Lithium mining: a reflection on tensions, conflicts and challenges in the lithium triangle.

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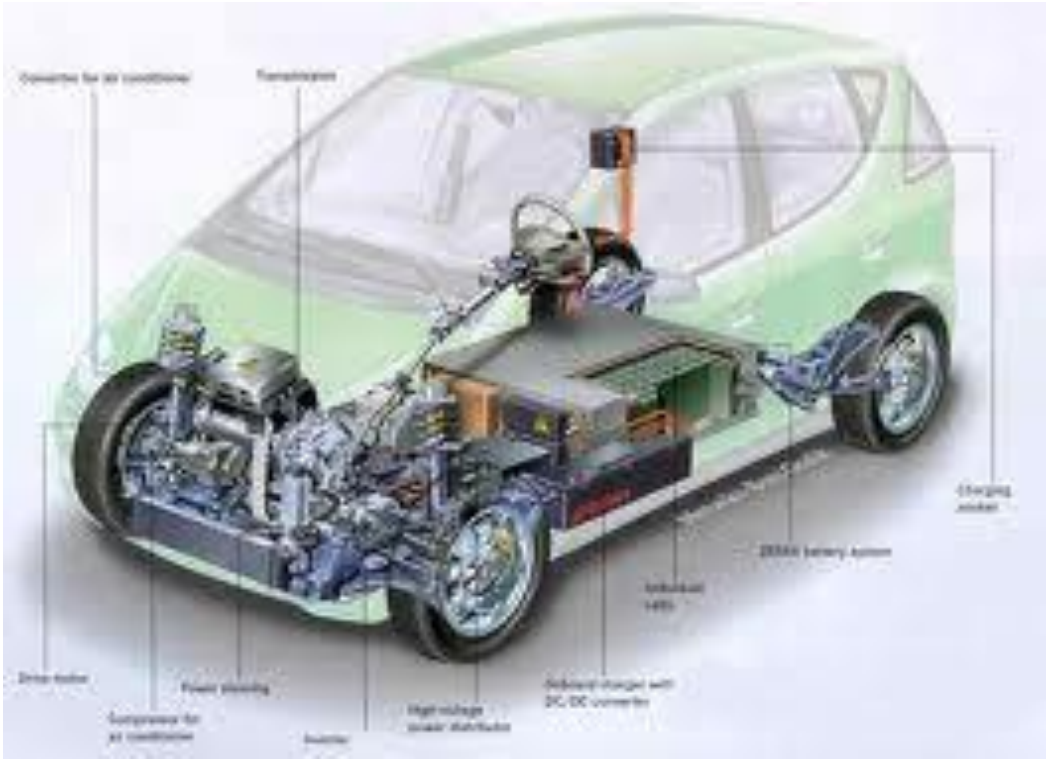
Lithium: is it different this time?

