

Environmental compliance and enforcement in Latin America

in the context of
Renewable Energy

Supplemental report:
Policies, regulatory systems, and case studies



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Supplemental report: Environmental compliance and enforcement in Latin America in the context of renewable energy

I. Background

In Latin America, national development policies have consistently highlighted renewable energy (RE) as a critical part of delivering the energy supplies needed to fuel sustainable economic growth (Martínez, 2016).¹ The region is now positioned to lead the world in the deployment of renewable energy (CS Monitor 2017, World Economic Forum, 2016). Although the region has historically invested heavily in large-scale hydroelectric infrastructure projects, many countries have begun to recognize that these have resulted in a variety of adverse environmental and social impacts despite their use of a renewable resource. (IRENA, 2016; Flavin et al., 2014). On the other hand, energy sources such as wind, solar, biomass, geothermal energy, and small hydroelectric projects—often referred to as “non-conventional” or “non-traditional” renewable energy sources (NCREs or NTREs)—do not cause vast disruption of watersheds, biodiversity loss, or threaten the livelihoods of nearby communities.²

Due to the milder impacts associated with NCREs, in many cases these activities are eligible for simplified impact assessment procedures that are less rigorous than the full environmental impact studies that are required for larger, more complex activities (Salazar).³ However, although NCRE projects often qualify for more streamlined assessment procedures, it is important to recognize that there are important exceptions—such as sprawling photovoltaic solar arrays that stretch for miles across a desert or wind turbines sited near important bird migration or coastal navigation routes. Like their conventional energy counterparts, RE projects have resulted in their fair share of protracted social conflicts, socio- environmental impacts.⁴

All of the Latin American countries included in this study have adopted binding or non-binding renewable energy targets, which are usually expressed in terms of a percentage of a country’s electric power consumption that is satisfied by renewable energy sources by a certain year. In order to achieve their targets, these countries have adopted legislation that establishes regulatory requirements, incentives, and milestones for the development of NCRE and biofuel energy sources (IRENA, 2015).⁵ Factors that are driving commitment to increased renewable energy utilization include the desire for energy independence, the need to diversify sources in order to secure energy supply, and international treaty obligations for reducing greenhouse gas emissions (ABN-AMRO, 2018; IRENA, 2016).⁶ In addition, some Latin American countries have also incorporated renewable

¹ Also IRENA (2016), *Renewable Energy Market Analysis: Latin America*. IRENA, Abu Dhabi.

² For example, Chile’s Law N° 20,257 (Non-Conventional Renewable Energy Law), of April 2008 aims to meet future energy needs through the development of non-conventional renewable energy sources (NCREs), such as geothermal, wind, solar, tidal, biomass and small hydroelectric plants.

³ For example, a 2014 report on the application of the impact assessment requirements to RE projects stated that 87% of NCRE projects in Chile were evaluated by means of an Environmental Impact Declaration (EID), a simpler and more streamlined process than a full-blown Environmental Impact Study (EIS).

⁴ See, e.g., Deloitte....(Stating that failure to conduct adequate consultation with external stakeholders has resulted in significant social conflict, protracted legal disputes, and the suspension or cancellation of projects.

⁵ IRENA (2015) at 8.

⁶ ABN-AMRO (May 2018), *Renewable Energy in Latin America*, Energy Monitor, Available at <https://insights.abnamro.nl/en/2018/05/energy-monitor-renewable-energy-in-latin-america/>.; The factors driving

transportation fuels into their energy matrix through the production of bioethanol and biodiesel. Each of these forms of renewable energy is associated with distinct sets of environmental impacts and ECE issues.

II. Renewable energy policies and their relationship with ECE issues in Latin America

Latin American countries have implemented a variety of systems for regulatory oversight of renewable energy (RE) activities. Environmental requirements for renewable energy sources generally represent part of a basket of regulatory issues, which also include rules on the tendering of proposals for new energy projects, interconnection to power grids, market competition, power purchase agreements, eligibility for fiscal and other promotional incentives, and a host of related topics that implicate legal compliance issues. Environmental requirements may or may not be governed by the same legislation and regulatory bodies that establish and enforce these other legal obligations.

The case studies included in this report include national policy goals and targets for increasing the proportion of electric power demand met by renewable energy sources, while examining the ways in which they implicate environmental compliance and enforcement functions.

III. Environmental impacts associated with NCREs

Despite the fact that the environmental and social impacts associated with NCREs may be substantially less severe than those resulting from conventional energy sectors, the generation and transmission of electric power from renewable sources do cause impacts that must be mitigated and that give rise to enforceable licensing requirements.⁷ Similarly, the production of biofuels can result in a variety of adverse impacts that must be prevented or mitigated. Legislative provisions and project-specific license requirements for managing these impacts are usually established at the national or provincial level. In many cases, energy sector ministries share enforcement responsibilities with environmental authorities.

The type and magnitude of environmental impacts arising from renewable energy activities vary enormously, ranging from the generation of harmful electromagnetic fields and the disruption of watersheds to impacts associated with the cultivation of biofuel feedstocks. Environmental compliance obligations also vary substantially according to the type of renewable energy activity, the applicable legislation, and project-specific circumstances.

A summary of environmental and social impacts associated with different forms of renewable energy are presented on the following page.

renewable energy policies are often stated in policy and legislative texts, such as Argentina's Act 27191 (Régimen de Fomento Nacional para el uso de Fuentes Renovables de Energía destinada a la Producción de Energía Eléctrica, Art. 12).

⁷ Union of Concerned Scientists, Environmental Impacts of Renewable Energy Technologies, <https://www.ucsusa.org/clean-energy/renewable-energy/environmental-impacts#.Wo6xvRPwa9Y>.

