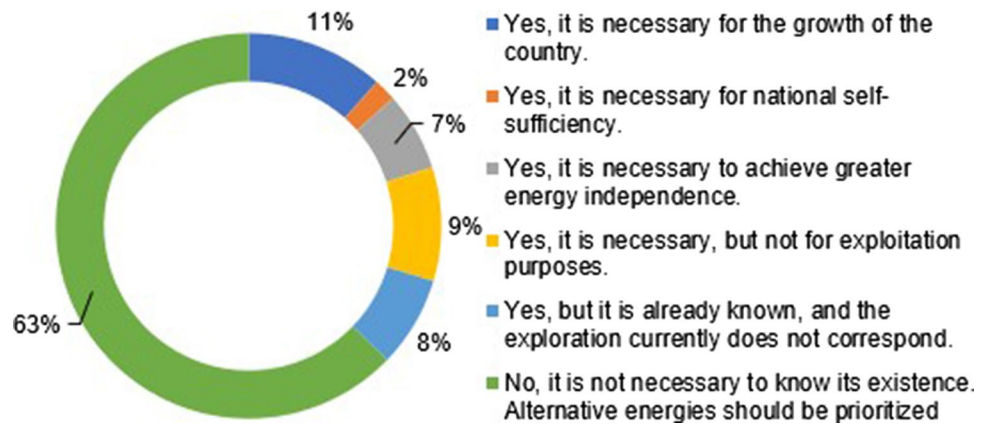
One of the last questions consisted of asking about the usefulness of participatory processes such as the Public Hearing, particularly related to environmental issues. As a result, it was found that 89% of the total of participants find its implementation useful (Fig. 11).

At the end of the survey, a general comments section was left open, so that the respondent had the option of expressing concerns not considered in the survey or of reaffirming their opinions and / or ideas. The results are summarized in Fig. 12, most of which are related to “Negative positions on exploitation” (21.4%) and “Need for more information” (20.5%).

Results of Public hearing 1/21

The AP1/21 was chaired by the Secretary of Climate Change, Sustainable Development and Innovation, the

Fig. 6 Respondents' response to the need to explore the ocean floor to find out about the existence of offshore oil. Source: own elaboration (2022)



National Director of Environmental Assessment and the director of Environmental Impact Assessment and Environmental Risk Analysis, of the MAYDS. It lasted three days, in which the speakers expressed themselves live, with pre-recorded presentations or slides during the established time (five minutes each).

The audience, depending on its structure, can be divided into three moments. In the first of them, the national authorities presented the case and explained the formal steps to be followed by each of the speakers. Then, in a second moment, the EQUINOR concessionaire presented the Environmental

Impact Study carried out by the company Serman y Asoc. SA, using a clock hour to do so. In this presentation, it was explained about the studies carried out by the consulting firm in the area, potential impacts, their assessment, as well as the planned mitigation measures and the proposed Environmental Management Plan. In conclusion, they argued that, in general, the effects of the activity on the environment are not only localized, but also have a limited duration, with which, with the proposed mitigation measures and their management plan, the activity is totally sustainable. In a third moment, the participants were exposed. Of the 522

Fig. 7 Respondents' response about the relationship between offshore exploration and environmental issues. Source: own elaboration (2022)

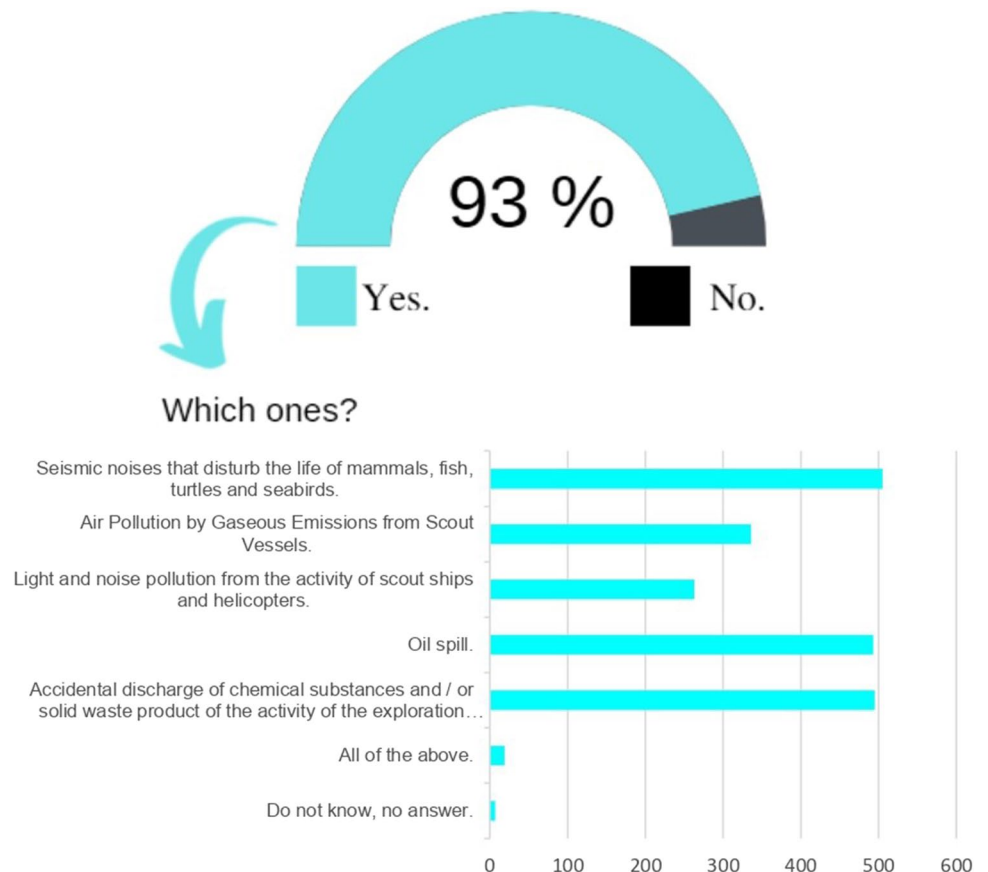
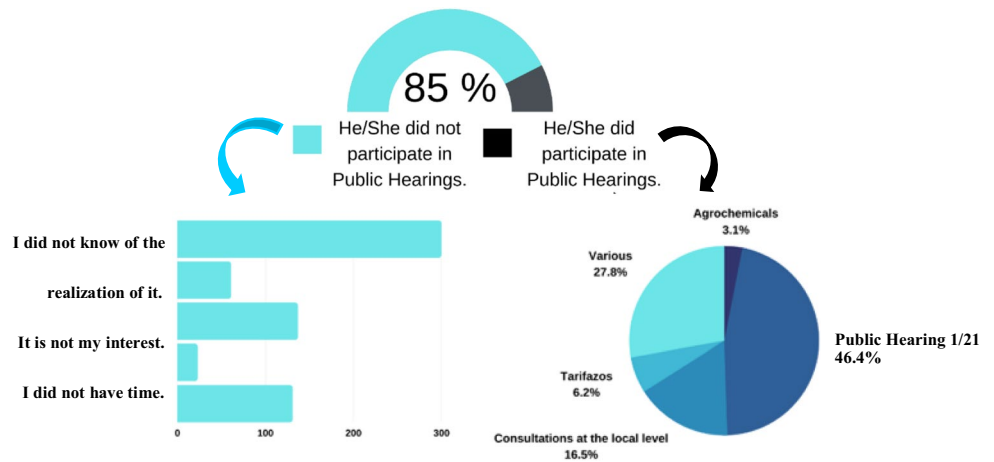