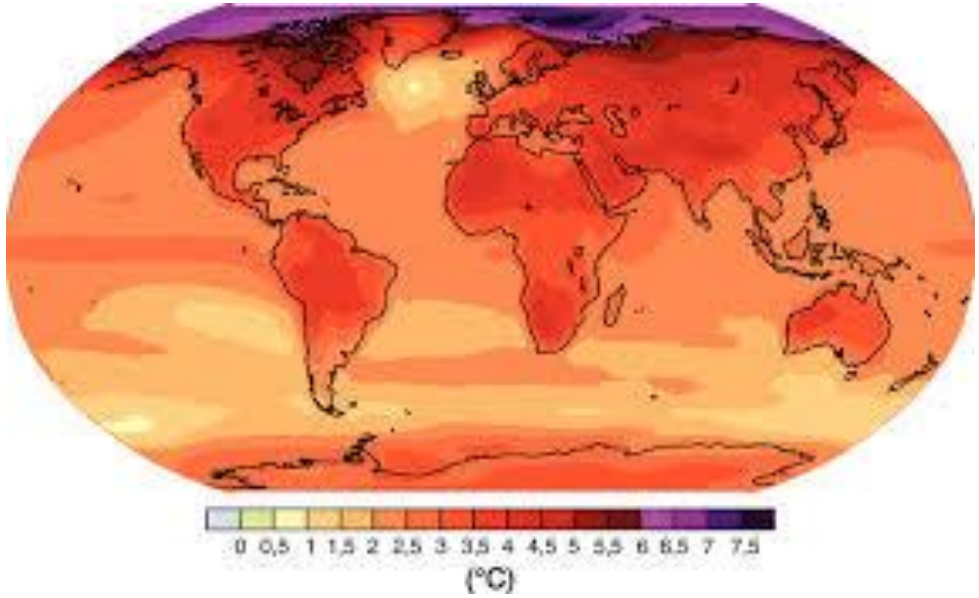


3	6,941
	1
1330	Li
180,5	
0,53	

$1s^2 2s^1$

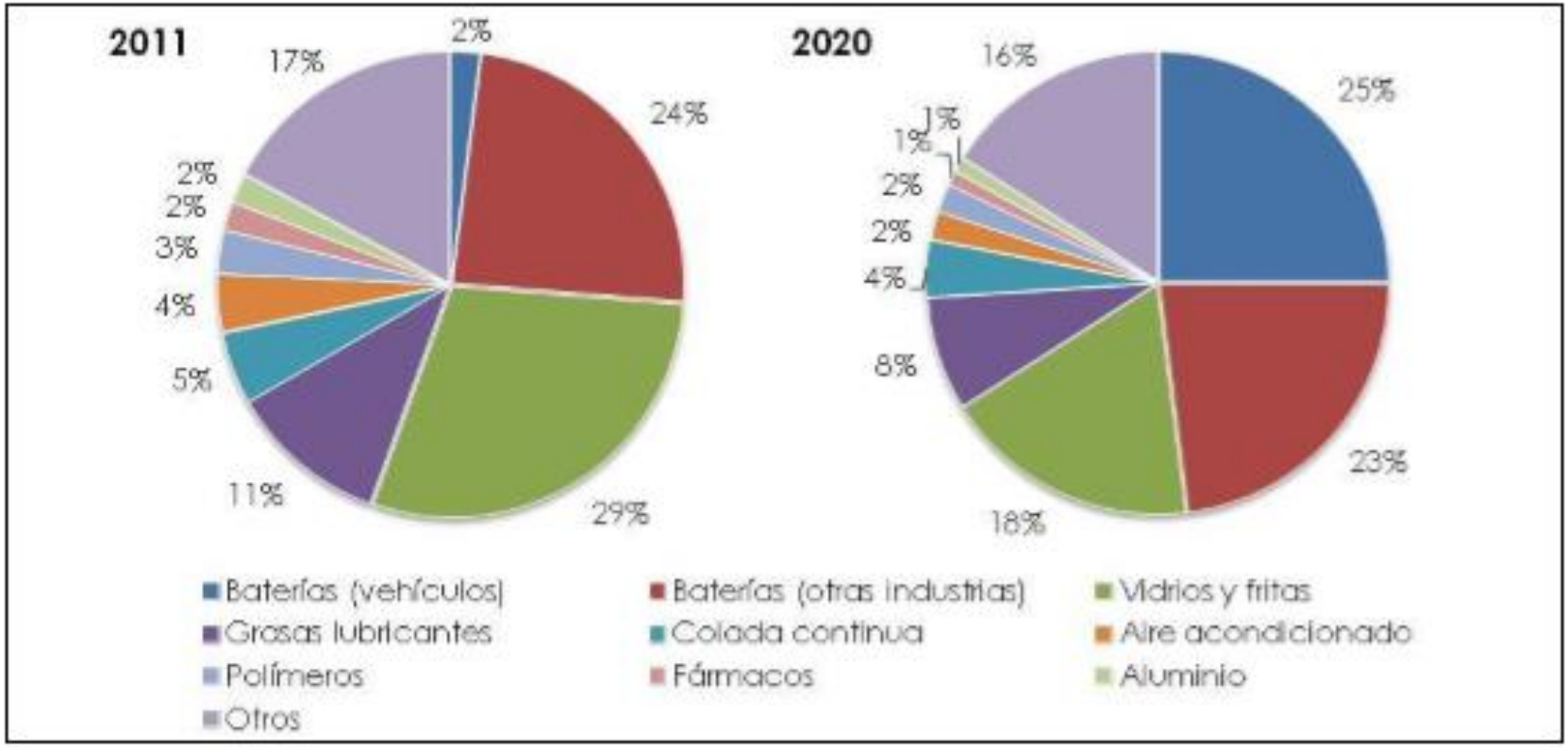
Litio

Climate change as one of the key challenges for the XXIst century



- Global need to reduce CO2 emissions from different sources:
- Search for alternative ways to generate and keep energy

