Cielos de Tarapacá

Chapter 2

Area of Influence

EIA Cielos de Tarapacá

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Content

1 INTRODUCTION

This chapter will develop the contents required in article 18, letter D) of the regulation of the Environmental Impact Assessment System (SEIA), DS 40/12, of the Ministry of the Environment, which provides the following:

"D. The determination and justification of the area of influence of the project or activity, including a general description of it. The area of influence shall be defined and justified for each affected element of the environment, taking into account the potentially significant environmental impacts on them, as well as the geographical space in which the parts, works and/or Actions of the project or activity ".

In the same way, the same regulation defines in article 2 (a)) *"Area of Influence"* As *"The geographical area or space whose attributes, natural or sociocultural elements must be considered in order to define whether the project or activity generates or presents any of the effects, characteristics or circumstances of article 11 of the Law, or To justify the absence of such effects or circumstances ".*

In consideration of the foregoing, this chapter will develop the following aspects:

- Identification and general description of each one of the elements of the environment that may be affected by the project.
- The way and the geographical space in which these elements will be potentially affected will be justified

For these purposes, the susceptibility of each component of the environment will be considered to be affected by the works and/or actions of the project. This will allow your turn to found which elements will not be affected.

To describe the potential effects, the following activities have been carried out:

- A general description of the location area, describing the environmental components present in them.

- Subsequently, it has been described in a general way the works, activities to be executed by the project that could have effects on the components of the environment.

Finally, for each element of the environment, we proceeded to:

- Make a general description of the same;
- To delimit the area of influence in a geographical or spatial way of each of the components and their respective justification.
- Finally, the susceptibility of the components of the environment to be affected by the works and/or activities of the project was evaluated, taking into consideration the potential significant impacts on them.

2 GENERAL CHARACTERIZATION OF THE PROJECT

2.1.1 General Description of the project

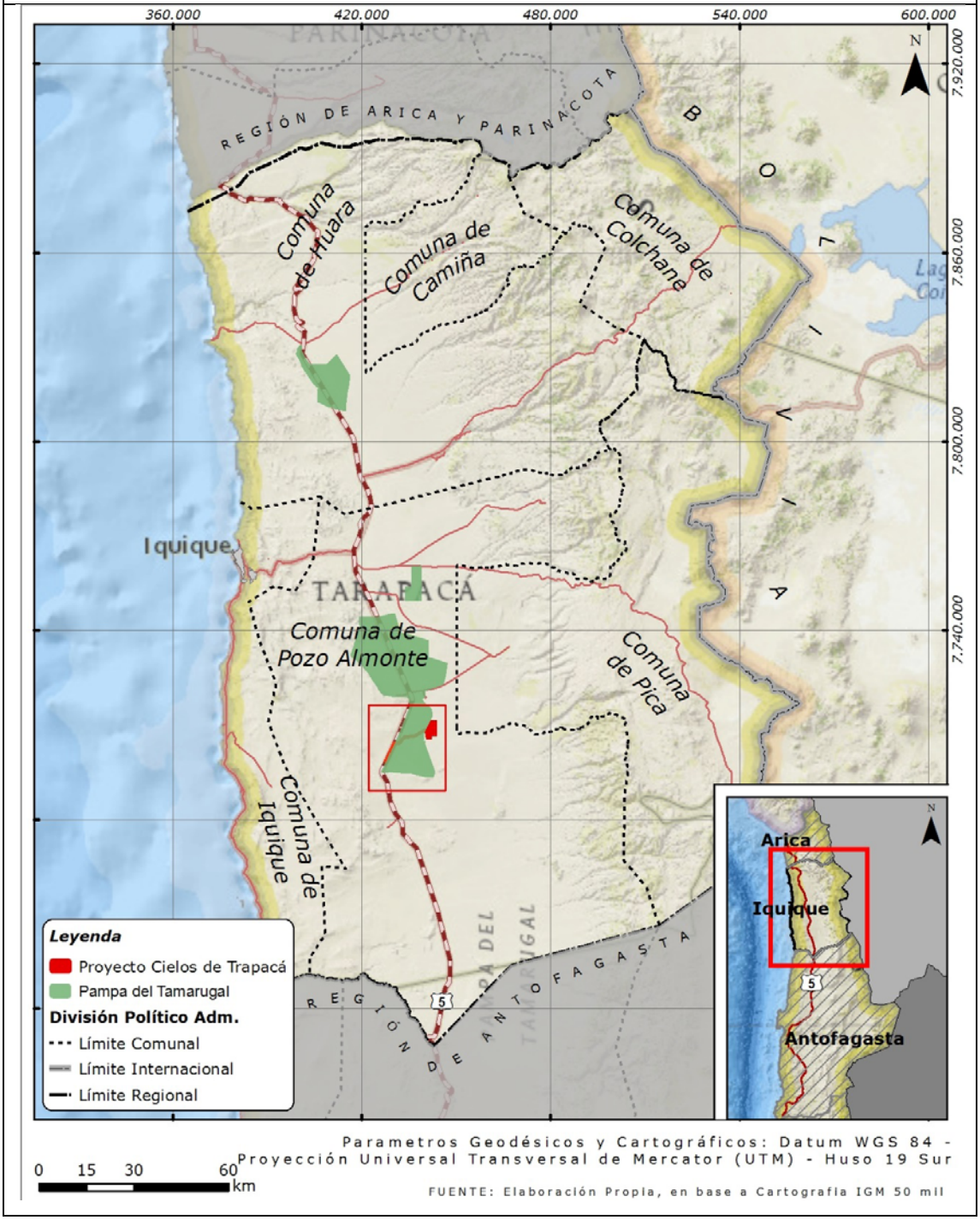
The project submitted to the Environmental Impact Assessment System (SEIA) consists in the construction and operation of a photovoltaic park of 600 MWac Whose name is "**Cielos de Tarapacá**", located To 80 km southeast of the city of Iquique, Pozo Almonte Commune, El Tamarugal province, Región de Tarapacá.