Fig. 8 Respondents' response regarding their participation in Public Audience. Source: own elaboration (2022)



listed, 373 people showed up, of which 350 spoke orally and 23 in writing. Following the Final Report of the Public Hearing No. 1/21 of the MAyDS, within the group of speakers, people on their own behalf and also exposing the position of legal groups, among which were registered:

- Council of Argentine Fishing Companies.
- Association of Coastal Fishing Vessels.

- Environment and Natural Resources Foundation (FARN).
- MANEKEK Association.
- Mar del Plata Energy Cluster Foundation.
- Argentine Institute of Oil and Gas.
- YPF SA.
- Chamber of Hydrocarbon Exploration and Production.
- Sustainability Without Borders Foundation.
- Geselina Naturalist Association.
- Chamber of Fishing Shipowners and Freezers of Argentina.
- Association of Fishing Captains.
- IUCN.
- Faculty of Engineering of the National University of the Center.
- Center for Higher Studies of the Argentine Sea.
- Youth for the Climate.
- Ecohouse.
- Assembly Sea without Petroleum.
- Surf rider.
- Forum for the Conservation of the Patagonian Sea.
- Among other.

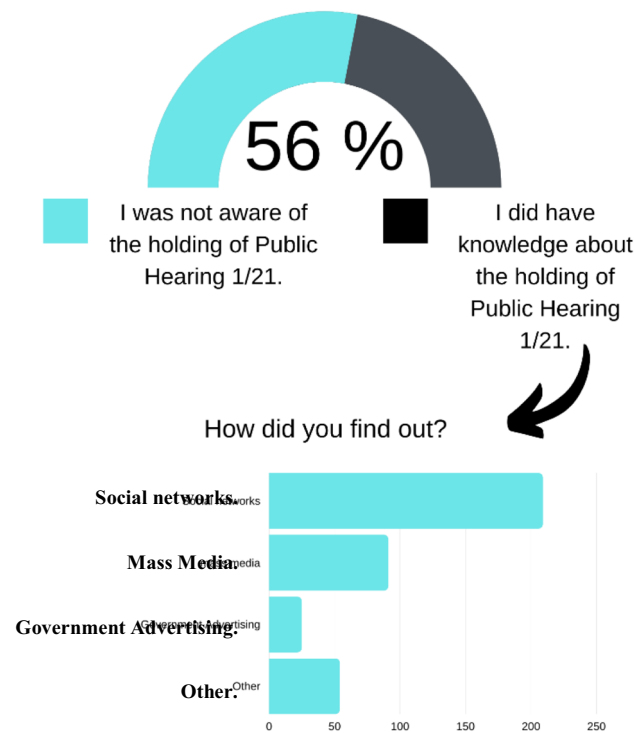


Fig. 9 Respondents' response regarding their knowledge about the holding of Public Audience 1/21 organized by the MAyDS, and how they found out about it. Source: own elaboration (2022)

Among the main topics on which the presentations of the speakers (oral and written) were: (Fig. 13)

- *Energy planning and sustainable development.* On this, approximately 58% of the participants made observations related to climate change and the national energy matrix. Within these positions, the emphasis was on climate change and the commitments assumed by the country in reducing Greenhouse Gas emissions, which is why encouraging the exploitation of hydrocarbons constitutes a contradiction. Related to this, the modification of the energy matrix from the incorporation of renewable energies, is considered as a relevant and necessary issue as