(transition to a post-fossil fuel economy)

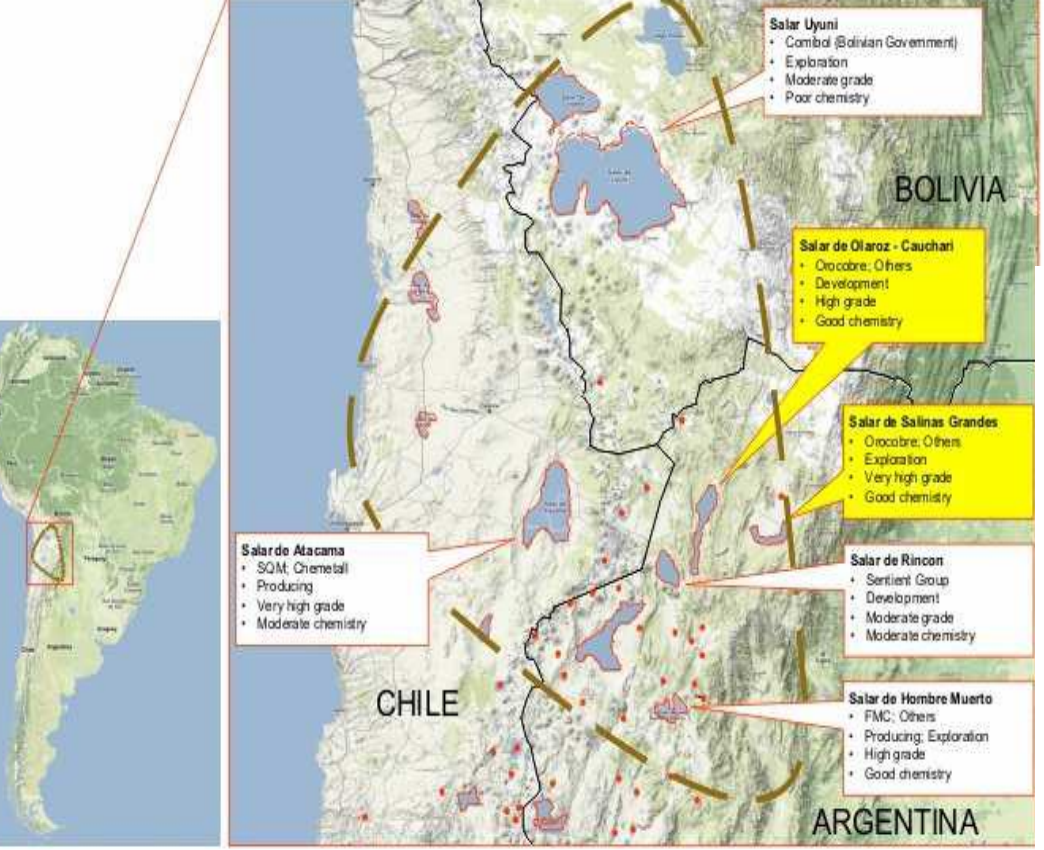


Fuente: COCHILCO en base a datos de GEM (2012).

Electric vehicle (EV) batteries are the main driver of the demand (not stationary storage): to grow from 2% in 2011 to 25% in 2020

- **88% EV, 7% energy storage; 5% technology (Benchmark Minerals Intelligence, 2019)**

Reserves and resources



urces: Company presentations, Roskill and independent consultants (to Orocobre) estimates
te: stated resources are not NI 43-101 compliant
Represents smaller brines

Reserves in the lithium triangle: 60% Argentina 13% and Chile 48% (Cochilco, 2019)