This project corresponds to one of the stages of the project of hydroelectric plant of pumping with seawater *"Mirror of Tarapacá"*, submitted to the environmental impact assessment system on August 18, 2014 through an environmental impact study (EIA) presented to the Environmental assessment Service of the Tarapacá region.

Regarding the project subject to this environmental impact study, the photovoltaic park "Cielos de Tarapacá", his Function Main is Give the necessary energy to make the project *"Mirror of Tarapacá"* Can pump seawater during the day and accumulate it in the reservoir, and also, deliver energy Al SING To supply residential and industrial consumptions.

In The following figure is Presents The location of the project.

Figure 1. Photovoltaic Park Location Cielos de Tarapacá



2.1.2 Works of the project

According to the phases of the project, described in the Chapter 1 of this EIA, the works and tasks associated with the project were identified, differentiating between works Temporary and permanent works. The following table summarizes the works to be done.

Table 1. Facilities-Works of the Project
Installation-Works
Main works
- Photovoltaic Park - Elevator Substation (E) - Disconnecting substation SES - High Voltage line (LAT) - Park Control and Operation Centers
Works Permanent complementary
- Roads (internal and external) - Surveillance booth - Monitoring and data acquisition control system - Weather Station - Lighting system - Perimeter fencing of the photovoltaic park
Temporary complementary works
- Slaughter facilities

Source: Own Elaboration.

For the development of these works it is estimated that the main activities that may cause some type of impact are:

	Table 2. Detail of activities per phase of the project susceptible to cause some impact	
	Activities that can generate impacts	**Description**
Construction	Hiring of Manpower	It is considered an average workforce of 500 workers and a Peak Of 600 workers in the period of maximum occupancy.
	Habilitation of installations of operations	Cleaning, clearing and levelling of the surface where the work is to be installed is considered, by means of the use of standard construction machinery and skilled labor so that it is possible to assemble the elements of the tasks itself, Corresponding to the modular units with different destinations.
	Land movements	The land where the solar plant will be installed and the substations, with clearing, escarpment and leveling activities for the installation of equipment and structures; As well as the habilitation of inner roads. Excavations will also be carried out on the ground on which the settlement and assembly of the structures forming part of the power line will be carried out. LAT.
	Photovoltaic plant construction	The perimeter fence will be installed whose poles are Piles. The Assembly of the followers will be carried out through the driving to later install on them the photovoltaic panels As well as will put the wiring In the underground pipeline.
	Construction of electrical substations	The foundations of each structure will be made by placing the Construction Molds And the foundation's armatures for later refilling with concrete. In addition, the civil works corresponding to pipelines will be carried out and then the wiring will allow to connect all the equipment of Each Substation.
	Demobilization and closure of the constructive phase	Withdrawal of Part of The Slaughter facilities And the work fronts and all the elements outside the operation of the project (surplus materials, waste and waste from the intervened areas).
Operation	Hiring of Manpower	For the operation of the solar park is envisaged to hire a maximum of 20 people.