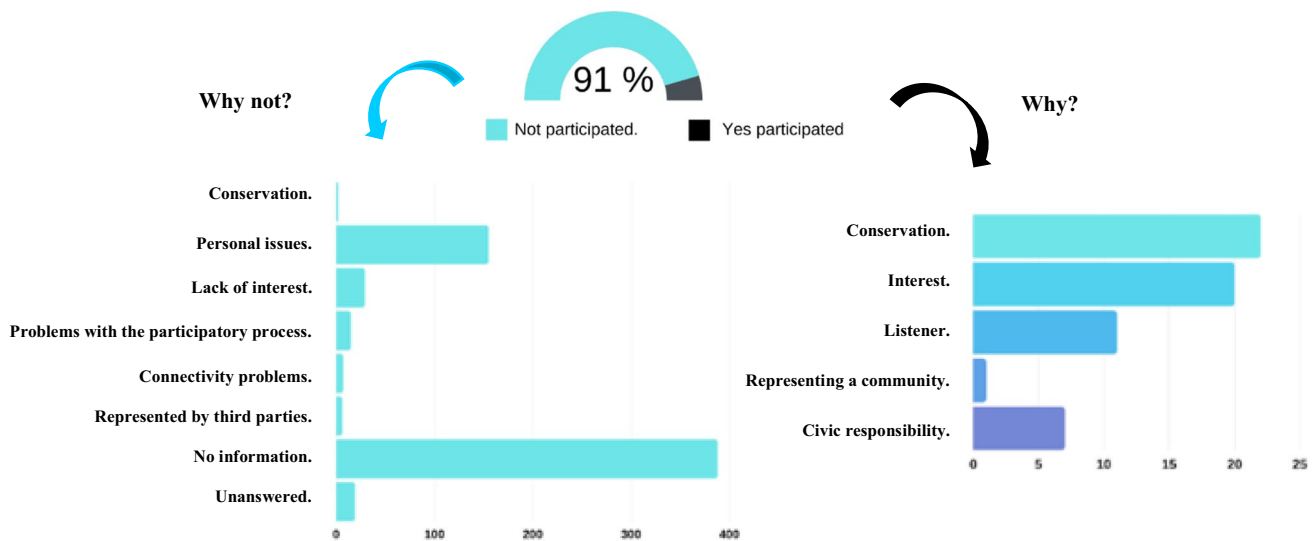


Fig. 10 Respondents’ response regarding their participation in Public Audience 1/21 organized by the MAyDS, and their reasons for participating or not participating in it. Source: own elaboration (2022)

public policy of the country. Therefore, they argued that meeting the current energy demand through the use of hydrocarbons evidences the need to carry out a decarbonization policy based on sustainable development.

- 12% of the speakers referred to issues related to the Sustainable Development Goals, gender policies and indigenous communities. For example, one of the exhibitions mentioned the importance of the sea for the Guaraní culture to this day.
- 4% of the exhibiting citizens made observations and comments associated with the need to carry out and implement a Strategic Environmental Assessment of the activity under analysis, especially before issuing the environmental execution permits.
- About 19% of the participants expressed their dissatisfaction with the conformation of the participatory process, as well as its importance in all stages of the Environmental Impact Assessment. In their speeches, the scarce dissemination on the subject was expressed, the importance of improving the mechanisms and increasing the instances of public participation, as well as the need for the AP to have a binding character. This last point was a common denominator in the vast majority of the speakers.
- 5% of the participants made observations related to the preparation of the Environmental Impact Study (EsIA) by the company EQUINOR, questioning its objectivity,

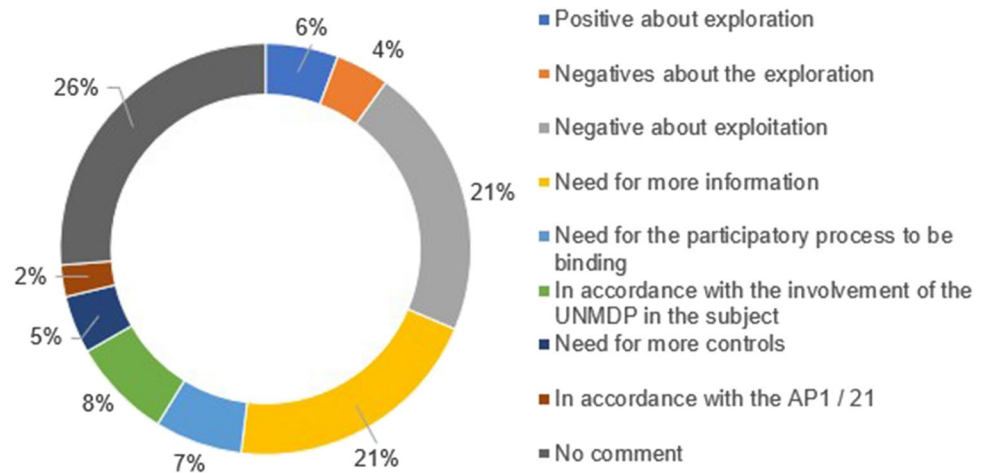
soundness and technical content. In this sense, disagreement with the role of the Government in the evaluation process was also expressed.

- 65% of the interventions mentioned the importance of biodiversity as a recipient of the project’s impacts. In this sense, the speakers stated that the EsIA underestimated the impacts involving threatened species and important conservation areas. Likewise, the proposed mitigation measures were questioned, since they were based on the marine fauna’s capacities to avoid the area in which the activity will be carried out.
- 48% of the participants mentioned the importance of considering spills and contamination as potential impacts of the project, especially on sensitive species, consumption and relevant conservation areas. It was questioned the lack of information regarding the frequency of occurrence and spatial scope of pollutant spills in the activity; the state of the art and the practices adopted by the concession company.
- 22% of the participants made observations related to the fishing activity carried out in the area and the potential impacts of the project, mainly related to the acoustic effects on the local resource. Likewise, it was mentioned the lack of joint planning between the fishing and energy sectors; the consequences that it could have on artisanal fishing; among others.
- About 10% of the speakers made observations related to the tourist activity of the city of Mar del Plata (the closest to the NAB) and the Atlantic Coast. They remarked that tourism is the main activity on the coast of Buenos Aires province and, the effects of a potential spill on the coast would immeasurably affect the beaches and the area.

Fig. 11 Respondents’ response as to whether they believe it is useful to carry out these procedures. Source: own elaboration (2022)



Fig. 12 Summary of comments. Source: own elaboration (2022)