Examples of impacts from renewable energy sources and renewable fuels

Energy source	Partial list of impacts ⁸	CO ₂ e/ GWh*	Examples of enforceable mitigation requirements ⁹
Wind	<ul style="list-style-type: none"> • Bird and bat mortality through rotor collisions and transmission line electrocutions • Disruption and dislocation of local and migratory wildlife, including disturbance of migratory corridors and breeding and nesting areas. • Preparation of site platforms & opening access roads • Erosion near access roads and cleared sites • Noise, lights, and vibrations in the vicinity of wind towers • Possible disposal of drilling fluids during construction • Aesthetic/visual pollution • Impacts to cultural and archaeological sites 	26	<ul style="list-style-type: none"> • Use of best practices and best available control technologies • Utilization of sound suppression and vibration dampening devices • Compliance with erosion control plans • Scheduling of construction to avoid breeding and nesting periods. • Limit or pause turbine operation during peak animal migration or breeding periods • Robust public consultation procedures • Modify or avoid cultural, archaeological, and ceremonial sites; clear delineation of site artifacts and boundaries
Solar Photovoltaic	<ul style="list-style-type: none"> • Disruption and dislocation of local and migratory wildlife, including disturbance of migratory corridors • Preparation of site platforms & opening access roads • Reflections from of solar arrays • Possible disposal of drilling fluids during construction • Habitat alteration from discharge of water needed for cooling towers and cleaning of glass and reflectors • Aesthetic/visual pollution • Impacts to cultural and archaeological sites 	85	<ul style="list-style-type: none"> • Use of best practices and best available control technologies • Compliance with erosion control plans • Maintenance of on-site monitoring equipment and vehicles • Robust public consultation procedures • Modify or avoid cultural, archaeological, and ceremonial sites; clear delineation of site artifacts and boundaries
Biomass¹⁰	<ul style="list-style-type: none"> • Emissions of carbon dioxide and particulate matter from burning of waste • Deforestation to clear land for growing feedstocks • Trucks coming to incineration /generation facility (noise and dust) • Dispersion of debris and leakage of some feedstocks • Disruption of water supplies for steam generation 	45	<ul style="list-style-type: none"> • Technology for minimizing emissions • Measures to offset CO₂ emissions • Use of no-till farming • Optimize timing of deliveries • Proper storage of feedstock/avoid leakage and dispersion • Use dust abatement techniques
Bioethanol/ Biodiesel	<ul style="list-style-type: none"> • Degradation of ecosystems and forest carbon sinks for cultivation of sugarcane and other feedstocks • Fragmentation of habitats and wildlife corridors; Biodiversity loss • Erosion 		<ul style="list-style-type: none"> • Use of best practices and best available control technologies • Use of equipment to control emissions and discharges of hazardous materials into water, soil, and air

⁸ US AID/CCAD, EIA Technical Review Guidelines: Energy Generation and Transmission, Volume II - Appendices, <https://www.epa.gov/sites/production/files/2014-04/documents/energyvol2.pdf>; Union of Concerned Scientists, *Environmental Impacts of Renewable Energy Technologies*, <https://www.ucsusa.org/clean-energy/renewable-energy/environmental-impacts#.Wo6xvRPwa9Y>.

⁹ US AID/CCAD, EIA Technical Review Guidelines: Energy Generation and Transmission Volume I Part 2, Example EIA Terms of Reference, <https://www.epa.gov/sites/production/files/2014-04/documents/energyvol1part2.pdf>; Tribal Energy and Environmental Information Clearinghouse, *General Mitigation Measures (Best Management Practices) for Biomass Facilities*, <https://teeic.indianaffairs.gov/er/biomass/mitigation/index.htm>, last visited 3-15-2018.

¹⁰ US EPA, *Using biomass for energy has positive and negative effects*, https://www.eia.gov/energyexplained/index.cfm?page=biomass_environment; Tribal Energy and Environmental Information Clearinghouse.

<ul style="list-style-type: none"> • Disposal of significant liquid residues/byproducts with high odor and harmful to many soil types • Discharge of pesticides and fertilizer into soil, water table, and waterways • Release of CO₂ through tilling of soil • Soil contamination from residue disposal • Dust from pulverizers and choppers • Discharges of hazardous materials and byproducts during biofuel (ethanol and biodiesel) production • Airborne emissions of hazardous gases and particulate matter during biofuel production, burning of bagasse, and burning of sugarcane fields 	<p>N/A</p>	<ul style="list-style-type: none"> • Prohibit conversion of forest, native grasslands, and other ecosystems for agricultural use • Prohibit burning of fields and crop debris • Dispose of acidic liquid residue in approved manner that does not allow spillage into lakes and streams • Implementation of erosion control, spill prevention, and hazardous waste management plans • Maintenance of agricultural and fuel transportation equipment
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* Full life-cycle greenhouse gas emissions expressed in tonnes of CO₂e/GWh.¹¹

IV. Verifying the environmental performance of renewable energy production

Similar to other sustainable activities, a secondary legal compliance issue exists regarding the veracity of renewable energy sustainability credentials: whether a unit of electric power or biofuel has fulfilled requirements prescribed in legislation, performance standards (such as kg of carbon dioxide per MW of electricity), or environmental license commitments related to minimizing adverse environmental and social impacts. This is particularly a concern in cases where units of renewable energy must be certified in order that the avoided emissions they represent can be sold to electric utilities and other third parties, who purchase them to comply with renewable energy quotas imposed by legislation.¹² Similarly, bioethanol and biodiesel may be used to comply with renewable fuel standards in the countries where they are produced or in foreign countries in North America and Europe. Avoided greenhouse gas emissions from renewable energy activities may also be utilized to help fulfill a country’s international climate commitments.

Although the integrity of renewable energy certificates and other credentials may be regarded as a secondary concern in comparison with direct environmental impacts, there is often a significant evidentiary overlap with respect to the data that government authorities must collect in order to verify compliance. These include performance indicators and sampling methods, laboratory reports, self-monitoring records, and a variety of other criteria.

¹¹ World Nuclear Association WNA Report, Comparison of Lifecycle Greenhouse Gas Emissions of Various Electricity Generation Sources, http://www.world-nuclear.org/uploadedFiles/org/WNA/Publications/Working_Group_Reports/comparison_of_lifecycle.pdf.

¹² Renewable energy certificates may also be purchased by corporations in order to fulfill voluntary corporate sustainability policies.

Case study 1. Argentina

Issue: parallel environmental obligations and channels for compliance monitoring



National Renewable energy target:

Renewable energy will contribute 20 % of national electric power consumption by 2025.

A. Overview of Argentina’s national renewable energy policy

Renewable energy policy goals have been established by both the federal government and by the provinces, which generally have jurisdiction over all matters pertaining to the environment and natural resources within their boundaries. At the national level, Act 26190, as amended by Act 27191 of 2015 creates the **Legal Regulations on the National Promotion for the Use of Sources of Renewable Energy**, Argentina’s national framework for the development and promotion of renewable energy.¹³ Act 27191 proclaims the national interest in generating energy from renewable energy sources and establishes a timeline of incremental targets for renewable energy to contribute increasing proportions of overall national electricity consumption, culminating in the target of 20% by the end of 2025. Act 27191 created a suite of tax benefits and other promotional incentives in order to foster investment in renewable energy projects.¹⁴ In order to support the achievement of its RE targets, Argentina created the **RenovAr** program for soliciting bids from prospective renewable energy investors and selecting qualified RE projects (“awardees”) to participate in the *National Promotion* program.

B. Summary of environmental compliance and enforcement issues

Under Argentina’s *RenovAr* program, regulatory requirements and performance standards apply to both the management of environmental and social impacts, as well as energy market participation. With respect to environmental/social management requirements, the Ministry of Energy and Mining (**MEyM**) and the Ministry of the Environment and Sustainable Development (**MAyDS**) play complementary roles in regulating and monitoring compliance with overlapping—but differentiated—sets of environmental requirements.

Law No. 24.0656/1996 requires that the facilities and equipment associated with the generation, transport and distribution of electrical energy must implement measures to protect the ecosystems involved, responding to current pollutant emission standards and those established in the future. The ESIA process, which is undertaken by MAyDS or (more frequently) provincial authorities, is the principle mechanism for determining the

¹³ Act 26190, *Legal Regulations on the National Promotion for the Use of Sources of Renewable Energy*, as modified by Act 27191; (*Régimen de Fomento Nacional para el Uso de Fuentes Renovables de Energía Destinada a la Producción de Energía Eléctrica* by its full Spanish title).