Reservas de Litio Estimadas a Enero de 2011

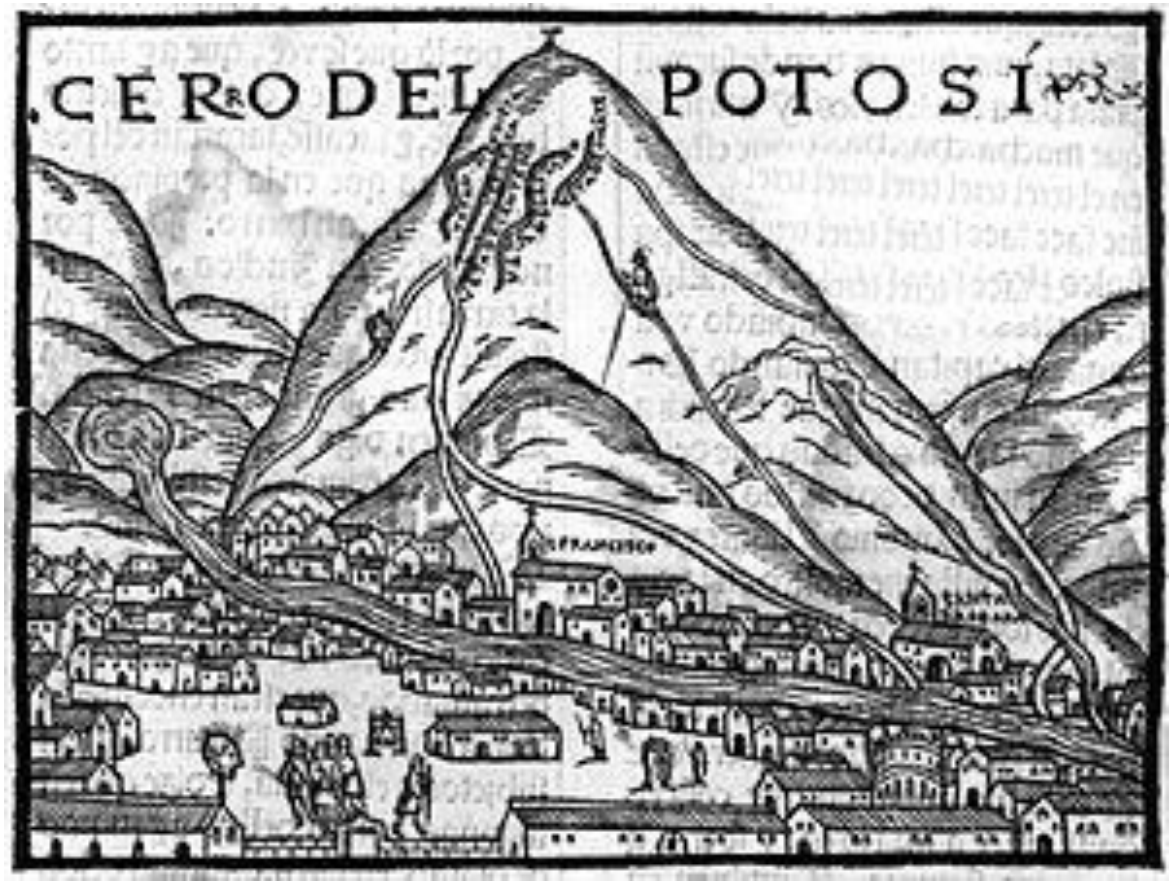
País	Recursos Identificados (*)		Reservas (*)	
	(en tn)	(en %)	(en tn)	(en %)
Total	33.000.000	100,0	13.000.000	100,0
Bolivia	9.000.000	27,3	s/d	s/d
Chile	7.500.000	22,7	7.500.000	57,7
China	5.400.000	16,4	3.500.000	26,9
Argentina	2.600.000	7,9	850.000	6,5
Australia	630.000	1,9	580.000	4,5
Estados Unidos	4.000.000	12,1	38.000	0,3
Brasil	1.000.000	3,0	64.000	0,5
Canadá	360.000	1,1	s/d	s/d
Zimbawe	s/d	s/d	23.000	0,2

(*) Recurso identificado: es una concentración de minera potencialmente extraíble, cuya localización, grado, cantidad calidad son conocidas o estimadas a partir de evidencia geológica. Reservas: es la parte de los recursos identificado que reúne los requisitos físico-químicos mínimos para llevar cabo prácticas de producción minera y cuya explotación e económicamente viable en las condiciones actuales.

Fuente: USGS

1. Lithium: is it different this time?

Mining and its relationship to different economic cycles and industrial development:



16th/17th Century: Silver/Gold: European mercantilism
19th C.: Lead, zinc, tin: urban industrial model
Nitrates: modern agriculture
20th C: Copper: automobile & electric industry
Today: other minerals for space, military and energy industries
(Machado Aráoz, 2014)

Great expectation on producing ion-lithium batteries in the region:

- Key for transitioning to post-fossil fuel societies (Climate Change)
- Exporting a product with very high added value
- Improves scientific capacities of the countries
- BUT: rapid growth of battery mega factories (from 3 Q1-2015 to a pipeline of 84 Q1-2019) elsewhere.