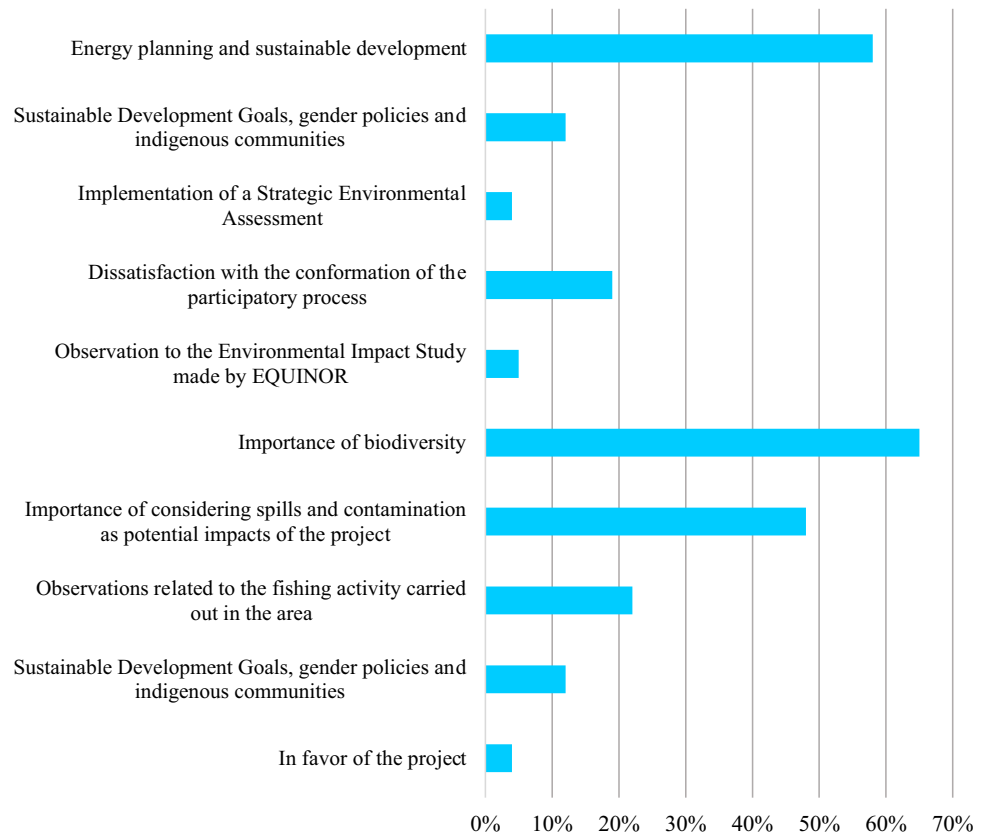
– Finally, 4% of the speakers were in favor of the project.

As a result of AP1/21, on September 24, 2021, as of Resolution 16/2021, the MAyDS was issued, ending the participatory instance, resolving to suspend the terms of the environmental impact assessment procedure until a response was obtained from the different competent bodies that were considered necessary to be consulted, in order to safeguard the public interest involved. This arose after a joint presentation between associations and chambers representing the

country’s fishing sector (Resolution 16/2021). In the same, technical, legal and institutional aspects related to the EIA procedure were questioned and, in addition, “alleged vices or processing defects in the evaluation and in the citizen participation procedure carried out in said context were denounced” (Resolution 16/2021:2).

After 3 months, on December 24, 2021, the MAyDS resolved, under Resolution 436/2021, published on December 30 of the same year, to conclude with the suspension of terms of the EIA procedure, to authorize the implementation

Fig. 13 Summary of the topics covered in AP 1/21. Source: own elaboration (2022)



of the project “Seismic Acquisition 2d-3d-4d Off-Shore in Block NAB 108 - NAB 114” presented by EQUINOR Argentina SA Argentine Branch and make the Environmental Impact Statement. As a justification for this, the MAYS explained in the Resolution that the pertinent consultations were carried out with organizations such as the Ministry of Energy; the Directorate of Fisheries Planning of the Ministry of Agriculture, Livestock and Fisheries; the National Institute for Fisheries Research and Development; the Argentine Naval Prefecture and the Navy Investigation Division; which were issued through technical reports and additional information requirements to the company on aspects that needed further evaluation or substantiation. The Company then presented the additional information required and, in addition, filed a reconsideration appeal with a hierarchical subsidy against the resolution of suspension of deadlines, requesting that the organizations to consult be identified and a maximum term be established for the organizations to be issued. Likewise, EQUINOR required that the criticisms made by members of the fishing sector in their presentation be dismissed.

In Resolution 436/2021, when approving the project, the MAYS established that:

- EQUINOR must bear in mind the aspects highlighted in the presentation made by the Chambers and Associations related to fishing activity.
- The Company must strictly comply with the terms of the Environmental Management Plan proposed in the Environmental Impact Study, as well as any other requirement that the highest national environmental authority considers carrying out. Any modification or update must be requested prior to the activity.
- EQUINOR must submit the Final Marine Fauna Monitoring and Mitigation Report to the MAYS.

Together with this, through National Decree 870/2021, the Secretary of Energy authorized the extension for up to two years of the first exploratory period of the permits granted in the framework of Round 1, which includes Area NAB 100, NAB 108 and NAB 114. On the other hand, through National Decree 900/2021, signed by the National Executive, the Ministry of Economy and the Ministry of Energy, it was established that the exploitation concessionaires of the NAB 100 area whose exploration permit was granted by Resolution 196 of 2019. They will pay 6% royalties during the first ten years of the exploitation concession, 9% during the next ten and 12% during the last ten. With this Resolution, it was made clear that hydrocarbon exploitation is authorized and encouraged in the area. The Secretary of Energy also added that “*developing offshore areas is also having a federal energy policy that is committed to enhancing all productive basins in the country and thus intertwine*

with the local productive apparatus the goods and services that will be necessary for carry out its production” (available in: <https://www.argentina.gob.ar/noticias/el-estado-nacional-otorgo-la-declaracion-de-impacto-ambiental-las-areas-de-exploracion>).

These last actions generated numerous questions on the part of scientific organizations, environmentalists and public opinion in general (Patagonian Sea, Greenpeace, Association for a Free Sea of Oil Companies) that promoted public actions of rejection (marches, public demonstrations, press releases, among others). These were based on the possible negative environmental impacts associated with hydrocarbon exploitation: pollution; effects on mammals, fish and mollusks; conflicts with the main coastal-marine activities such as tourism and fishing; and, above all, the potential disaster in the event of a potential spill oil (CENPAT 2017; CEPA 2019; Greenpeace 2021; ICB 2021; Wildlife Conservation Society, and BirdLife and International 2021).

Discussion

In general terms, it has been shown that, regarding the development of the activity, the potential occurrence of an accident (spill) with disastrous environmental consequences is of concern to those surveyed. Likewise, it should be mentioned that in certain cases, the use of the concepts of exploration and exploitation as synonyms was observed. In this way, when asked about the first, the answers were oriented towards potential impacts derived from offshore hydrocarbon exploitation. However, exploration should be considered as the first stage of possible exploitation. It is important to note that, under the precautionary principle, it is convenient to identify possible effects of the actions previously. Therefore, it is necessary to detect and separate the consequences of both activities.