¹⁴ Promotional benefits established by Act 27191 include exemption from import tariffs (for projects that started construction prior to 2018), accelerated depreciation of assets, exemption from certain taxes, a tax deduction for financing expenditures, and a tax credit for local capital expenditures.

environmental feasibility of energy projects in Argentina. Decree 531/2016 imposes specific additional minimum environmental qualifications for the *National Promotion for the Use of Sources of Renewable Energy* program.¹⁵

Overlapping sets of environmental and social management requirements:

- Obligations contained in the MEyM's Environmental and Social Risk Management Framework (MGRAS), which incorporate World Bank/IFC Environmental and Social Sustainability Performance Standards and guidelines. MEyM's Environmental and Social Unit (UAYs) has primary responsibility for monitoring compliance by RE project owners with these requirements.¹⁶ Note that compliance with applicable legislation concerning environmental and social risks is also a mandatory condition of *RenovAr* loans and guarantees through the World Bank.¹⁷
- Environmental license requirements derived from the ESIA process and environmental legislation. MAYDS has primary responsibility for enforcement of environmental license (*Environmental Viability Certificate*) obligations and applicable legislation for large projects under federal jurisdiction, but provincial environmental authorities are generally competent to monitor the compliance of smaller projects in their jurisdictions.

In the case of noncompliance with environmental and social requirements under the interrelated regulatory regimes, three types of sanctions may apply:

1. Noncompliance with the requirements of an environmental license (*Environmental Viability Certificate*): Violations can result in a range of sanctions, from warnings, temporary or permanent closures, suspension of environmental licenses and permits, to monetary fines that may grow for repeated infractions (See Argentina Appendix).
2. Noncompliance with the requirements of the *Legal Regulations on the National Promotion*: In cases where environmental licenses are suspended, approval for participation in the RE electric power market is also voided, since approval to operate is predicated on the project owner holding a valid license.¹⁸ The project owner may lose fiscal or other promotional incentives provided by the *National Promotion*

¹⁵ Resolution 72/2016, Section 22 requires compliance with the Resolutions N° 475/1987 and N° 149/1990 of the former Secretariat of Energy, a list of professionals in charge of the drafting of the environmental studies, a copy of the environmental authorization (Environmental Viability Certificate) from the jurisdiction (national or subnational) that issued it, and a note stating that the equipment does not contain polychlorinated biphenyls (PCBs) and that those products are not stored in the premises.

¹⁶ The UAYs is an executing body under the Undersecretary for Renewable Energy—a dependency of the MEyM.

¹⁷ MEyM/World Bank (15-August-2017), Programa RenovAr, Garantía FODER – Fondo de Energías Renovables, MGRAS - Marco de Gestión de Riesgo Ambiental y Social, <http://documents.worldbank.org/curated/en/205341481661520199/pdf/110969-REVISED-EA-SPANISH-P159901-Box405296B-PUBLIC-Disclosed-8-18-2017.pdf>.

¹⁸ Resolution No. 72/2016, Art. 4(d)(6) – *Procedure for Obtaining a Certificate of Inclusion in the Program for the Promotion of Renewable Energy*; No Certifications of Inclusion can be issued anywhere in the country, unless all necessary environmental licenses, permits, or authorizations for that jurisdiction have been secured without being subject to unfulfilled compliance conditions.

program. Severe violations may disqualify an RE provider from participation in the national energy grid.

3. Noncompliance with World Bank/IFC environmental and social performance standards, which are required under the *RenovAr* guarantee program, project owners may not receive further loan disbursements and environmental guarantees may be cancelled.¹⁹

C. Key institutions and components of Argentina's national renewable energy policy

The Ministry of Energy and Mines (MEyM) is responsible for selecting qualified RE investors for participation in the *Legal Regulations* in accordance with standards established by the Ministry of the Treasury and Public Finance (MHYFP), which issues a *Certificate of Inclusion* to the participant.²⁰ In the case of projects where renewable energy sources pose a risk of producing harmful environmental impacts, the Ministry of the Environment and Sustainable Development (MAyDS) has enforcement authority to intervene, issuing an opinion on the eligibility of the project, within the scope of its competence.²¹

Three features of Argentina's *National Promotion* renewable energy regulatory framework are central to its effort to achieve its 2025 targets:

- **RenovAr** is an innovative program for soliciting bids from potential renewable energy investors in order to achieve the country's RE targets.²²
- The **Fund for the Development of Renewable Energies (FODER)** provides payment guarantees for power purchase agreements with successful bidders, as well as project financing assistance.²³ The World Bank has funded FODER through a 20-year, USD \$480 million guarantee. The Green Climate Fund (GCF) also provides loans to awardees.
- The **Environmental and Social Risk Management Framework (MGRAS)** was developed by MEyM in order to manage the environmental and social risks associated with a large build-out of RE projects.²⁴ The **Environmental and Social Unit (UAYs)** of the National Renewable Energy Directorate (departments within the Undersecretary of Renewable Energy (**SSER**)), is responsible for implementing the MGRAS.²⁵

¹⁹ Decree 531/2016, Art. 8.2.

²⁰ MEyM Resolution 72/2016, Section. 17. Provides that the Ministry of Energy and Mines will qualify potential investors in the *Program* according to the guidelines of the Ministry of the Treasury and Public Finance.

²¹ Decree 531/2016 (Regulations for Act 27191), Art. 8.2.

²² RenovAr was launched in 2016 via Resolution No. 136/2016.

²³ FOCER was established by Act 27191/2016, Section 7.

²⁴ MEyM (August 2017), Programa RenovAr, *Marco de Gestión de Riesgo Ambiental y Social (MGRAS)*, FODER – (Fund for Renewable Energy RenovAr Program) / Garantía FODER BM, <http://documents.worldbank.org/curated/en/205341481661520199/pdf/110969-REVISED-EA-SPANISH-P159901-Box405296B-PUBLIC-Discovered-8-18-2017.pdf>.

²⁵ Id.

The MGRAS provides a comprehensive summary of potential environmental and social impacts (beneficial and adverse)—and mitigation measures for addressing them—that are associated with different types of RE projects and with power generation and transmission projects in general. At the same time, the MGRAS recognizes that RE projects have impacts that vary according to project-specific characteristics, such as geology, soils, hydrology, hydrogeology, climate, ecosystems, and human populations in the vicinity of the project.

D. MGRAS Environmental eligibility requirements

In order to qualify for fiscal and other types of incentives under the *RenovAr* framework, the proponents of renewable energy projects (“awardees”) must provide information to the SSER concerning the environmental and land use issues implicated by the project and confirmation that all required environmental licenses (Environmental Viability Certificates) and permits required by federal, provincial, and municipal authorities have been received.²⁶

The MGRAS also requires each RE project proponent who opts for a FODER guarantee (issued through the World Bank) to develop an **Environmental and Social Management System (SGAS)**, which covers the construction and operation stages of the RE project and works in parallel with environmental management requirements associated with licenses and permits. In addition, Resolution SE 475/87 requires that awardees conduct prefeasibility studies, in parallel with the ESIA process, relating to the interconnection of the project with the existing power grid. Administration of environmental licensing and prefeasibility processes are normally the competency of provincial environmental authorities.