2. Strategies and policies in the lithium triangle

Argentina: Open participation of transnational capital in lithium´s extraction

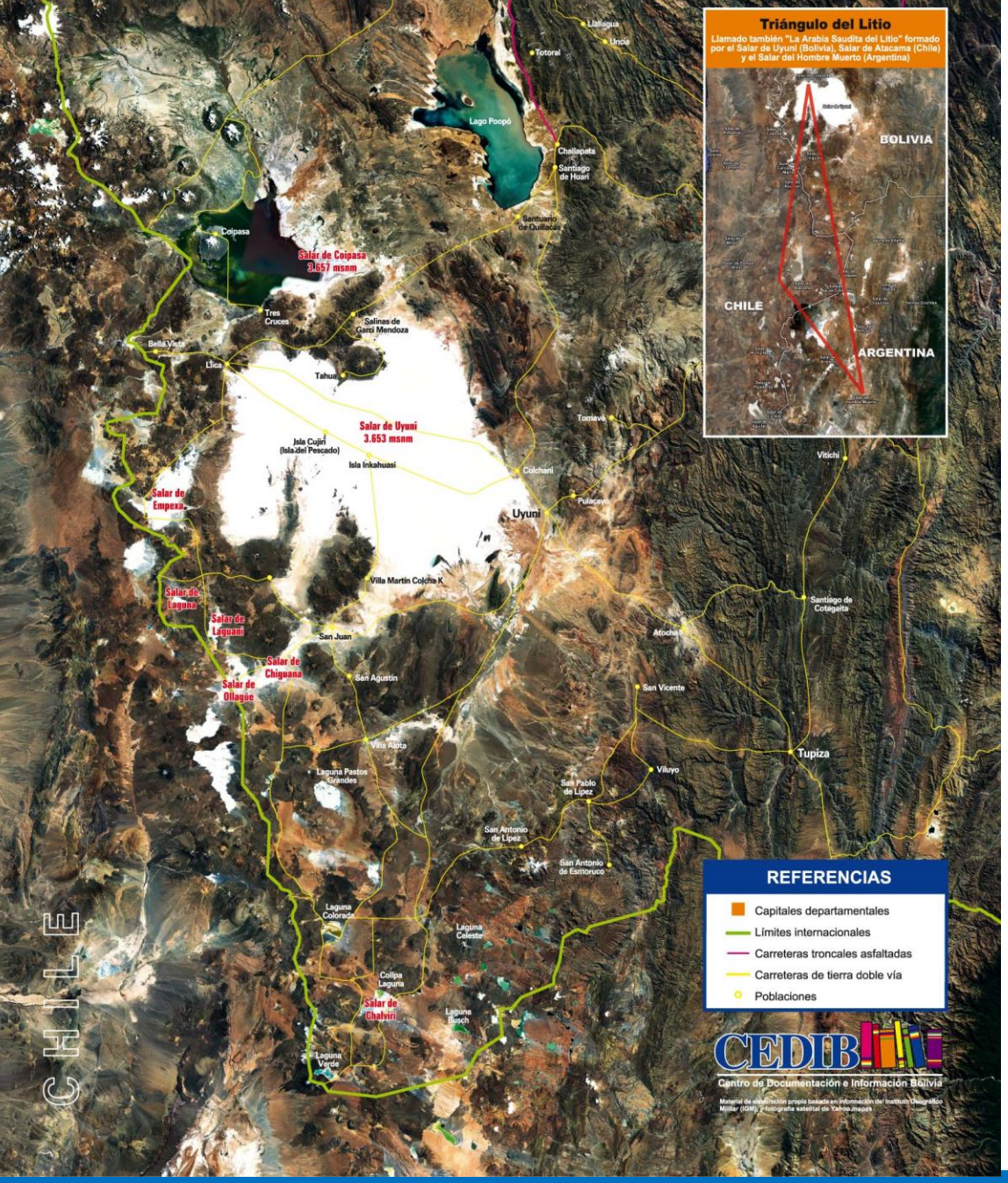
- Federal state: provinces own the natural resources (approve and control projects)
- Joint ventures between mining, provincial and automobile companies
- High potential for environmental conflicts (lack of participation and risks of impact on water sources)