The answers obtained were general in their distribution, without evidence of a bias according to the profile of the respondent. In research carried out in the United States and the Gulf of Mexico, on the contrary, social factors had a great impact on the responses collected (Gramling and Freudenburg 2006).

With regard to the results of the AP, as in the survey, few positions have been observed in favor of exploration activity in different sectors of the NAB and in a greater number, against it. In the exhibitors’ participations, emphasis was placed on the potential negative consequences of the activity, especially those related to offshore hydrocarbon exploitation. This has been a common point between respondents and participants of the AP: the explicit reference to the impacts of exploitation. However, various interventions were identified that addressed the negative effects that seismic

explosions can generate on marine fauna derived from the first exploratory stage.

Another aspect that coincided between the participatory process and the results of the surveys was the expression of concern by the fishing and tourism sector for the effects of exploration and exploitation on their respective economic activities. This shows the position and actions of other social actors before the development of a new activity potentially incompatible with theirs in an area of the Argentine Sea and the complexity that its management would present to avoid conflicts. In this context, it is necessary to carry out an approach from the precepts of the MSP. Likewise, related to uses and activities in the NAB, another common theme between the AP and those surveyed was the relationship seen between the promotion and development of non-renewable energies with the effects of climate change. In both cases, a contradiction has been visualized between the commitments assumed by the Government regarding the development of alternative energies within the framework of mitigating climate change and the set of measures in place to facilitate the exploration and exploitation of offshore hydrocarbons.

In relation to the AP, the respondents agreed that the information provided by the Government was either complex or scarce. Although a specific area for the AP and all the related documentation was enabled from the M_AyDS website, a large part of the common population did not access it quickly and efficiently. Likewise, it was recognized as another of the main issues to be considered by the respondents related to the AP, the need for the results of the same to be binding. In the final document generated by the Ministry, it is also stated that AP1/21 was convened by different mass media: in particular by the *Diario Crónica* and the *Diario Página /12*. However, none of the respondents mentioned in their responses that they had seen such an announcement. In the AP participations this aspect was strongly criticized, on the grounds that this has put into discussion one of the key points of the Escazú Regional Agreement according to which the Enforcement Authority must provide the necessary information in a clear way before a participatory process, timely and understandable. Related to access to information and participation and monitoring of the AP, numerous respondents have stated that connectivity failures were seen on the days of the AP1/21, which did not allow for the participation and / or live monitoring of the participatory process. However, everything is available on the M_AyDS YouTube channel.

The approval of hydrocarbon exploration and exploitation reinforces the idea of the need for the results of AP1/21 to be binding. The demonstrations and statements made are highlighted in the rejection of the activity, due to the risk of contamination and disasters. The position that maintains that the impact of seismic prospecting and subsequent exploitation can be associated with threats to marine ecosystems,

the economic activities that take place in the area and the coastal zone, as well as in the communities is intensified. The foundations made in the claims against the hydrocarbon activity are consistent with the positions against it expressed in the AP as well as in the surveys.

The results of the surveys and the participatory process coincide with research carried out in the United States (Bishop 2014; Mukherjee and Rahman 2016), Europe (Ruiz et al. 2018); China (Chen and Martens 2021) and Latin America (Diaz Mondragon et al. 2021), which showed that coastal residents identify the environmental impacts of offshore exploitation as the main threat to the population. Among them, there is agreement on considerations about the contamination of the marine environment typical of activity maneuvers (Vidal Hernández et al. 2012), the possibility of a serious disaster due to spills (Lilley and Firestone 2013; Bishop 2014; Vidal Hernández et al. 2012; Mukherjee and Rahman 2016), and the health risks of local citizens (Michaud et al. 2008) as the main impacts of the activity. Also, those linked to the impacts on the rest of the activities developed such as fishing, tourism (Mukherjee and Rahman 2016) stands out. In addition, the proximity to coastal cities whose activity is essentially focused on sun and beach tourism, such as Mar del Plata, has received special attention. It is evident that, when faced with offshore exploitation projects, the population's level of confidence is greater in the environmental groups that express their positions, than in the State and the oil companies themselves (Carlisle et al. 2010).

In this context, MSP as a process of ordering uses and activities that seeks to reduce conflicts, reconcile uses and activities and attend to all positions, has been evidenced as a response in regions of the world (Echeverría 2015). Within MSP process, public participation has been necessary and very useful so that all the sectors involved can dialogue and seek management alternatives (Pomeroy and Douvere 2008; Díaz Merlano and Jiménez Ramón 2021). Participatory processes have served to identify key issues to be addressed, the discussion between sectors and stakeholders, as well as the reduction of conflicts in national MSP processes (Gopnik et al. 2012; Tissiere and Trouillet 2022), regional (Twomey and O'Mahony 2019) and transboundary (Morf et al. 2019; Cordero Penin et al. 2021; García Sanabria et al. 2021). However, for this to be effective, the public administration must generate participatory processes in which the different actors are informed, listened to, and addressed their perceptions, concerns, current and potential conflicts.

Conclusion

This work analyzed the particular case of NAB, a small sector of the Argentine Sea, which during 2021 has been on the public agenda due to various offshore seismic prospecting

projects. Given the AP1/21 carried out by the MAyDS in July of that year, a survey was motivated to find out the opinion of the Mar del Plata population regarding the possibility of this activity being carried out. This city was selected since it is one of the closest to the area under concession by the oil companies.

The objective of this work was to analyze the results of the AP1/21 and contrast them with the opinion of Mar del Plata's population. To do this, surveys were conducted with residents, where they were asked about the activity and the AP1/21 associated with it. As a result, it was obtained that in AP1/21, 96% of the participants expressed themselves against the project and 4% in favor. Topics such as climate change, energy planning, disagreement with the steps of the participatory process and the environmental impact study presented were presented. In the case of the surveys, opinions similar to those expressed in the audience were found, corroborating results and conclusions between both processes.

The work carried out allowed us to know not only the opinion of the Mar del Plata population about the participatory process but also the type of information available on the economic activity analyzed. This new activity potentially incompatible with those already present (which were expressed both in AP1/21 and in the surveys) in an area of the Argentine Sea, and the complexity that its management would present to avoid conflicts, demonstrates the need to carry out an approach from the precepts of the MSP.