E. Interrelation of government and lender requirements

The *RenovAr* program provides an example of the interoperation of host country regulatory systems with international lender policies. Since World Bank/IFC Performance Standards play a role in shaping the SGAS that becomes part of the final ESIA study and forms the basis for environmental license commitments, there is cross-pollination between lender and government regulatory requirements. *RenovAr* awardees who opt for guarantees are required to prepare ESIA studies and mitigation plans in consultation with the general and sectoral *Environmental, Health and Safety Guidelines* of the International Finance Corporation (IFC).²⁷ The UAYs is responsible for ensuring that private sector energy projects also comply with the World Bank’s *Performance Standards for Environmental and Social Sustainability and Operational Safeguards Policies (OP)*.

²⁶ Resolution 72/2016, Section 22.

²⁷ RE project proponents who opt for guarantees are required to consult the IFC Guidelines on Environment, Health and Safety (EHS) general guidelines, its guidelines for electric power transmission and distribution, and guidelines for wind energy. In implementing IFC standards, when host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent.

F. Monitoring and enforcement of environmental license and SGAS requirements

Similar to the project authorization process, compliance monitoring and enforcement for environmental license requirements and SGAS obligations are carried out on parallel tracks. Although compliance with environmental license obligations are a component of SGAS compliance, MGRAS additionally involves its own compliance assurance procedures.

Monitoring and enforcement by environmental authorities

Environmental enforcement authorities from the jurisdiction that issued the license (Environmental Viability Certificate) for the RE project (often provincial authorities) are responsible for carrying out periodic monitoring and inspections to determine whether licensees are complying with environmental legislation and project-specific obligations. Inspections may be triggered by complaints, license renewals, or other rules determined by the applicable federal, provincial, municipal, or federal district (Autonomous City of Buenos Aires) legislation.

Monitoring and enforcement by energy authorities

The Undersecretary for Renewable Energy, acting through the UAYs, also undertakes inspections of wind and solar projects, in order to enforce environmental license requirements and commitments made for securing promotional benefits.²⁸ The Undersecretary may demand documentation, data, and complementary information from project operators in order to carry out monitoring and control tasks.²⁹ The Undersecretary may also request assistance from the National Institute of Industrial Technology or other entities.³⁰ If they fail to comply, facility owners may lose tax and other benefits provided under Act 27191 and be liable for the payment of deferred or exempted taxes, without prejudice to sanctions imposed by environmental legislation.

Following the construction phase, UAYs undertakes a fact-finding process, relying primarily on mandatory Compliance Reports submitted by awardees to verify that projects have implemented the SGAS measures for the construction phase and complied with the World Bank's Performance Standards.³¹ The UAYs then forwards approved Compliance Reports to the World Bank.

If deviations from the SGAS or rectifiable instances of noncompliance are detected, the project operator must submit a **Corrective Action Plan (PAC)**, whose scope and implementation schedule must be approved by the UAYs and the World Bank, and then implement the PAC to the satisfaction of those parties. RE project awardees must immediately report accidents or environmental and/or social incidents to the UAYs, including any sanctions imposed by authorities that are competent in connection with environmental matters (including energy regulators). In addition, awardees must implement immediate and

²⁸ Resolución N° 72/2016 (Procedure for procuring a Certificate of Inclusion in the regimen for promoting renewable energy).

²⁹ Resolución N° 72/2016, Art. 22.

³⁰ Ibid.

³¹ The MEyM may also conduct site visits when additional information is needed to confirm compliance.

preventive corrective measures that have been established by the competent environmental enforcement authority at the national, provincial or municipal level. In the event that the objectives of the PAC are not reached within the reasonable deadlines agreed, the SSER, through the UAYs, informs the World Bank, which determines the sanctions to impose on the project operator/awardee that has failed to comply with its obligations with respect to the Performance Standards. This could result in the Bank taking actions, such as limiting or canceling the part of the guarantee that corresponds to the awardee.

Argentina's national biofuels policy

A. Biofuels policy goals

With respect to renewable transportation fuels, Law 26.093 provides a regulatory framework for biofuel production and establishes a National Auxiliary Commission for the Sustainable Production and Use of Biofuels.³² The Law 26.093 specifies the technical definitions of bioethanol and biodiesel and provides guidelines for granting subsidies and tax reductions. The **National Auxiliary Commission** is charged with facilitating technology transfer, particularly between small and medium sized enterprises. The Law also establishes minimum requirements for the mixture of biofuels with gasoline and diesel fuel. Pursuant to the Law's amendments, bioethanol must comprise at least 12% of all gasoline produced and consumed in the country, and biodiesel must account for 10% of diesel fuel.³³

B. Environmental compliance and enforcement issues

For the production of biofuels, plants must be authorized for this purposes by enforcement authorities. Obtaining authorization requires that production plants comply with requirements for the sustainable production and quality of biofuels, including the environmental impact assessment process.³⁴ The treatment of effluents and waste management plans must be included in the assessment process.

With respect to biofuels, Law 26.093 establishes a range of sanctions for violations of mandated biofuel standards and requirements prescribed by competent enforcement authorities. For authorized biofuel production facilities, these include fines and the loss of authorization to undertake the activity.³⁵ Noncompliant facilities may be subject to losing promotional tax incentives and being suspended from a national directory of biofuel suppliers (and prevented from reapplying). Other types of biofuel-related activities are subject to maximum fines based on the prevailing retail price of *nafta super*, a medium-quality automotive fuel found at service stations. Fines range from the price of 10,000 liters, for minor offenses, to the price of 100,000 liters, for very serious offenses.³⁶

³² Ley Nº 26.093 (2006) - Régimen de regulación y promoción para la producción y uso sustentables de biocombustibles.

³³ Decreto Nº 543/2016 - Porcentaje obligatorio de Bioetanol; Resolución Nº 56/2012 - Ratifícase el Nuevo Acuerdo de Abastecimiento de Biodiesel para su Mezcla con Combustibles Fósiles en el Territorio Nacional.

³⁴ Ley Nº 26.093, Art. 6.

³⁵ Ley Nº 26.093, Art. 16.

³⁶ Ley Nº 26.093, Art. 18.

Case study 2 - Chile

Issue: Learning from social conflict to transform renewable energy policy



National Renewable energy targets

Medium-term: Renewable energy will contribute 20 % of its national electric power needs by 2025.

Long-term: Renewable energy will contribute 70 % of its national electric power needs by 2050.