Only of the 3 countries in which lithium can be licensed; 46+ projects in different phases; 2 in operation (1997 and 2014)

Bolivia

If we have the largest lithium reserve in Bolivia, why shall we not have the largest lithium industry in the world? This should be our goal and it is within our reach (Evo Morales, in the inauguration of the pilot plant for ion-lithium batteries; El país; 17.feb.2014)

- **Extractive sector: central to development policies (surpluses)**
- **Lithium: strategic place; seeks to have control on the complete value chain**



State program in 3 phases (little and controlled intervention of foreign capital & companies)

I) Pilot production of lithium & potassium salts

II) Industrial production of them

III Production of ion-lithium batteries

Chile

- Positioning as a principal lithium carbonate exporter; extracting lithium and potassium, initially little concern with added value
- Best conditions for extraction
- Decree 2886/1979 reserves the exploitation of the mineral to the State

2 projects in operation: Rockwood Lithium/Albemarle (1984, 35 y) & Sociedad Química y Minera de Chile (SQM) (1996; 23y)

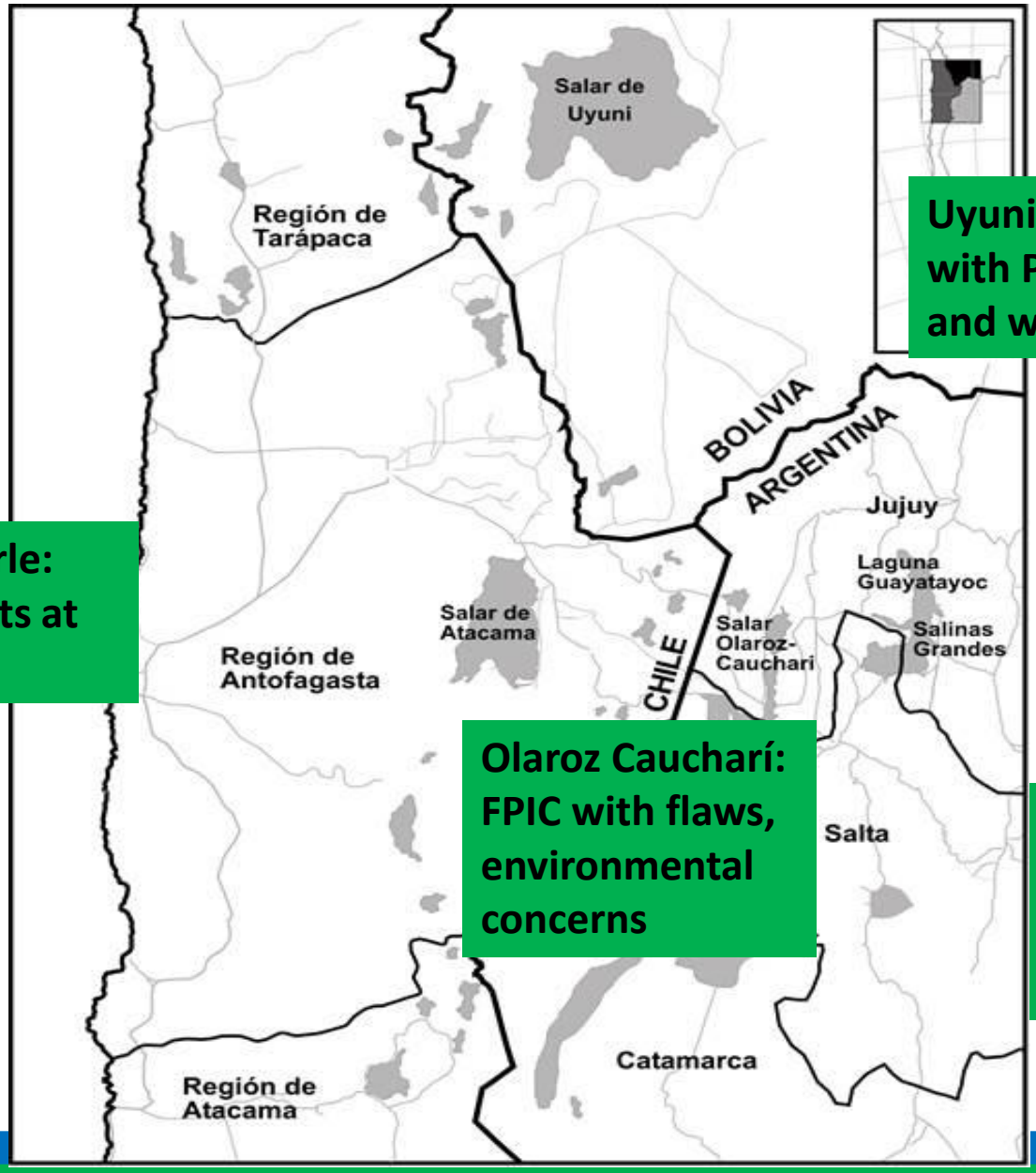
Chile: the governance of the Salt-flats (2016) by the Lithium National Commission:

- **Short term policies:** revise existing contracts and create articulation among institutions
- **Medium and long term:** develop a concept on shared value, strengthen the role of the State, create a cluster for research and innovation, improve institutions around lithium

3. What about people and the environment?

Reconfiguration of territories; displacement and invisibilization of ways of relating with nature and creation of a new territoriality linked to the global (Goebel, 2013)

Environmental conflicts: social demands, strategies and relationships



Uyuni: latent conflicts with Potosi government and with future incomes

Atacama –Albemarle: Negotiating benefits at the local level?

Olaroz Caucharí: FPIC with flaws, environmental concerns

Salinas Grandes: resistance and mobilization against lithium

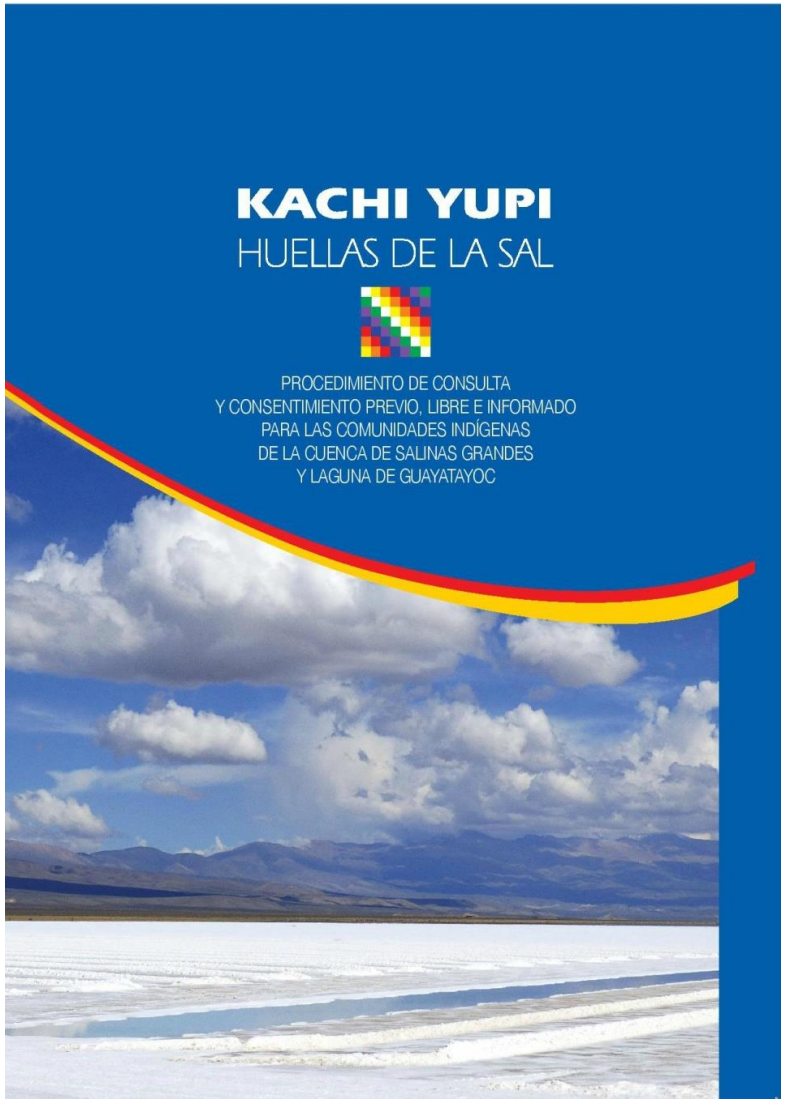
The importance of the respect for participation and consultations rights in defining their development priorities; self-determination and their world vision

