

**SMART LAND MANAGEMENT TOOLS FOR SECURE TENURE  
AND CLIMATE ACTION “*From Awareness to Action: The Arce Rojas  
Consultores (ARC) Experience*”**

WORLD BANK LAND CONFERENCE 2025

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ARC aims to promote development by providing legal security and human rights recognition, through the quality services for the acquisition of property rights, environmental and social management to companies mainly in the mining-energy, infrastructure, agro-industrial, telecommunications, and biofuels sectors.

**Slide 2: Our Company**

ARC has over 27 years of experience as a consulting firm in land management in managing relations issues, cadastral advisory, social and environmental management. We are the leading company in securing easements of public utility activities for mining, oil, and electricity projects (renewable or non-renewable sources). ARC also provide services for obtaining and regularizing property rights for agro-industrial, infrastructure (roads, ports, airports, railways, telecommunications) projects among others.

ARC represent clients in court cases, such as easements recognition, land restitution, and constitutional actions.

ARC have covered over 80% of the Colombian territory and have worked on projects in other countries like Mexico, Argentina, and Ecuador.

ARC have partnered with Colombian and multinationals companies like Ecopetrol (Colombian State Oil Company), Frontera Energy (Canadian Company), Tetra Tech (funded by USAID), ConocoPhillips (US Company), Enerfin (Elecnor Group from Spain), and AES Colombia (AES Energy Group).

ARC have managed over 50,000 property rights in more than 700 projects for different infrastructure works and activities in the Colombian territory.

### **Slide 3: Our Resources**

ARC has a multidisciplinary team (lawyers, engineers, social and environmental professionals with relevant expertise) to provide comprehensive solutions to our clients' land management needs.

ARC has obtained international certifications like ISO for quality information management and environmental processes (45001).

ARC avails of state-of-the-art technologies for land management such as:

- UAVs/Drones
- GeoServer/GeoNode
- Spatial databases
- Offline and mobile forms
- Surveying equipment

ARC have our own IT platform (ARkandha®), which provides us with knowledge management for decision-making purposes. Such platform helps the design and implementation of land management projects by collecting relevant technical, legal, and cadastral information. It is an instrument for planning, execution, tracking, monitoring and evaluating projects associated with land issues.

### **Slide 4: Our Projects**

#### **Wind Farm El Ahumado / Enerfin**

For the first time in Colombia, the National Land Agency (ANT, Acronymous for the name in Spanish) authorized the development of a renewable source energy on Government-owned wasteland located in the rural area of Riohacha (La Guajira department, in the north of the Colombian territory), under new procedures regulating easements (Agreement 029 of 2017). The project was sponsored by Guajira Eólica S.A.S. (wholly owned subsidiary of the Spanish Elecnor Group)

For this project, upon request of the ANT, ARC provided the technical and legal advice prior to granting the permits for the required easements.

In this process, ANT in coordination with ARC, managed to award the property to the indigenous community and, once the land tenure was formalized with property rights, the ANT imposed a public utility easement in favor of the power company, allowing the development of the project for generating and transporting electricity coming from renewable sources.

Budget: \_\_\_\_\_

### **Slide 5: Our Projects - Renewable Energy**

ARC under a contract with Ecopetrol S.A. (the main Colombian Government-owned company) developed the regulatory framework and the business supply model for new renewable energy projects.

Such framework now supports 43 initiatives in alternative energies such as: photovoltaic, wind, biomass, hydraulic, geothermal, etc. To that end ARC evaluated various risks, opportunities, and alternatives for the cadastral, legal, geographical, and administrative dimensions of such projects.

ARC also provided Ecopetrol legal and management advisory services for these initiatives, evaluating risks, opportunities, and alternatives from the cadastral, legal, geographical and social viewpoints (including prior informed consent). ARC is conducting a comprehensive geographical diagnostic of the most important areas in Colombia in terms of business expectations for renewable energy. As a result, ARC has identified the optimal areas for development in the Colombian territory, considering the different risk matrixes in each geographical context.