A. Background: Chile's renewable energy policy

In 2013, Chile adopted a target for the use of non-conventional renewable energy sources through Law 20.698, which mandates that 20% of the country's power generation must come from by the year 2025.³⁷ Chile's long-term goals are even more ambitious. The Ministry of Energy's **Road Map 2050** policy calls for at least 70% of national electric power demand being supplied by renewable energy sources, with an emphasis on solar and wind power, complemented by new hydroelectric power sources.³⁸ In addition, Chile's Regulation for Energy Planning (Decree 134 of 2017) emphasizes the need for the Ministry of Energy to work closely with the Ministry of the Environment in developing the country's long-term plans for developing its energy sector, in order to maintain compliance with environmental policy and legislation.³⁹ Law 20.698 is complemented by Chile's **Energy Agenda**, which proclaims the need to foster a greater commitment by the energy sector to environmental and social protection while fulfilling the country's energy needs, including higher levels of environmental compliance.⁴⁰

Delegation of environmental inspections to the Ministry of Energy

The **Superintendence of the Environment (SMA)**, Chile's environmental enforcement agency for authorized projects and activities, delegates most environmental inspection tasks relating to RE projects to the Ministry of Energy and accredited technical entities.⁴¹ The Ministry of Energy must abide by the procedures, methodologies, methods of analysis, and technical protocols established by the SMA.⁴² The rules for the delegation of tasks are contained in **delegation agreements** (*convenios de encomendación de acciones*).⁴³

³⁷ Ley N° 20.698 (*Ley de Fomento de las ERNC 20/25*) increased the previous NCRE targets of Law 20.257 (2008).

³⁸ Ministerio de Energía (2015), *Hoja de Ruta 2050: Hacia una energía sustentable e inclusiva para Chile*, Comité Consultivo de Energía 2050, Available at <http://www.energia.gob.cl/content/hoja-de-ruta-2050-hacia-una-energia>.

³⁹ Decreto N° 134 – *Aprueba Reglamento de Planificación Energética de Largo Plazo* (2016).

⁴⁰ Ministry of Energy (Chile), *Agenda de Energía: un Desafío País, Progreso para Todos* (2014), Available at http://www.sec.cl/pls/portal/docs/PAGE/SEC2005/ACTUALIDAD/2014/LANZAMIENTO_AGENDA/AGENDAENERGIA.pdf.

⁴¹ Law No. 20,417, Arts. 4 and 25.

⁴² Ley N° 20,417, Art. 25.

⁴³ See, e.g., *Agreement for the Delegation of Enforcement Actions between the SMA and the Superintendence of Sanitary Services (SISS)* (2012) (Defining standards and procedures for SISS to follow in carrying out inspections).

B. Simplified environmental assessment requirements for many RE projects

In Chile, all proposed power projects that will generate more than 3 MW are subjected to the country's Environmental Impact Assessment System (SEIA). For investors in renewable energy projects, the process of applying for an environmental license (Environmental Qualification Resolution or "RCA") has often qualified for a simplified environmental assessment procedure that is not subject to the highest level of rigor and detail. A 2014 report on impact assessment requirements for RE projects in Chile stated that the vast majority of renewable projects (87% of the total) qualified for the use of simplified Environmental Impact Declaration (EID) procedures, rather than having to undertake a more rigorous Environmental Impact Study (EIS) (Salazar, 2016).⁴⁴ environmental policy and legislation.⁴⁵ Law 20.698 is complemented by Chile's **Energy Agenda**, which proclaims the need to foster a greater commitment by the energy sector to environmental and social protection while fulfilling the country's energy needs, including higher levels of environmental compliance.⁴⁶

Subjective assessment of social impacts

The eligibility of many RE project proposals for a simplified impact assessment process belies the difficulties that have accompanied the development of some of Chile's largest and more complex RE projects. Until 2015, the implementation of a number of high-profile energy projects (including ERNC projects) were accompanied by significant social conflict, protracted legal challenges, and the suspension or cancellation of projects, due to the systematic failure of ESIA process (administered by the Environmental Assessment Agency) and the Ministry of Energy's own approval process to take into account many of the public concerns regarding social and environmental impacts.⁴⁷ A 2016 study prepared for the Deloitte consulting group identified growing social conflict as a major barrier to the expansion of installed renewable energy capacity in Chile.⁴⁸

C. Addressing the roots of social conflict: transforming the public consultation process

During the past three years, Chile's Ministry of Energy has implemented significant changes in the way it regulates and promotes the expansion of renewable energy to meet the country's national energy goals. In response to a recurring pattern of conflicts, the Ministry of Energy,

⁴⁴ Salazar states that between 2012 to 2016, of the projects qualifying for the EID process, 74% were for solar power, followed by 20% for wind energy, and 7% for hydroelectric projects. Most applications for RE projects were for solar power, which had the highest rate of eligibility (93%) for simplified environmental assessments (EIDs), the shortest evaluation period and the second lowest rejection rate (4%). This was followed by wind energy projects (86% assessed through EIDs), subject to a more moderate evaluation timeframe and low rejection rate.

⁴⁵ Decreto N° 134 – *Aprueba Reglamento de Planificación Energética de Largo Plazo* (2016).

⁴⁶ Ministry of Energy (Chile), *Agenda de Energía: un Desafío País, Progreso para Todos* (2014), Available at http://www.sec.cl/pls/portal/docs/PAGE/SEC2005/ACTUALIDAD/2014/LANZAMIENTO_AGENDA/AGENDAENERGIA.pdf.

⁴⁷ In Chile, the ESIA process is administered by Chile's Environmental Assessment Agency (SEA) through the Environmental Impact Assessment System (SEIA). The SEA is a department within the Ministry of the Environment.

⁴⁸ Deloitte Consulting Group (2016) *Sector energía III: ERNC, perspectivas y dificultades/Chile*, <https://www2.deloitte.com/content/dam/Deloitte/cl/Documents/energy-resources/cl-er-estudio-energ%C3%ADa-chile-parte3.pdf>.

through its **Sustainable Development Division**, undertook a comprehensive transformation of the public consultation process and improvements in the way stakeholder concerns are integrated into the development of social and environmental management requirements for energy projects.⁴⁹

In September of 2015, the Ministry of Energy created an internal Participation and Social Dialogue Division to improve the effectiveness of public consultation. The Division supervised the preparation of a document entitled *Commitment to Dialogue: Standards Guide for Participation in the Development of Energy Projects*. In preparing the *Standards Guide*, the Division solicited commentary from a wide range of actors and stakeholders involved in—or impacted by—the planning and approval processes for RE projects, through a comprehensive participatory process. This effort included participatory workshops, the formation of the **Roundtable for the National Review of the Participation Standard**, and an International Seminar. A separate dialogue process was undertaken to incorporate the viewpoints of indigenous peoples into the Chile’s 2050 energy policy and foster a general diagnostic process.

D. Improving the effectiveness of environmental assessment

In 2015, the Ministry of Energy also undertook a strategic impact assessment (SEA) of its energy policy and the expansion of the renewable energy sector—the first time that a national government policy was formally submitted to SEA in Chile.⁵⁰ This effort included the development of a **strategic reference framework**, the proposal of critical decision factors, an evaluation of its risk and opportunity analysis, the preparation of an SEA report and the development of an improved public consultation process.