Currently, international, regional and even national legislation calls for citizen participation and involvement in different branches of the Administration, including environmental issues. That is why more and more processes such as AP1/21 are being seen. It is necessary that the information is available, so that the population participates, contributes from their place and, as affirmed by the Ibero-American Charter for Citizen Participation in Public Management, seek to guarantee a full democracy based on the fulfillment of the rights to information, participation, association and expression on the public.

Offshore hydrocarbon exploration and exploitation are activities carried out internationally in the development of the energy industry. However, they are in constant conflict over competing for space and / or ocean resources, with activities that were already in the area. That is why Marine Spatial Planning, from its ecosystemic and holistic point of view, offers tools to address this type of problem.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11852-022-00896-x>.

Credit taxonomy Eleonora Verón Conceptualization; Methodology; Validation; Formal Analysis; Investigation; Writing – original draft;

Writing – review and editing; Supervision. Juliana Socrate Conceptualization; Methodology; Validation; Formal Analysis; Investigation; Writing – original draft; Writing – review and editing. Mónica García Writing – review and editing. Participatory Process for Marine Spatial Planning: Perception of Mar del Plata's residents on offshore hydrocarbon exploration in the North Argentina Basin (Argentina)

References

- Allega L, Braverman M, Cabreira AG, Campodónico S, Carozza CR, Cepeda GD, Colonello JH, Derisio C, Di Mauro R, Firpo CA, Gaitán EN, Hozbor MC, Irusta CG, Ivanovic M, Lagos N, Lutz VA, Marí NR, Militeli MI, Danovaro M, Navarro PI, Orlando G, Pájaro P, Prandoni M, Prosdociami N, Reta L, Rico R, Riestra R, Ruarte CM, Schejter C, Schiariti L, Segura A, Souto V, Temperoni VS, Verón E (2020) Estado del conocimiento biológico pesquero de los principales recursos vivos y su ambiente, con relación a la exploración hidrocarburífera en la Zona Económica Exclusiva Argentina y adyacencias. INIDEP; Ministerio de Agricultura, Ganadería y Pesca, Mar del Plata
- Balech E, Ehrlich MD (2008) Esquema biogeográfico del Mar Argentino. *Revista de Investigaciones de Desarrollo Pesquero* (19), pp 45–75. Available in: http://marabierto.iniddep.edu.ar/xmlui/bitstream/handle/iniddep/287/RevINIDEP19_45.pdf?sequence=1&isAllowed=y
- Bishop BH (2014) Focusing events and public opinion: Evidence from the deepwater horizon disaster. *Polit Behav* 36(1):1–22
- Bravo V (2015) Por qué el fracking en Argentina?. *Enciclopedia de la Energía*. Available in: <http://encyclopedia-energie.org/articles/%C2%BF-porqu%C3%A9-el-fracking-en-argentina>
- Burningham K, Barnett J, Thrush D (2006) The limitations of the NIMBY concept for understanding public engagement with renewable energy technologies: a literature review. *School of Environment and Development*. University of Manchester
- Busenberg GJ (2000) Resources, political support, and citizen participation in environmental policy: a reexamination of conventional wisdom. *Soc Nat Resour* 13(6):579–587. <https://doi.org/10.1080/08941920050114628>
- Bustos ML, Zilio MI, Ferrelli F, Piccolo MC, Perillo GME, Van Waarde G, Mavo Manstretta GM (2021) Tourism in the COVID-19 context in mesotidal beaches: carrying capacity for the 2020/2021 summer season in Pehuén Co, Argentina. *Ocean Coast Manag*. <https://doi.org/10.1016/j.ocecoaman.2021.105584>
- Calle I, Ryan D (2016) (coords.). *La participación ciudadana en los procesos de evaluación de impacto ambiental: análisis de casos en 6 países de Latinoamérica*. SPDA, Lima
- Campagna C, Verona C, Falabella V (2005) Ecorregión Mar Argentino. En: Brown A, Martínez Ortiz U, Acerbi M, y Corcuera J, *La Situación Ambiental Argentina* (págs. 321: 354). Fundación Vida Silvestre Argentina, Buenos Aires
- Campodónico H (2004) Reformas e inversión en la industria de hidrocarburos de América Latina. CEPAL, núm. 78. Santiago de Chile
- Carlisle J, Feezell J, Michaud K, Smith E, Smith L (2010) The public's trust in scientific claims regarding offshore oil drilling. *Public Underst Sci* (Bristol, England) 19:514–27. <https://doi.org/10.1177/0963662510375663>
- CENPAT (2017) *La Ruta de las ballenas*. Centro para el Estudio de los Sistemas Marinos. Recovered from: <https://cenpat.conicet.gov.ar/la-ruta-de-las-ballenas/>
- CEPA (2019) *Exploraciones Sísmicas: Impacto del sonido en los peces y en los invertebrados marinos. Importancia de los estudios sobre los efectos del sonido en los organismos acuáticos*. CEPA, Mar del Plata

