

**MIT REAP-SANTIAGO**

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*Preliminary version for comments and observations*

## Executive Summary

### Looking back

The REAP Santiago team generated an evaluation of the innovation ecosystem based on the methodology proposed by MIT. The main results of the analysis about the capacities of entrepreneurship (e-cap) and innovation (i-cap) can be summarized as:

- Even though there is a growing pool of entrepreneurs in the country, most of them participate in areas of services and information technologies and a very small percentage is contributing in the area of science and technology.
- It is recognized, a lack of training among engineers and scientists with regard to entrepreneurial and innovation skills. Though they have the technical skills, there is a lack of specialized people in innovation and entrepreneurship at institutional level in universities, companies and public institutions.
- Access to financing presents two central difficulties. On the one hand, there is little availability of venture capital at the national level for innovation-based enterprises, and these operate mainly in the early stages of development (seed capital) or in advanced stages, without opportunities for scale up and prototyping stages.
- From the perspective of demand, the large size of the industry and the companies involved are factors that could be a benefit.
- New contextual conditions such as water stress and new sustainability standards may play in favor of looking for innovative solutions to maintain the productivity of the industry and reduce its impacts.
- The companies in the mining industry that operate in the country are world-class companies that compete in global markets, a condition that applies especially to technology providers and services more than for large corporations that boast access to opportunities of mineral extraction in a commodity market.
- The challenges on infrastructure are consistent with the funding requirements, i.e., there is a need to improve the infrastructure for scale up processes, test development and piloting, especially for the ecosystem of the industry in which companies, due to characteristics of the operation, have not developed adequate testing conditions.

Chile's main strengths are:

- Its potential to adopt or imitate new products (product innovation) because of its human capital and STEM professionals.
- The crescent percentage of the population who believe they have adequate startup skills and interest for becoming an entrepreneur.

- The quality of its infrastructure and institutions.

Their main weaknesses have to do with:

- Their low performance in technology transfer and capacity to convert research into innovation and development.
- The relatively low number of businesses that are in technology sectors.
- The extent of market dominance by few business groups as an expression of high levels of market concentration and high levels of income inequality

Their comparative advantages are:

- It is a world leader in the production of Copper.
- It has a 30% of world's copper production and reserves.
- Its industry at the national level is linked to a global market of products and services.
- It has initial conditions in terms of resources, capacities and institutions to facilitate the development of an ecosystem of innovation.
- The confluence of firms in the central zone of the country that might operate as a cluster in the mining sector.

### **Must Win Battle and Programmatic Intervention**

The Must Win Battle defined by the team Santiago is “bridging the gap between researchers, suppliers and entrepreneurs”. As a result of the analysis, it was identified a lack of relationships between researchers and big suppliers that might offer opportunities of cooperation beyond the big corporations and the necessity to facilitate the articulation between entrepreneurs, researchers and companies already with access to the big mining corporations.

The implementation of the Programmatic Intervention demands the articulation and commitment of different actors, for whom a specific strategy of involvement was defined.

- Corporate: the participation of CODELCO, BHP, and other large mining industry corporations in the validation of the exercise and sponsorship are critical to the success of the activities.
- Universities: from their different faculties, research centers and academics are an essential knowledge asset for the development of this activity, so the project's ability to convene researchers from different specialties and institutions is a requirement for its success in the way that allows for expanding the pool of people with different talents in solving mining challenges.

- Suppliers: participation and commitment by suppliers are both equally important factors since suppliers should lead the process of interaction with researchers to spur innovation driven entrepreneurship.
- Entrepreneurs: perhaps the weakest point in the process has been the identification of entrepreneurs, not suppliers that can come with capacities and solutions from different industries to the mining sector.

### Must Win Metrics

Currently, we are working on a model that can predict the level of success of an entrepreneurship based on the model of analysis provided by the MIT. Given the lack of critical data to make the analysis, at this level of development we expect to build a base line for the evaluation of the ecosystem and contribute to define the critical variables to be measure over time.

This model is being made through the data from the SII (the Service of Internal Taxes in Chile). Unfortunately we have faced some difficulties, but we expect to have the first results in June.

### Looking forward

The REAP- team has identified specific roles to play for the REAP program as part of the ecosystem of innovation that justify their existence and continuity over time. On the one hand, there is “Alta Ley” program as a strategic institution with demonstrated capacity to define policy guidelines for the development of the mining sector and innovation driven entrepreneurship in the industry. On the other hand, the Open Innovation Platform from Fundación Chile provides the operational capacity to facilitate articulation and problem solving activities. In that sense, the REAP initiative is seen as a complement to those institutions as a team that might facilitate coherence and articulation of the different initiatives, build trust among the different stakeholders and maintain a critical evaluation of the development of the ecosystem. In that term, it is expected that one representative from the REAP-Team can be part of the ALTA Ley Board, and that, at least for one year, the University of Chile can operate as executive body to facilitate the articulation between initiatives/institutions and specific actors.