Outcomes of the strategic environmental assessment:

First, the Ministry of Energy established a set of five **environmental sustainability indicators for the energy sector**, which address:

- a) Thermoelectric performance,
- b) Greenhouse gas emissions,
- c) **Environmental enforcement**,
- d) **Environmental licensing**, and
- e) Environmental management instruments for land use.

In addition, the Ministry determined that the energy sector will need to exercise the highest level of commitment to environmental protection in order to harmonize the integration of energy projects into Chile’s land use management framework. The Ministry also determined that creating coherence between the country’s energy policy and national land use planning process will require strong inter-sectoral coordination.

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⁵⁰ Chile/Ministry of Energy (March 2015), *Cuenta Pública Participativa Ministerio de Energía* (Accounting of Public Participation), http://www.energia.gob.cl/sites/default/files/resumen_documento_cuenta_publica_minenergia.pdf.

E. Environmental enforcement of the energy sector

The third sustainability indicator for the energy sector (environmental enforcement) provides a measure of improvements in the level of compliance by energy projects that are subject to environmental license (RCA) requirements. For this indicator, the level of compliance is determined through inspection reports issued by the Superintendence of Environment, or SMA (the agency responsible for enforcement of requirements associated with environmental licenses, environmental quality standards, and pollution control plans).

Although only four years of data were currently publicly available at the time of this study, the Ministry of Energy has observed an increase in the number of cases that potentially merit the imposition of sanctions.⁵¹ The Ministry cautions that inspection reports that present findings of RCA violations do not automatically trigger a sanctioning process, since the seriousness of such findings is determined by another unit within the Superintendency of the Environment. **However, the data suggest that enforcement of energy projects is becoming more stringent.** Between 2013 and 2016, the number of inspection reports indicating the possible need for sanctions increased from 44% to 71% per year.⁵²

⁵¹ Ministry of Energy (website), *Environmental Enforcement of the Energy Sector*, available at http://www.minenergia.cl/indicadoresambientales/?page_id=136; last accessed 25/6/2018).

⁵² Id.

Case study 3 - Mexico

Issue: Ensuring the environmental integrity of clean energy in a new energy market



National Renewable energy target

Clean energy will contribute 25% of national electric power consumption by 2018, 30% by 2021, and 35% by 2024.

A. Overview of Mexico's renewable energy policy

Mexico has adopted a series of transformative policies and legislation during the past decade to liberalize its wholesale energy market and increase the proportion of the market comprised by “clean” energy sources (including non-conventional renewable energy).⁵³ In 2015, Mexico adopted its current energy policy framework through the passage of the **Energy Transition Law (LTE)**, which established a binding target of generating 35% of national energy needs from clean energy by the year 2024.⁵⁴ The LTE's objectives are to promote the sustainable and efficient use of energy, ensure the attainment of mandatory percentages of clean energy in the energy market, and reduce pollutant emissions by the electric power industry, while maintaining the competitiveness of the energy sectors.⁵⁵ The Law also supports the objectives of Mexico's **General Climate Change Law**, enacted in 2012, of reduced emissions of greenhouse gases achieved through the increased utilization of clean energy sources.⁵⁶

Principal instruments for the transition to cleaner energy

The Energy Transition Law recognizes three principal instruments for the implementation of the energy transition:

1. The **Transition Strategy for Promoting the Use of Cleaner Technologies and Fuels** establishes policies and actions for promoting the use of energy from renewable resources and substituting them for fossil fuels at the final consumption stage. The *Strategy* contains a medium-term (15-year) planning horizon and a long-term (30-year) horizon. The medium-term horizon must be updated every three years and contain an **“exhaustive diagnosis” of the status of environmental pollution caused by the electric power industry**, utilizing data provided by SEMARNAT.⁵⁷

⁵³ Grantham Research Institute on Climate Change and the Environment, *The Energy Transition Law*, the London School of Economics and Political Science, <http://www.lse.ac.uk/GranthamInstitute/law/energy-transition-law/>.

⁵⁴ Mexico's Energy Transition Law or “LTE” (24 December 2015), Third transitory provision; The LTE merged and replaced the *Law on the Use of Renewable Energies and Financing the Energy Transition (LAERFTE)* and the *Law for Sustainable Energy Use (LASE)* which were both passed in 2008. Two forms of “clean” energy are recognized: *Baseload clean energy* consists of nuclear, hydropower, biomass, geothermal, and efficient cogeneration (electric and thermal) sources, while *Intermittent clean energy* consists of wind and solar power.

⁵⁵ Ley de Transición Energética (12 January 2015), Art. 1.

⁵⁶ Ley General de Cambio Climático (6 de junio de 2012), Available at http://www.diputados.gob.mx/LeyesBiblio/pdf/LGCC_190118.pdf.

⁵⁷ Ley 1715, Art 29, § II.

2. The **Special Program for Energy Transition** (PETE) aims to facilitate the execution of the action items established in the Strategy. It establishes concrete goals for installed renewable energy capacity for 2018 for hydropower (13,030 MW), wind (8,922 MW), geothermal (1,018 MW), bioenergy (784 MW), and solar PV (627 MW).⁵⁸
3. The **National Program for the Sustainable Use of Energy** (PRONASE), is a program for increasing energy efficiency across all economic sectors. It caps Mexico's national energy intensity for 2018 at 2012 levels and prescribes additional energy efficiency improvements.⁵⁹

B. New regulatory framework for Mexico's energy market

Following a 2013 constitutional reform and several years of legislative modifications, Mexico's energy markets were opened for the first time in January 2016 to participation by private sector energy suppliers.⁶⁰ Important components of Mexico's new regulatory framework for the energy market were established through the *Law of the Electricity Industry* of 2014, which charges the **National Center for Energy Control** (CENACE) with responsibility for managing, monitoring, and ensuring fair competition in the wholesale energy market, as well as in the market for Clean Energy Certificates (CECs).⁶¹

Under the new framework, CENACE is responsible for issuing CECs to producers of clean energy, defined in the *Law of the Electricity Industry* as energy generated from wind, solar, tidal, geothermal, biofuels, methane and biomass, carbon sequestration, hydrogen exploitation (under certain conditions), hydropower, nuclear, and heat/power cogeneration.⁶² Generators of clean energy can sell their CECs to large power consumers and residential power suppliers, who use them to verify that a portion of their power is generated by clean energy sources.⁶³ Each participant in the energy market is required to hold a number of "clean" megawatt-hours corresponding to a mandated percentage of clean energy, which is gradually incremented over time in order to make steady progress toward the 35% clean energy target for 2024.

C. Environmental compliance and enforcement issues associated with the clean energy market

The use of clean energy certificates in the energy regulatory system implicates a range of legal compliance issues. First, even activities that generate "clean" energy can result in adverse

⁵⁸ GlobalData (2017), *Mexico Renewable Energy Policy Handbook 2017*, 8, <http://www.arena-international.com/Uploads/2017/11/27/c/c/r/Free-Mexico-Renewable-Energy-Policy-Handbook-2017.pdf>.