Resistances. The experience of Salinas Grandes´ communities

- 2010: **lawsuit filed before the Argentine Supreme Court of Justice** against the provincial governments on the basis that extraction permits were granted to companies without compliance of the consultation and FPIC rights
- 2011: FARN and other organizations presented Amicus Curiae briefs
- 2012: The case was dismissed based on proof arguments
- 2013: The case was taken to the Inter American Human Rights Commission (which has not yet taken a decision)

Since 2010 communities decided to self-convene in defence of their territories and their rights to FPIC. The Protocol is part of this broader strategy and helps build consensus and act in anticipation to prevent further conflicts

Self determination exercise: elaboration of a document to relate/engage with external actors and to apply indigenous rights



Kachi Yupi
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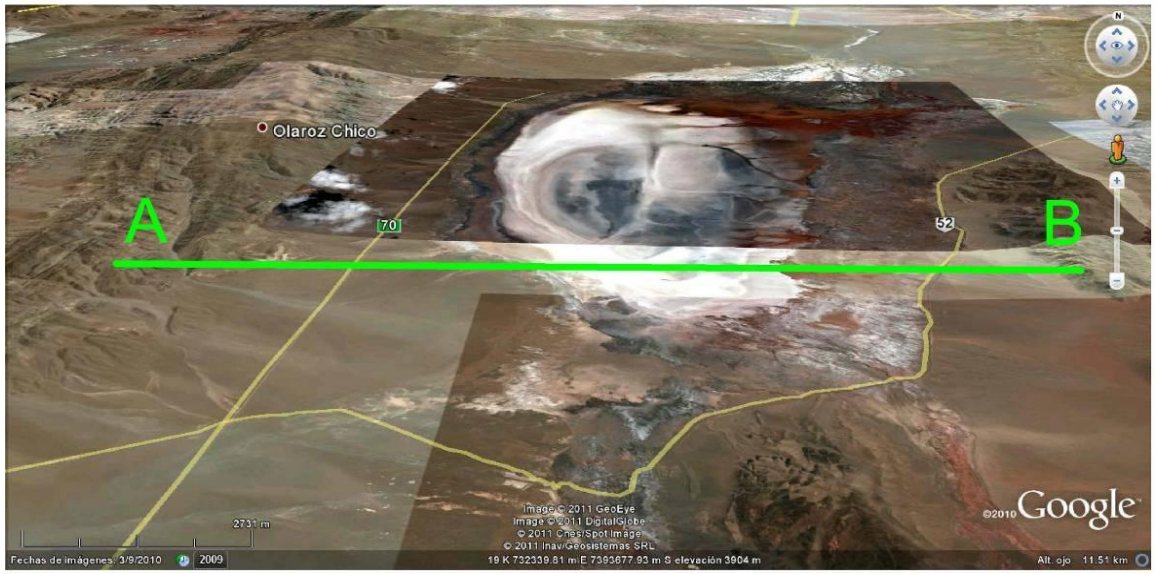
The escalation phase of the conflict (February 2019)

Movilization against lithium, communities decided to say no to lithium and no to consultation

Environmental discussions: functioning of hydrological systems

Modelo hidrologico presente
(EQUILIBRIO)



Environmental discussions

Lack of independent information on environmental impacts

- Few independent studies; lack of comprehensive baseline water studies at a basin level to understand the functioning of the water system (closed/endorreic) and the long term impacts.
- Preliminary studies find a critical condition for water reserves in a minimum recharge scenario (Olaroz-Cuacharí y Salinas Grandes) and potential for a negative water balance in Olaroz-Caucharí

Weak environmental impacts assessments processes

Limited intervention for environmental agencies, lack of capacity of agencies to process and understand information, formalism

Insufficient evaluation of environmental impacts and ability to prevent irreversible damages

4. Some reflections and further discussion:

- **Economic:** how to avoid reinforcing the web of interrelated inequalities and asymmetries at the various levels (Global north and south), within the region, and with communities.
- How to devise a responsible value chain that seeks to minimize extreme extraction and encourage a move to less material exchanges
- **Social:** how to avoid breaking or putting at risk the complex web of social and reciprocal relationships in the territories; how to genuinely grant community participation in the local decision-making processes and benefits
- **Environmental:** how to minimize impacts at a local level; improve technical capacities of authorities to authorize and control de projects.
- But also, generally combat consumerism and programmed obsolescence

Thank you! pmarchegiani@farn.org.ar