The budget for this project is above \$584,000 USD

### **Slide 6: Our Projects - Land Surveying**

ARC participated in the implementation of the Rural Property Social Management Plan (POSPR- *Plan de Ordenamiento Social de la Propiedad Rural*) in the municipality of Santander de Quilichao (Cauca department), implemented by Tetra Tech with USAID funding. The project covered 2,145 properties that required formalization through a pioneering application of a clustered methodology known as Massive Land Surveying Scheme by Nucleous Supply.

This activity, in partnership with ANT was adapted to the particular conditions of the Municipality that included illicit crops, armed groups, ethnic communities, and protected areas.

As part of this project, the “social license” was obtained by working closely with the community, particularly the less favored population and adopting strategies to engage their support.

Budget: \$1.7 million USD.

### **Slide 7: Our Projects - Environmental Compensation - ConocoPhillips**

An analysis was conducted for 3 large properties located in the Cesar department, northern Colombia, with the purpose of acquiring areas for 1% environmental compensation, as part of the compliance requirements for environmental obligations in the projects developed by ConocoPhillips. As a result of ARC services, we obtained all the required approval for the transfer of areas to the Municipality through instruments such as donation, purchase, and easement. In this case, the company acquired the properties and subsequently donated them to the municipality, which will execute the Compensation Management Plan. Through the principle of additionality, these properties will be reforested or will increase ecosystem services to strengthen the water body that supplies the water supply system for the entire population.

### **Slide 8: Our Projects – Arkandha®**

ARkandha® is ARC knowledge management tool for decision-making in the design and implementation of large land management project, comprising technical, legal, and cadastral information. It's a planning, execution, monitoring, and control instrument for land projects with a multidisciplinary approach. This tool was developed using open-source software and is currently being adjusted to the LADM-Co model. ARkandha® is a registered trademark owned by ARC. It features a Geovisor, Dashboards, LookUp, and Development Intelligence modules, among other services that you can see in the following video (go to slide 9 and click on the Play logo)."

### **Slide 9: ARkandha® (this content is part of the video)**

The main Arkandha® modules are the following:

- **Property Management Module:** Allows for comprehensive management of land projects, providing a detailed record of general information about individual properties. It provides georeferenced visualization, facilitating spatial identification and analysis of location within the project areas.
- **Judicial Processes Module:** This module allows ARC to manage judicial cases in different areas of the country, by georeferencing the land and the various court decisions affecting such land. It provides spatial location, case tracking, generates early alerts, and provides graphical evidencing.
- **ARkandha® Lookup Module:** It allows ARC to have a centralized information repository and to quickly analyze the chain of title (property's legal history) and detect any potential transfer restriction affecting the land involved in the project. To ensure effective land management and increase the likelihood of project success, ARkandha® sends automatic notifications about administrative or judicial decisions, alerting the interested parties about the possible impact of new actions and cautionary measures.
- **Land Intelligence Module:** It generates preliminary analysis and reports based on the information uploaded into the platform, and performing various searches among official sources of relevant data. It may identify areas of interest and possible risks at the environmental, geological, and hydrological levels.
- **Geovisor Module:** This module is a powerful tool that facilitates visualization and exchange of geographic, alphanumeric and documentary information through interactive resources such as Dashboards, dynamic maps, and GeoStories. This platform allows for visual and intuitive exploration and analysis of data, improving understanding and decision-making about the territory. It's worth noting that many available geographic resources are integrated as WMS (Web Map Service) that operates efficiently and allows for the more complete and updated data to be available.

## Slide 10: ARkandha® Records

Within the ARkandha® tool, ARC currently has:

- Over 12 million cadastral records compiled
- Over 100,000 property certification records
- Over 190 registered internal and external users
- Over 34,000 queries for official legal records
- Over 23,000 geographical searches and queries

**Slide 11: End**

At ARC “*We transform the world by managing the territory*”.