⁵⁹ SENER (2014) *Programa Nacional para el Aprovechamiento Sustentable de la Energía 2014-2018*, 39.

⁶⁰ Vietor, Richard H.K. and Sheldahl-Thomason, Haviland (2017), *Mexico's Energy Reform*, Harvard Business School.

⁶¹ Ley de la Industria Eléctrica (11 August 2014), Art. 108.

⁶² Ley de la Industria Eléctrica, Art. 2, § XXII.

⁶³ Roberto Rodriguez Labastida (February 22, 2016), *Mexico's Power Market Moves Ahead*, Navigant Research, <https://www.navigantresearch.com/tag/clean-energy-certificate>.

impacts if project owners do not properly implement environmental management requirements, particularly for energy projects at the larger and more complex end of the scale. Secondly, some compliance issues related to energy market participation are incidental to environmental requirements. The validity of CECs must be based on the underlying environmental compliance of the generators of clean energy to whom they are issued—compliance that must be monitored and verified. The Law charges the Secretariat of Energy and SEMARNAT with determining whether each certified source of “Clean Energy” is actually clean, meeting a maximum emission limit for carbon dioxide of 100 kg/MWh.⁶⁴

The Energy Transition Law designates Mexico’s **Federal Prosecutor for Environmental Protection** (PROFEPA) as the primary authority for monitoring and enforcing the Law’s terms, as well as project-specific requirements prescribed by SEMARNAT in issuing environmental licenses to new clean energy suppliers.⁶⁵ In addition, it is charged with responding to environmentally-related complaints by members of the public, as well as prescribing urgent corrective measures and imposing sanctions in for environmental violations. If PROFEPA finds evidence of acts or omissions by the operator of an energy-generating facility that indicate the probable commission of environmental crimes, it will refer the case to the office of the Federal Prosecutor and other competent jurisdictional authorities for criminal proceedings.

D. Mandate for the recognition and internalization of environmental and social costs

The Energy Transition Law directs the **Secretariat of Energy** (SENER) to coordinate with the **Secretariat of the Environment and Natural Resources** (SEMARNAT) and other agencies to prepare a methodology for assessing the externalities (spillover costs to the environment and society) of the impacts resulting from a large increase in the number of new energy projects.⁶⁶ It provides that the characteristics and scale of these impacts must be determined and their costs internalized in order that environmental authorities can take them into account when prescribing environmental and social management requirements for new energy projects.⁶⁷

Methodologies for quantifying greenhouse gas emissions and avoided emissions

The Regulation for the LTE (2017) charges SENER to coordinate with SEMARNAT in formulating, issuing and, where appropriate, updating methodologies for the quantification of greenhouse gases emitted through the exploitation, production, transformation, distribution, and carbon-intensive production resulting from electric power consumption, as well as avoided Emissions due to the incorporation of energy efficiency measures. The agencies must review these methodologies every three years.⁶⁸

⁶⁴ LTE, Transitory provisions, § VI.

⁶⁵ LTE, Arts. 20 and 117; PROFEPA is a dependency of SEMARNAT, but its activities are largely autonomous and segregated from its parent agency.

⁶⁶ Ley de Transición Energética, Art. 14 (XIII).

⁶⁷ LTE, Art. 2 (III), Art. 14 (IXX) and (XIII).

⁶⁸ Regulation for the Energy Transition Law (4 May 2017).

Case study 4 - Uruguay

Issue: Environmental license renewals - an opportunity for continuous improvement in environmental requirements for wind projects



National renewable energy targets

Non-conventional renewable energy are to contribute 15% of national electric power consumption by 2015 (achieved); reaching the “optimal level” of renewable energy use by 2020 with a 20% decline in energy use (from its prior trajectory) due to energy efficiency measures; the Uruguayan model is one of the best in the world by 2030, having saved billions since 2010 through the use of renewables and energy efficiency measures.⁶⁹

a. Current state of renewable energy development and energy policy

Since 2015, Uruguay has received broad international acclaim due to its achievement in fulfilling over 97% of its electric power demand from renewable energy sources in under ten years, while drastically slashing its carbon footprint (US Dept. of Commerce, 2017; Guardian, 2017). The World Resources Institute previously reported that Uruguay was on track to generate 38% of this power from wind energy projects alone by 2017 (WRI, 2016). In addition, renewable energy activities now fulfill 55% of the country’s *overall* energy demand when transport and heating fuels are included. Uruguay’s former head of the National Energy Directorate, Ramón Méndez, has attributed the success of the transition to renewable energy to international confidence in the stability of the government (which has never defaulted on its debts), favorable natural conditions, and a regulatory environment that encourages clean energy investments and public-private sector collaboration (Guardian).

In 2008, Uruguay adopted a comprehensive energy policy that addresses every aspect of the country’s energy needs. The **Uruguay Energy Policy 2005-2030** established a set of incremental targets for 2015, 2020, and 2030, over the course of which the country’s energy infrastructure and generating capacity would be progressively developed.⁷⁰ The environment represents one of seven thematic axes around which the document is organized. The Policy’s environmental objectives are driven, in part, by data showing that 60% of carbon dioxide emissions are related to the production and consumption of energy. The Policy has been planned, designed, evaluated, and guided by the **National Energy Directorate (DNE)**, a division within the **Ministry of Industry, Energy, and Mines (MIEM)**.

b. Environmental authorities and quality management for environmental licenses

⁶⁹ MIEM/DNE (2005), *Política Energética 2005-2030*, (B) Measures to achieve, Available at <http://www.eficienciaenergetica.gub.uy/documents/20182/22528/Pol%C3%ADtica+Ener%C3%A9tica+2005-2030/841defd5-0b57-43fc-be56-94342af619a0>.

⁷⁰ MIEM/DNE, *Política Energética 2005-2030*, Available at <http://www.eficienciaenergetica.gub.uy/documents/20182/22528/Pol%C3%ADtica+Ener%C3%A9tica+2005-2030/841defd5-0b57-43fc-be56-94342af619a0>.

Competent government authorities

The **Regulatory Unit of the Energy and Water Service** (URSEA) is linked to the government's executive branch through MIEM and is responsible for enforcing legal and technical requirements applicable to public and private sector electric power generating activities, including generators of renewable energy.⁷¹ Depending on the nature of the energy activity involved, URSEA may be required to coordinate its administrative actions with the MIEM and the **Ministry of Housing, Land Use and the Environment** (MVOTMA), Uruguay's top-level authority for matters concerning the environment and the management of natural resources.⁷²

The **National Directorate of the Environment** (DINAMA) is an agency within MVOTMA that has responsibility for administering the ESIA process and overseeing the enforcement of environmental legislation and Environmental Authorization (license) requirements through its **Environmental Control and Performance Division**.⁷³ The Division conducts inspections and audits, responds to complaints, monitors air emissions for large enterprises (via an online interface), and oversees self-monitoring and environmental reporting—a requirement for regulated entities.⁷⁴

Quality management for environmental licensing

Since 2012, the Environmental Control and Performance Division has sought to administer the process of issuing environmental licenses and permits, as well as enforcing their requirements, as part of a coordinated **Quality Management System** for continuously improving the environmental sustainability of authorized activities and projects.⁷⁵

Environmental Performance Improvement Plans, which collectively represent a third component of the Quality Management System, are management tools that are applied to different production or service sectors. The Plans vary according to the characteristics of each type of activity and the corresponding environmental management considerations that must be improved and are formulated through the use of a variety of tools, such as diagnostic procedures, inventories, environmental criteria, exchanges among the actors involved, the identification of the need for new regulations, specific projects, and the development of technical guides.

c. Revised procedures for environmental license renewals for wind farms

⁷¹ Ley No. 17.598, Art. 2(B) Competencias de la Unidad Reguladora de Servicios de Energía y Agua.