	Table 2. Detail of activities per phase of the project susceptible to cause some impact	
	Activities that can generate impacts	**Description**
	Operation Solar Park, Substations and Power line (LAT).	Repair and maintenance activities will be carried out to all works of the project.
Closing	Hiring of Manpower	For the closing phase of the solar park it is envisaged to hire a maximum of 150 people.
	Dismantling of the solar park	The dismantling of the park considers the removal of the structures and demolition of all the concrete that has been installed in the ground.

Source: Own Elaboration.

On the basis of the activities identified above, it is anticipated that the elements of the environment that could, Or not, Potentially affected by any work or project action Are those who are presented below.

Table 3. Elements of the environment susceptible to impact			
Environmental component	**Environmental impact**	**Phase**	**Description**
Physical environment			
Climate and weather	No	does not apply	does not apply
Geology	No	does not	does not apply
Geomorphology	No	does not apply	does not apply
Hydrography	No	does not apply	does not apply
Edaphology	No	does not apply	does not apply
Noise and vibration	Yes	All	The project will generate noise emissions in all its phases
Air quality	Yes	All	Increased particulate matter and combustion gas emissions
Electromagnetic fields	Yes	Operation	Generation of electromagnetic fields as a result of the S/E and LAT

Table 3. Elements of the environment susceptible to impact			
Environmental component	**Environmental impact**	**Phase**	**Description**
Terrestrial ecosystems			
Flora and vegetation	No	does not	does not apply
Terrestrial Fauna	Yes	Construction	Disturbance
Human and Built Environment			
Socio-economic dimension	Yes	All	Local economy activation
Geographic dimension	No	does not	does not apply
Social Welfare dimension	No	does not	does not apply
Territorial Planning Instruments			
Territorial Planning Instruments	No	does not apply	does not apply
Use of soil			
Use of soil	Yes	Construction	Change of land use
Protected areas and priority sites			
Protected areas	Yes	Construction	Introduction of artificial elements and/Or Anthropic origin within a
Cultural heritage			
Historical heritage	Yes	Construction	Introduction of artificial elements and/Or Anthropic origin within a national reserve
Archaeological heritage	Yes	Construction	Affectation and/or loss of the elements that define each archaeological site
Landscape			
Landscape	Yes	Construction	Modification of aesthetic attributes of the landscape, by the works and/or
	Yes	Construction	Intrusion into the landscape of new elements Artificial
	Yes	Construction	Partial blocking of landscape views

Table 3. Elements of the environment susceptible to impact			
Environmental component	**Environmental impact**	**Phase**	**Description**
	Yes	Construction	Recovering aesthetic attributes
	Yes	Operation	Intrusion into the landscape of new artificial elements
	Yes	Closing	Intrusion into the landscape of new artificial elements
Tourist attractions			
Tourist attractions	No	does not apply	does not apply

Source: Own Elaboration.

Legend:

Positive	Non-significant	Slightly significant	Moderately significant	Significant
Negative	Non-significant	Slightly significant	Moderately significant	Significant

Source: Own Elaboration.

2.1.3 Definition and justification of the area of influence

The following will describe and justify each of the elements of the environment, which are part of the area of influence of the project, especially considering those that may be affected.

2.1.4 Middle Physical

The area of influence for the components of the physical environment corresponds to the area where the works and activities of the project will be placed generating changes, modifications or perceptible variations in the short, medium or long term, on the geofoams, units Climatic, local geology, hydrographic units and soil characteristics.

2.1.4.1 Area of Influence and justification

Climate and meteorology: It has been determined that the works or actions of the project during its different phases, will not affect the climate and the meteorology of the sector, because it does not generate long-term emissions that could change the behavior of those components.

Geology, geomorphology, Hydrography and Edaphology: The area of influence of the geological component is determined by the site of the projected works, the path of access to the area and the area of the layout of the high-voltage line.. The characteristics of the project and the works associated with it, will not generate possible disturbances or adverse effects to the subsoil where the project is located. The main works of the project that involve the immediate soil, are the escarpment, levelling of the terrain and the driving of the support piles of the panels. Notwithstanding the foregoing, these works are developed in the first layers of the soil, not affecting the subsoil.

