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## Building Regional Foresight Capability in Antofagasta, Chile

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### Purpose

The foresight programme was part of a broader joint project, which had an overall objective to enhance innovation-driven sustainable economic development of the Antofagasta region. The main purposes of the foresight project were 1) improving the foresight capability in the region, especially for the partner organisations, 2) enhancing collaboration between the industry, government and research organisations and 3) supporting the creation of a strategic research agenda for the region on a topic chosen by the partner organisations.

### Pact for Regional Development and Innovation in Antofagasta Region

In March 2008, various public and private actors signed the “Pact for Regional Development and Innovation in Antofagasta Region” answering to the challenge of regional economic development. The main objectives of the agreement are to generate economic growth and equality, generate better jobs, and pave a path towards a sustainable development in the region. Those who signed the pact recognize that this can be achieved only by increasing human capacities in the region, particularly in organizations that support research, development and innovation activities.

Chilean Foreign Ministry selected Finland as one of six countries to be studied in the “Like-Minded Countries Project”, which started in 2005. Especially the transformation of the Finnish economy from a resource-driven economy into knowledge-driven economy was considered a source of inspiration to Chilean national and regional aspiration. Chile considers Finland as a prime global example on how resource-driven econo-

mies can develop into knowledge-driven economies when development strategies and policies are correctly selected. Eventually Chile will exhaust its natural resources, as did Finland, in the case of copper. Antofagasta region will need to develop significant alternative industries.

#### Extreme risk area for ecological changes

In addition to the structural economic shifts, Antofagasta Region is an extreme risk area for ecological changes. Global climate change and contamination from the mining activities have had a high and lasting effect especially in the regional water supplies. Melting glaciers and overuse of groundwater will require a significant redesign of water use and many other aspects that affect the environment. However, responding to the challenges, the region will need to rely on foreign expertise.

A collaborative project called “Innovation Capacity in the Antofagasta Region” was set up in 2011 between Mining Technological and Scientific Research Centre CITEM in Chile and VTT Technical Research Centre of Finland with the aim of transferring international best

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practices to strengthen the capacity of CICITEM to support economic, social and environmental development in the region. The main objectives for the project were:

- Capacity building in the field of institutional leadership and knowledge management, innovation culture, and innovation capabilities.
- Create self-sustained innovation capacity at CICITEM.
- Capability to create strategic vision for the regional innovation activities and facilitate joint innovation activities in the mining cluster.

Foresight activities were an integral part of the project. They were aimed to increase the foresight capability of CICITEM and other regional actors by conducting a collaborative foresight exercise between industry and regional stakeholders and demonstrating how foresight can promote regional co-operation. The activities included gathering training material, designing foresight approaches suitable for the region, holding a foresight training and conducting a foresight pilot called “Water in Antofagasta 2040”.

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## Enhancing Foresight Capabilities

The foresight activities consisted of two parts. The first was a hands-on training on futures thinking and the methods of foresight. This was done as a three-day workshop in Antofagasta. A learning package with glossary was distributed beforehand to the participants, and a website was set up to facilitate communication and exchange of information. The workshop included brief presentations by VTT experts on key methods such as scenarios, roadmapping and Delphi, as well as exercises, where the participants had a chance to briefly test the methods with key issues of the region. The workshop ended with a group work of planning a foresight project that could be implemented in the region.

Based on the group work results a topic of “Water in Antofagasta 2040” was chosen for a foresight pilot project in a planning meeting between VTT and CICITEM. The topic was chosen based on its importance and relevance for different stakeholders. In addition to planning meetings, the activities of the foresight pilot project included scenario and roadmapping work that consisted of a conference, two stakeholder workshops, a stakeholder survey, interviews with mining companies and a reflection discussion with the CICITEM experts.

VTT experts provided guidance and support for the process, but the main emphasis was on learning by doing for the CICITEM experts. In addition to people from VTT and CICITEM, the process also included researchers from the local universities, representatives from local SMEs, government officials and mining companies.

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## Four-layer Framework

Although the foresight activities were mainly aimed at increasing the foresight capability in the region, they contributed also to the creation of new knowledge about alternative futures and to the networking between key actors in the regional innovation system. Based on the process and existing foresight literature, we developed a multi-layer framework for analysing these contributions of the process. The layers describe the level in which foresight contributes: landscape, innovation system, organisation and individual. We describe the main findings from the process using the layers as a structure.

### 1. Landscape layer: connecting to the global context

Although the overall focus of the project was on enhancing the innovation capacity of the Antofagasta region, it was important to understand the develop-

ments in the global level: how the region is connected to the rest of Chile and the world, how global developments influence the region and how that might change. The aim was to help the participants to see the region as part of a larger, global system and come up with the pathways to increase the capacities of the region to find its niche in the global market.

### 2. Innovation system layer: building shared vision

The foresight activities were part of a larger process which aimed to enhance the innovation capacity of the region. Their role was to support the joint strategy formulation and the creation of a shared vision for the region. During the process different perceptions to the proposed foresight project topics were explored through stakeholder analysis. Anticipating the different expectations of stakeholders helped choose a suitably controversial topic that would be interesting and beneficial for all the stakeholder groups, which in turn would aid in committing the stakeholders to the foresight process.