- CEPAL (2018) Acuerdo Regional de Escazú. Available in: <https://www.cepal.org/es/acuerdodeescazu>
- Ceppi NP (2018) Política energética argentina: un balance del periodo 2003–2015. *Probl Desarro* 49:192. Universidad Nacional Autónoma de México. Instituto de Investigaciones Económicas, 37–60
- Chen M, Martens P (2021) Coastal residents' attitudes toward offshore oil and gas drilling in China. *Extr Ind Soc* 8:2214–2790. <https://doi.org/10.1016/j.exis.2021.100942>
- CLAD (2009) *Carta Iberoamericana de Participación Ciudadana en la Gestión Pública*. Aprobada por la XI Conferencia Iberoamericana de Ministros de Administración Pública y Reforma del Estado. Lisboa, Portugal. Available in: <https://clad.org/wp-content/uploads/2020/07/Carta-Iberoamericana-de-Participacion-06-2009.pdf>
- Cohen N (1995) Technical assistance for citizen participation: a case study of New York City's environmental planning process. *Am Rev Public Adm* 25(2):119–135. <https://doi.org/10.1177/027507409502500202>
- Conroy MM, Evans-Cowley J (2006) E-participation in planning: an analysis of cities adopting on-line citizen participation tools. *Environ Plann C Gov Policy* 24(3):371–384. <https://doi.org/10.1068/c1k>
- Cordero-Penín V, De Andrés M, García-Onetti J, Pallero-Flores C, García-Sanabria J (2021) Laying the foundations for cross-border cooperation in marine spatial planning: the case of the European Macaronesia. *Rev Costas* 2:225–252. <https://doi.org/10.26359/costas.e1121>
- Devine-Wright P (2013) Explaining “NIMBY” objections to a power line: the role of personal, place attachment and project-related factors. *Environ Behav*. <https://doi.org/10.1177/0013916512440435>
- Díaz Merlano JM, Jiménez Ramón JA (2021) *Planificación Espacial Marina: conceptos, principios y guía metodológica*. Bogotá. Fundación MarViva, Colombia
- Díaz-Mondragón SD, Pedroza-Páez LA, Bojórquez-Tapia AJ, Díaz de León (2021) Contribution of marine spatial planning in Mexico to marine and coastal management. *Rev Costas* 2:75–90. <https://doi.org/10.26359/costas.e0421>
- Echeverría L (2015) *Bases para la Planificación Espacial Marina en Uruguay. Identificación de conflictos de uso*. UDELAR, Uruguay. Tesis de Maestría-Inédita. 127pp. <http://www.fadu.edu.uy/sepep/files/2016/03/Echevarria-Luciana.pdf>
- Ehler C, Douvère F (2009) *Planificación espacial marina: una guía paso a paso hacia la Gestión Ecosistémica*. COI – UNESCO: manuales y guías n°53. París, Francia
- Elrick-Barr CE, Zimmerhackel JS, Hill G, Clifton J, Ackermann F, Burton M, Harvey ES (2022) Man-made structures in the marine environment: A review of stakeholders' social and economic values and perceptions. *Environ Sci Policy* 129:1462–9011. <https://doi.org/10.1016/j.envsci.2021.12.006>
- García Sanabria J, García Onetti J, Cordero-Penín V, De Andrés M, Millán Caravaca C, Verón E, Pallero-Flores C (2021) Marine Spatial Planning cross-border cooperation in the ‘European Macaronesia Ocean’: A participatory approach. *Mar Policy* 132. <https://doi.org/10.1016/j.marpol.2021.104671>
- Gopnik M, Fieseler C, Cantral L, McClellan K, Pendleton L, Crowder L (2012) Coming to the table: Early stakeholder engagement in marine spatial planning. *Mar Policy* 36(5):1139–1149. <https://doi.org/10.1016/j.marpol.2012.02.012>
- Gramling R, Freudenburg WR (2006) Attitudes toward offshore oil development: A summary of current evidence. *Ocean Coast Manag* 49:442–461. <https://doi.org/10.1016/j.ocecoaman.2006.03.010>
- Greenpeace (2021) Playas sin petróleo: Tutorial para sumarte a la Audiencia Pública y decirle NO a la exploración petrolera en el Mar Argentino. Greenpeace. <https://www.greenpeace.org/argentina/blog/issues/oceanos/playas-sin-petroleo-tutorial-para-sumar-te-a-la-audiencia-publica-y-defender-el-mar-argentino-de-la-exploracion-petrolera/>
- Haavik TK (2012) Challenging controversies: A prospective analysis of the influence of new technologies on the safety of offshore drilling operations. *J Contingencies Crisis Manage* 20(2):90–101
- Harring N (2018) Trust and state intervention: Results from a Swedish survey on environmental policy support. *Environ Sci Policy* 82:1462–9011. <https://doi.org/10.1016/j.envsci.2018.01.002>
- ICB (2021) *Le decimos NO a la exploración sísmica en el Mar Argentino*. Instituto de Conservación de Ballenas. Available in: <https://ballenas.org.ar/le-decimos-no-a-la-exploracion-sismica-en-el-mar-argentino/>
- IOC-UNESCO (2022) *Guía internacional de MSPGlobal sobre planificación espacial marina/ marítima*. UNESCO, París. (Manuales y guías de la COI no 89), pp 154
- Irvin RA, Stansbury J (2004) Citizen Participation in Decision Making: Is It Worth the Effort? *Public Adm Rev* 64:55–65. <https://doi.org/10.1111/j.1540-6210.2004.00346.x>
- Jensen S, Rimancus P, Zamora A (2019) Evolución de la matriz eléctrica argentina. Gerencia, planificación, coordinación y control de la Comisión nacional de Energía Atómica. Available in: <https://estrucplan.com.ar/articulos/evolucion-de-la-matrizeletrica-argentina/>
- Knapp H, Kirk SA (2003) Using pencil and paper, Internet and touch-tone phones for self-administered surveys: does methodology matter? *Comput Hum Behav* 19:117–134. [https://doi.org/10.1016/s0747-5632\(02\)00008-0](https://doi.org/10.1016/s0747-5632(02)00008-0)
- Kozulj R (2005) Crisis de la industria del gas natural en Argentina, Cepal, Serie Recursos Naturales e Infraestructura N° 88, Santiago de Chile
- Lilley J, Firestone J (2013) The effect of the 2010 Gulf oil spill on public attitudes toward offshore oil drilling and wind development. *Energy Policy* 62:90–98. <https://doi.org/10.1016/j.enpol.2013.07.139>
- Martínez Iglesias M, Lerma Montero I, García E (2008) Políticas de medio ambiente y participación ciudadana. *CIRIEC-Esp Rev Econ Pública Soc Coop* (61):179–201. ISSN: 0213–8093. Available in: <https://www.redalyc.org/articulo.oa?id=17412302009>
- MGP (2021) Official site of Municipality of General Pueyrredon. Available in: <https://www.mardelplata.gob.ar/>
- Michaud K, Carlisle JE, Smith ERAN (2008) Nimbyism vs. environmentalism in attitudes toward energy development. *Environ Polit* 17(1):20–39. <https://doi.org/10.1080/09644010701811459>
- Morf A, Moodie J, Gee K, Giacometti A, Kull M, Piwowarczyk J, Schiele K, Zaucha J, Kellecioglu I, Luttmann A, Strand H (2019) Towards sustainability of marine governance: Challenges and enablers for stakeholder integration in transboundary marine spatial planning in the Baltic Sea. *Ocean Coast Manag* 177:200–212. <https://doi.org/10.1016/j.ocecoaman.2019.04.009>
- Mukherjee D, Rahman MA (2016) To drill or not to drill? An econometric analysis of US public opinion. *Energy Policy* 91. <https://doi.org/10.1016/j.enpol.2015.11.023>
- National Decree 1172 (2003) Access to public information. Argentina, Boletín Oficial
- National Decree 870 (2021) DCTO-2021-870-APN-PTE. Argentina, Boletín Oficial
- National Decree 900 (2021) DCTO-2021-900-APN-PTE. Argentina, Boletín Oficial
- National Law 25675 (2002) Ley General del Ambiente. Argentina, Boletín Oficial
- National Law 27007 (2014) Hidrocarburos. Ley 17.319. Modificación, 29 de octubre, Argentina, Boletín Oficial
- Oloyede SA, Ajibola MO, Durodola OD (2010) Neighborhood citizenship participation in environmental planning and management in Lagos State: The Estate Surveyors' view. *J Sustainable Dev Afr* 12(7):186–195
- Ozawa CP (1993) Improving citizen participation in environmental decisionmaking: the use of transformative mediator techniques.