Air quality: To From the analysis of the project description, it is identified that the activities that generate emissions from MP10 and MP 2.5 to the atmosphere will be those Product of activities associated with such as; Earth movements, Load And

Unloading of material, transit of light and heavy vehicles by paved and unpaved roads and the use of machinery.

During the operation phase of the solar park, it is estimated that the emissions will be of little significance, since they are related to the activities of personnel displacement and transport of equip the operation of the Plant, maintenance and eventual emergency situations.

Finally, in the closing phase of the project, after the service life has been fulfilled, the equipment will be dismantled, where it is estimated that the emissions will be lower than those considered in its construction phase, because the earth movement would be Less.

Noise: The area of influence was determined on the basis of identified sensitive receptors where impacts from the community could be expected to result from the construction and operation of the project. It is considered that the construction phase will generate more noise emissions in its area of influence due to the activities to be carried out, while in the operation phase the broadcasting activities correspond only to those of maintenance, finally for the Closing phase and/or abandonment it is considered that the emissions will be lower than those of construction since the park will be dismantled, considering less activities and period of time.

Electromagnetic fields: In a bibliographical way It has been reported that the effect of electromagnetic fields, for both LAT and SE, To LAt a distance of the project are null.

2.1.4.2 Susceptible to being affected

Climate and meteorology: As justified in the previous point, the project will not generate impacts on the Component.

Geology, geomorphology, hydrography and Edaphology: these Components Of the area of influence is not susceptible of being affected by the works and/or activities of the project.

Air quality: Considering that the project in all its phases will generate atmospheric pollutants, it is possible to point out that this affects To the component Quality Of the

air in the area of influence. However, there Is They will generate significant increases that could affect the health of the population.

Noise: Because the project will generate new sources of noise emission, perceived in its area of influence, it is possible to point out that the noise component is susceptible to be affected in all phases of the project, however, no significant impacts are generated, as demonstrated by the acoustic impact study attached to this EIA.

Electromagnetic fields: the component is susceptible to being affected or By the execution of the project, however, it is not considered a significant impact since the intensity of the electromagnetic fields decreases considerably when moving away from the line or substation And Therefore the health of the population close to the project will not be affected.

2.1.5 Terrestrial ecosystems

To carry out the characterization of the terrestrial fauna in the area of influence of the project, two field campaigns were carried out, the first campaign was carried out between 14 to 16 of April of the 2014, and the second campaign was carried out between the days 29 of September to 01 October 2014. In this way, both campaigns are representative of the fall and spring climatic seasons respectively. During the field work an intensive sampling was carried out in the area of influence of the project. In the area of influence of the project were recorded four species of terrestrial vertebrates corresponding to two species of birds and two species of mammals, with low abundance.

On the other hand LA flora and terrestrial vegetation in the project site area is framed within a landscape corresponding to a mosaic dominated by a Desert matrix with almost horizontal relief that combine with localized areas, where human settlements are developed, productive activities – mainly mining-and sites of patrimonial value, in general, where the regional landscape comprises large Transformations of their original attributes. In turn, it corresponds to that part of the desert in which rainfall is negligible And the water supply is of local character, coming from the presence of NAPAs groundwater or occasional alluvia that descend from the Cordillera de los Andes.

It is qualified of absolute desert, because plant life is practically absent in much of its extension, except in very particular conditions.

2.1.5.1 Area of Influence and justification

The area of influence for the component of terrestrial flora and vegetation corresponds to all those sectors where the works and activities associated with the project as Escarpment and Earth movements, could generate some kind of affectation on the component.

2.1.5.2 Susceptible to being affected

The terrestrial fauna component is susceptible of being affected by the project, since the works and/or activities of the project will generate disturbance to the habitat of The same.

2.1.6 Human environment

According to the characteristics of the project and its location, it has been defined to evaluate the potential significant alteration of the life and customs systems of human groups within the project's polygon and its immediate areas.

2.1.6.1 Area of Influence and justification

The definition of the area of influence is established according to the circumstances or elements of the human groups that could potentially be affected by the place where the physical works and associated activities will be located and developed to the project. In this sense, the analysis of the five constituent dimensions Of The human groups have allowed to define the area of influence for this environmental component to The towns of Pozo Almonte, Victoria Painted Cologne Neighborhood Boards.

2.1.6.2 Susceptible to being affected

Due to the scale of the project, it is estimated that the geographical, demographic, anthropological and basic social welfare dimensions will not be affected by the works

and/or activities of the project, however a positive impact is expected in the Socioeconomic dimension, given by the activation of the local economy.