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### 3. Organisational layer: building organisational future-orientation

CICITEM researchers were closely involved in the design and implementation of the foresight activities. This resulted in new ideas about the role of CICITEM and its mission. As the organisation was fairly small and young, the foresight pilot project influenced the social dynamics within the organisation. Not every researcher at CICITEM saw the benefit of the project and some were reluctant to participate. Thus there was a risk of creating an “in” group of persons more heavily involved in the process. What is needed in a situation like this are “bridge builders” between the “foresighters” and the “reluctants”. This is a good example of how a foresight process is connected to the organisa-

tional dynamics, even though the focus might be on enhancing the innovation system.

### 4. Individual layer: learning by doing

The foresight activities aimed to give the skills to do foresight via “learning by doing”. This includes the specific methods, but also experience in scoping, designing, implementing and documenting the foresight process. A CICITEM researcher commented during the final reflection, that he learned how to bring the ideas high up in the sky down to earth and make them actionable. In addition to specific skills and methods, the process enhanced the capability for future-oriented thinking by challenging existing worldviews and mind-sets and understanding others’ viewpoints and perceptions.

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## Individuals are the Key

We can draw the following implications for policy making:

### 1. Design with multiple layers in mind; especially individual

For practitioners designing and conducting foresight the layers provide a checklist on the effect and influence of foresight. In our experience the layers help design foresight exercises that 1) are relevant and interesting to the individuals involved, 2) contribute to the capabilities of the organisation, 3) shape the system to enable the desired future and 4) capture the most recent advances and create new knowledge on the topic. We especially want to emphasise the individual layer, since effects of foresight are often not thought about on the level of individuals participating in the process. However, individuals are the key to creating a change within an organisation and subsequently on the innovation system. This can be a consequence of changing mindsets and worldviews through learning.

### 2. Take into account that the nature of foresight effect varies from layer to layer

The layers emphasise different foresight contributions. On the landscape and system layers there is a bigger emphasis on the knowledge produced, whereas the individual and the organisational layer put more emphasis on the capabilities gained during the process. This is because the focus of knowledge is usually on the developments in the operational environment and the users of that knowledge are individual members of an organisation. Therefore the content and effects of the foresight

exercise gain more attention on the innovation system and landscape layers, whereas the learning i.e. gaining of capabilities during the process is seen as important especially on the organisational and individual layers.

Foresight, however, contributes to knowledge also on the individual layer and to capabilities on the landscape layer. On the landscape layer the capability of the society as a whole to adapt to changes might be enhanced by foresight. On the individual layer, the knowledge produced is tied to the learning process and may include the translation of alternative futures to own worldviews, reflection on the perspectives of other participants and the interpretation of trends and weak signals to the day-to-day life. The layers thus provide alternative views to the knowledge, capabilities and relations created in a foresight project.

### 3. Use the layers to structure the effects of foresight

A foresight process might have different emphasis on which layer is seen as the most important, but often foresight contributes to all layers, either by design or unintentionally. However, what is more important than the individual layers is the movement of focus across the layers. Looking at the layer “above” and “below” aids in understanding what the layer consists of and what it is a part of. For example, an innovation system is embedded in the inter-systemic developments of the landscape layer, and consists of different organisations, which in part consist of individuals. The layers demonstrate that there is more to foresight than just the immediate tangible outcomes. A successful foresight process might change the capacity of an organisation or a community to anticipate the future and through that even create a regional transformation.

Table 1. Description of layers and the contribution of foresight

| Layer             | Description  | Foresight effects  |
|-------------------|--|--|
| Landscape         | The external developments that affect the innovation systems but are hardly affected by any single measure | Anticipating global developments, trends and/or wild cards, and enhancing future-orientation of the society  |
| Innovation system | The structure and dynamics of intertwined innovation sub-systems consisting of organisations               | Increasing the capacity to reconfigure the innovation system to respond to future developments by exploring alternative futures and supporting networking between stakeholders |
| Organisation      | The organisational culture and allocation of resources   | Creating organisational future-orientation and triggering the creation of organisational responses to the anticipated changes in the operational environment                   |
| Individual        | Individual capacities and capabilities   | Enhancing future-oriented thinking and increasing capacities and capabilities related to anticipating possible futures   |

## Sources and References

- VTT & CICITEM, 2015. Desafíos de innovación en la Región de Antofagasta / Innovation capacity in Antofagasta Region.
- Dufva, M., Könnölä, T. & Koivisto, R. 2015. Multi-layered foresight: Lessons from regional foresight in Chile. *Futures*, 73, 100-111.

**About the EFP:** Policy professionals dealing with RTD, innovation and economic development increasingly recognize a need to base decisions on broadly based participative processes of deliberation and consultation with stakeholders. Among the most important tools they apply are foresight and forward looking studies. The EFP supports policy professionals by monitoring and analyzing foresight activities and forward looking studies in the European Union, its neighbours and the world. The EFP helps those involved in policy development to stay up to date on current practice in foresight and forward looking studies. It helps them to tap into a network of know-how and experience on issues related to the day-to-day design, management and execution of foresight and foresight related processes.