- Environ Plann C Gov Policy 11(1):103–117. <https://doi.org/10.1068/c110103>
- Palomeque M (2008) Historia de la exploración en la Argentina: cuencas offshore y reflexiones finales. *Petrotecnica XLIX* 6:88–91
- Pomeroy R, Douvère F (2008) The engagement of stakeholders in the marine spatial planning process. *Mar Policy* 32(5):816–822. <https://doi.org/10.1016/j.marpol.2008.03.017>
- Pucci JC (2006) Situación de las cuencas marinas de la República Argentina. *Petrotecnica* 16:26
- Radovich VS (2016) Petróleo y Gas en el Mar. *Regulación Ambiental en la República Argentina. Rev Fac Derecho Cienc Polít* 46(125):261–274
- Radovich VS (2018) Implicancias ambientales en la exploración y la explotación hidrocarburífera en el mar con especial referencia al régimen de la República Argentina y del MERCOSUR [Tesis de Doctorado publicada]. Facultad de Derecho – UBA
- Resolution 65 of 2018 (2018) [Ministry of Finance and Secretary of Energy of the Nation] By calling for an International Public Contest for the award of exploration permits for the search for hydrocarbons in the areas of the National Offshore area
- Resolution 196 of 2019 (2019) [Ministry of Finance of the Nation] Association agreement – Convert
- Resolution 16 of 2021 (2021) [Ministry of Environment and Sustainable Development Secretariat of Climate Change, Sustainable Development and Innovation] RESOL-2021-16-APN-SCCDSEI#MAD
- Resolution 436 of 2021 (2021) [Ministry of Environment and Sustainable Development] RESOL-2021-436-APN-MAD
- Ruiz C, Marrero R, Hernández B (2018) Influence of emotions on the acceptance of an oil drilling project. *Environ Behav* 50(3):324–349. <https://doi.org/10.1177/0013916517701795>
- Sánchez-Cortez JL, Arredondo-García MC, Leyva-Aguilera C, Ávila-Serrano G, Figueroa-Beltrán C, Mata-Perelló JM (2018) Participación comunitaria y percepción social en Latinoamérica: un futuro para las áreas protegidas y proyectos de geoparques. *Ambient Desarro* 21(41):61–77. <https://doi.org/10.11144/Javeriana.ayd21-41.pcps>
- Searman and Asoc (2021) Estudio de Impacto Ambiental. Registro Sísmico Offshore 3D Áreas CAN_100, CAN_108 y CAN_114, Argentina. Searman&Asociados S.A Consultoría
- Soto Barrientos F, Costa Cordella E (2019) Tensiones y desafíos de la participación ciudadana en materia ambiental. *Rev Derecho Estado* 44:227–255. <https://doi.org/10.18601/01229893.n44.09>
- Tarback EJ, Lutgens FK (2013) Chapter 13. Divergent edges: origin and evolution of the ocean floor. In: Tarback EJ, Lutgens FK (eds) *Earth Sciences. An Introduction to Physical Geology*. Pearson, Madrid, pp 406–435
- Tissière L, Trouillet B (2022) What participation means in marine spatial planning systems? Lessons from the French Case. *Planning Practice and Research*, Taylor & Francis, Routledge. <https://doi.org/10.1080/02697459.2022.2027638ff.fhal-03541646f>
- Twomey S, O'Mahony C (2019) Procesos de las partes interesadas en la planificación espacial marina: ambiciones y realidades de la experiencia atlántica europea. J. Zaucha, K. Gee (eds) *Planificación espacial marina: pasado, presente, futuro*. Palgrave Macmillan, London, pp 295–325
- Vidal Hernández LE, Páramo Romero I, Soto LA, Riviera Arriaga E (2012) Legal framework for the offshore operations of the Mexican Oil Industry from a systemic environmental perspective. *Ocean Coast Manag* 58:964–969. <https://doi.org/10.1016/j.ocecoaman.2011.12.006>
- Villalba MS (2018) Hidrocarburos no convencionales en Argentina: exploraciones en lo profundo, transformaciones territoriales en superficie. *Universidad del Rosario; Territorios* (39), 225–243
- Wildlife Conservation Society, and BirdLife International (2021) Atlas del Mar Patagónico. Available in <http://atlas-marpatagonico.org/index.html>
- Williams A, Micallef A (2009) Beach management: principles and practice. *Geogr J* 176(2):178–184. Earthscan, London. https://doi.org/10.1111/j.1475-4959.2010.00360_1.x
- Withycombe Keeler L, Wiek A, White DD, Sampson DA (2015) Linking stakeholder survey, scenario analysis, and simulation modeling to explore the long-term impacts of regional water governance regimes. *Environ Sci Policy* 48:1462–9011. <https://doi.org/10.1016/j.envsci.2015.01.006>

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.