2.1.7 Territorial Planning Instruments

The territorial planning instruments currently in force in the project site area, are presented in Chapter 14 of this EIA.

2.1.7.1 Area of Influence and justification

The definition of the area of influence has been established according to the territory where the works of the project will be located. In the case of the description of the instruments of ordering and of territorial planning, the use of current soil, and the capacity of use of soil, it is considered as area of influence the place of intervention where the works of the project will be developed; Whereas, in the case of the description of the productive activities and relevant infrastructure, it has been considered a buffer of 1000 meters around the project area.

2.1.7.2 Susceptible to being affected

The area of the project does not present territorial incompatibility with the existing planning instruments at the inter-communal and communal level in the area.

2.1.8 Protected Areas and Priority conservation sites.

The area of influence would correspond to all those portions of territory that are part of areas placed under official protection and priority sites for conservation in the project area, or in their near surroundings.

2.1.8.1 Area of Influence and justification

The national park closest to the project corresponds to the Salar de Huasco, located more than 71 km east of the project. On the other hand, near the area of the project

to the nearest reserve is immediate, ie the project – specifically the photovoltaic plant-, would be located immediately next to the eastern boundary of the National Reserve Pampa del Tamarugal.

With respect to the high voltage line, the projected path crosses the reserve in a sector with total absence of Tamarugos, where the use of the soil corresponds to salares.

However, there are no natural monuments within the region where the project is located

2.1.8.2 Susceptible to being affected

According to the above, the site of the project does not generate affection for the areas of official protection that are part of the SNASPE in the region and, in general, of those areas under official protection indicated in the of. ORD No. 130844 of 2013 (SEA).

2.1.9 Cultural Heritage

EL area of influence defined for the Cultural heritage component, corresponds to the site area of the works and activities associated with LA construction and execution of the project, where they register Elements of a patrimonial nature.

2.1.9.1 Area of Influence and justification

The archaeological inspection carried out during The months of March-April and September of the 2014, within the framework of the "Project Photovoltaic Cielos de Tarapacá" allowed To detect 85 patrimonial elements, between pre-Hispanic evidence (n = 11) and historical (n = 74). The number of elements of patrimonial value and their dispersion in much of the area of influence, makes it necessary to define and implement environmental management measures around the cultural patrimony component.

In addition, and by virtue of the patrimonial richness of the project area, the implementation of an archaeological monitoring program is proposed during the construction phase of the project. This measure contemplates the protection and inspection of the Labor fronts, aiming at the early detection of unforeseen findings. Archaeological monitoring, as a specialized activity, should be conducted by a professional archaeologist.

2.1.9.1 Susceptible to being affected

The archaeology component is susceptible to being affected as archaeological prospecting in the area of the project managed to raise a baseline of patrimonial information by registering superficial patrimonial elements. This component is considered a significant component.

2.1.10 Landscape

In relTo the area of influence This is defined as all those portions of the territory that are part of the visual basins that allowed to characterize the landscape; And that will be modified or intervened directly by the works and/or activities of the Project.

2.1.10.1 Area of Influence and justification

The area of influence is defined as the surface that occupy the visual basins that affect the area of the project, which are established from the observation points, thus involving the main visual flows that are given to and from the Area affected by the project, finally occupying the area that is perceived visually by any observer and from where the main interactions are generated between the elements that make up the medium visual and the actions of the project.

2.1.10.1 Susceptible to being affected

The site of the project within its area of influence represents a new element in the landscape so this component is susceptible to affectation by the execution of the Solar Park. However, and due to the location of the project in a human area, this impact is not considered significant.

2.1.11 Natural or cultural attractions

In relation to the area of influence This is defined From a spatial and territorial delimitation With the Connecting routes The park with the localities.

2.1.11.1 Area of Influence and justification

The area of influence corresponds to the area where the works will be located and the territories that contemplate within itself a possible tourist offer to be affected by reason of the materialization of the project. However, regional and communal scales will be considered as tourism can be expressed in a timely manner, zonal or in circuits that escape to traditional spatial scales. Therefore, the area of influence extends, to all areas that will be affected, either within or outside the project boundaries.

2.1.11.2 Susceptible to being affected

The tourist component of the area of influence of the project No It is susceptible to being affected, as the project is inserted in an area Without Tourist offer.