⁷² Ley No. 17.598, Art. 3.

⁷³ The Department of Control for Activities is a unit under Environmental Control and Performance Division; MVOTMA official website, *Control ambiental de emprendimientos y actividades*, <http://www.mvotma.gub.uy/portal/control-ambiental-de-emprendimientos-y-actividades.html>.

⁷⁴ *Id.*

⁷⁵ The Quality Management System was designed, implemented, and certified by the Uruguayo Institute of Technical Standards (UNIT).

Stakeholder input and streamlining license renewals

In 2017, DINAMA undertook a series of efforts to streamline the process of renewing an environmental license (*Autorización Ambiental de Operación* or AAO) for a wind farm, which is valid for a period of three years. In October of 2017, DINAMA convened a diverse group of stakeholders in an instructional workshop that addressed these topics.⁷⁶ The workshop was an opportunity for DINAMA to build on the cumulative knowledge of environmental management issues that it had acquired as a result of regulating earlier generations of wind energy projects. The primary outcome of the workshop—and DINAMA’s subsequent analysis of stakeholder feedback—was DINAMA’s finalized instructions for AAO renewal for wind farms. An important secondary outcome of this process was a refined set of performance evaluation criteria and minimum environmental management requirements for wind energy projects.⁷⁷

Self-evaluation and reporting at the time of license renewal

Before applying for license renewals, wind farm owners must first evaluate and then report their own compliance with the legal requirements established when DINAMA granted their original environmental licenses—particularly the management tasks that were contained in the Environmental Management Plan for Operation (PGA-O).⁷⁸ These compliance evaluation criteria refer to self-monitoring and mitigation measures carried out in connection with following categories of impacts:

1. Shadow flicker (a visual caused by moving turbine blades)
2. The level of acoustic pressure
3. Impacts on birds and bats
4. Management of solid wastes (e.g., lubricating oils, oil filters, batteries, and lamps)

In addition, license renewal applicants must present the results of their own monitoring, analysis, and conclusions concerning potential impacts to society or local communities, as well as the results of compensatory measures they implemented during the first licensing period, if applicable. Owners must also confirm that proper decommissioning plans and environmental guarantees (e.g., reclamation bonds) are in place for the eventual termination and closure of their wind farms.

⁷⁶ DINAMA-MVOTMA, Workshop “*Presentación del Instructivo para la Solicitud de Renovación de Autorización Ambiental de Operación (AAO) para Parques Eólicos*,” (9 October 2017) <http://mvotma.gub.uy/portal/control-ambiental-de-emprendimientos-y-actividades/item/10009452-taller-presentacion-del-instructivo-para-la-solicitud-de-renovacion-de-autorizacion-ambiental-de-operacion-aa-para-parques-eolicos.html>.

⁷⁷ Resolución Ministerial 561/2018 del 14 de mayo del 2018, Available at http://mvotma.gub.uy/portal/ciudadania/biblioteca/marco-legal/item/download/6427_23fd40c26a31846e084607705d5d8d27.html.

⁷⁸ MVOTMA, *Instructivo para Solicitud de Renovación de AAO para Parques Eólicos*, IT-ACDA-012-00, http://mvotma.gub.uy/portal/ciudadania/biblioteca/documentos-de-ambiente/item/download/6428_9cf557dd88d69a297da67afe4b25ef88.html.

d. Increased effectiveness of ESMP requirements for renewed licenses

The information reported to DINAMA through the license renewal process provides a valuable mechanism for evaluating of the quality of the original environmental license, as well as verifying the accuracy of assumptions on which mitigation requirements for the first licensing period were based. In addition, it provides data on the actual effectiveness of environmental management measures that are common to many wind energy projects. This not only allows DINAMA to incorporate revised requirements into a license for a subsequent 3-year period, but also allows it to improve licensing conditions for other wind farm proposals, resulting in a continuous improvement process.

e. Responding to a continuously expanding caseload

DINAMA officials have stated that during the past decade, there has been an exponential increase in the number of environmentally licensed activities that must be monitored, which compels the institution to continuously improve the tools it uses and its approach to managing its expanding workload.⁷⁹ As a first line of environmental control, requiring owners of authorized activities (e.g., wind energy projects, dairy farms, and manufacturing facilities) to perform compliance assessment of their own operations extends its finite resources, while fostering a sense of environmental responsibility by these regulated companies.⁸⁰

Although it is difficult to determine the accuracy of self-reporting for wind projects with the data publicly available, Uruguay's legislation provides stringent penalties for omitting or presenting false information when communicating with DINAMA or applying for an environmental license or permit.⁸¹ Intentional misreporting of facts (such as noncompliance) is classified as a serious infraction, subject to fines of between 200 UR to \$3,500 UR (~ \$7,500 USD to \$131,250 USD) for the first offense.⁸² In addition, staff members who are responsible for reporting a project's environmental performance data may face criminal penalties if the under-report data on adverse impacts or noncompliance (Caffera & Lagomarsino, 2014).⁸³ In recent years, local environmental authorities have also experimented with an alternative to imposing large monetary fines on a cash-strapped projects, holding professional staff associated with projects personally liable if they submit false information to authorities.⁸⁴

⁷⁹ MVOTMA (11 October 2017), *Integrando Aportes*, <http://mvotma.gub.uy/portal/sala-de-prensa/noticias/item/10009453-integrando-aportes.html>.

⁸⁰ Ibid.

⁸¹ Decreto 349-2005, Art. 29(d) (Noncompliance and sanctions); Some analysts have investigated self-reporting practices in other sectors in Uruguay, finding some evidence of under-reporting (See Caffera and Lagomarsino, 2014).

⁸² A "Readjustable Unit" or "UR" is an index-driven monetary unit that is based on salary levels in Uruguay.

⁸³ Marcelo Caffera, Alejandro Lagomarsino, 2014. *Testing the effectiveness of enforcing industrial pollution regulations in Montevideo, Uruguay*, Working Papers 201466, Latin American and Caribbean Environmental Economics Program, revised 2014, 5.

⁸⁴ Goyahkla, Effectiveness of the enforcement of industrial emission standards in Montevideo, <http://cienciassociales.edu.uy/departamentodeeconomia/wp-content/uploads/sites/2/2014/06/Effectiveness-of-the-Enforcement-of-Industrial-Emission.pdf>.

