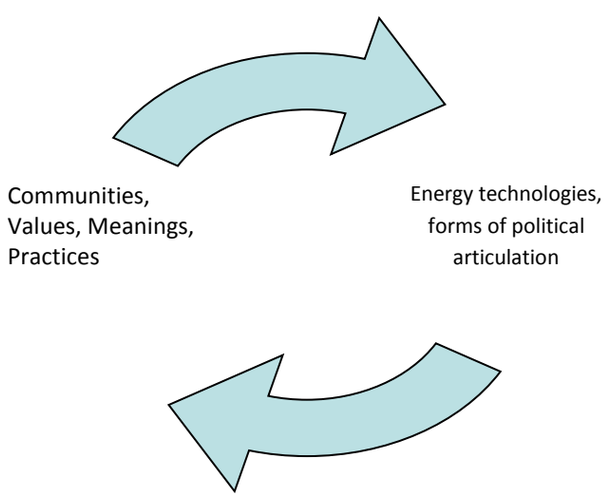
Light and Shadow for Isolated Energy Communities in Patagonia

This document is intended to outline a preliminary focus to discuss and analyze the notion of Isolated Energy Communities (IECs) in Chile, particularly in the Patagonian area of Aysen. To this end, studies in science, technology and society are considered as reference that are drawn upon to conceive energy technologies as social-technological networks and from which laws, programs and public policy initiatives linked to the locality are traced. Under this constructivist assumption, energy technologies are not neutral in terms of value; on the contrary, they are constituted socially, materially and culturally. Although communities shape their territory, landscape, nature through discursive and material everyday practices, energy technologies are also co-constituted politically.

In this proposal on the transition toward sustainable paths, the coupling between communities and technological projects is acknowledged, which may be more or less negotiated, more or less imposed, and more or less discussed. IECs could be framed in bottom-up political and governance discussion, facing the challenges brought on by climate change at a global level.

Energy Technology Communities as Socio-technical Overlap



Chilean Energy Communities (ECs) in general and particularly those of the western Aysen Patagonia are preliminarily considered as emerging or soon to be consolidated socio-technical networks. Their protection spaces are physical, social and cultural, rather than of market tariffs. Unlike in Europe, where the ECs have, since the 90s, received institutional, financial and education support, just recently important contributions are being presented in Chile (ME, 2015) in local energy policies. These policies, furthermore, are subjected to parliamentarian discussion.

Thus, lights and shadows for Chilean IECs will be presented along five pillars, which will also be contrasted with European experiences in this regard. The purpose of this preliminary outline is to provide a starting point for discussion, consideration and suggestions within the group. Thus, this proposal is "under construction."

1. Socio-cultural Conformation of Energy Communities

In developed countries, since the 70s, discussions about soft energy patterns have recognized decentralized, renewable modalities, which are provides though alternative, non-nuclear, peaceful technologies, led by the claimants themselves, which made up the utopia of countercultural movements the time.

In England, according to Walter et al. (2010), this view continues to influence energy policy, which has found a niche in the organization of base groups, alienated from central generation systems, which did not have the support of public funds, but were self-managed. Thus, the privatizing of British energy at the end of the 80s, an opportunity is open to new actors, technologies and market subsidy modalities and shared protection.

Although before the 90s, new actors generated a non-threatening market for leading companies, later new emphasis generated more local and distributed patterns of electricity generation. This entailed the involvement of more local people and communities focused on the development of renewable energy. Initially, it arose from the discourse of the government and consultants at the end of the 90s.

In Latin America, the background to boost energy communities is made up of the critical discussions and activism from developed countries, as well as the history of Latin American critical thinking and contemporary countercultural movement based on good living. Decolonization and liberation processes founded the utopias of the transition towards more renewable, decentralized, autochthonous and autonomous modalities.

The good living philosophy, postulated at the annual People's Summit held since 2006, recognizes the cosmological rights of Mother Nature, conveying that which for Pre-Hispanic, mainly Andean, indigenous cultures, was an ethical, spiritual posture which was at the same time, communitarian. Not without contradictions, good life states added challenges for contemporary mixed governments, which have maintained mining, agricultural and fishery neo-extractivisim. Systematic violence toward particular ethnical territories and communities has activated the discourse of environmental racism in Latin America as well.

In the case of Patagonia, Romero (2013) has expressed in as one of the State's processes of territorializing, characterized by militarizing and delimiting frontiers of this space. With the arrival of modernization, States conceive communities as receptacles that have to be reached in order to deliver progress and wellbeing.

Latin American critical thinking based on a Neo-Marxist view, claims the situation of poverty, abandonment, alienation that caused massive exodus from the country to the city. Paolo Freire's principles on pedagogy of the oppressed present the liberation of marginalized groups in Latin America. Education as a liberation tool also nourished the communitarian landscape, for instance,

through activism against dams and educational practices focused on changes in everyday practices in energy and electricity consumption.

Finally, Chilean neoliberal dynamics have also strongly influenced the installation of interpretation based on local entrepreneurship and tourism with special interest. This also gives way to socio-economic opportunities for certain sectors of Patagonia, while other sectors have raised the loss of communitarian customs and practices that are typical of the Chilean-Argentinean Patagonian culture, stressed by the individualistic notion of the entrepreneur.

This axis should include discussions on socio-historical configured lifestyles for Patagonia and current controversies that they generate in the communities.

2. *Institutional Perspective*

In Europe, energy policies are framed in the need to move toward more sustainable methods under discussions of energy governance in the face of climate change. The White Paper for European Governance and the Green Paper of Energy 2030 acknowledge these strategic outlines for the region under a multilevel focus.

For Walter et al. (2010) this institutionalization, which has been based on communitarian focus since the beginning of the century and assumes the confidence given to renewable energy programs and projects by the communities, also acknowledges certain qualities about the results emerging from this focus.

Notwithstanding, it would seem that the same assumptions for the community may not be homologous to the community with renewable energy projects that are already installed. Sometimes interpersonal confidence may be strengthened, while others, different results could occur.

In this regard, the authors foresee potential disconnection, tension, division and conflicts, which may be generated by the momentum of certain energy projects in the locality and in the assumptions that the community signifies.

For the implementation of the programs in ten areas of England, opportunities to install these renewable technologies were identified thanks to organizations acting as brokers; Local Support Teams (LSTs) These groups provided information and expertise to the organizations in the network in different stages of project development. There were four national programs which included notions of community and renewable technologies in their titles. While in other state sectors such as the Department of Trade and Industry, this meaning is broader and involves benefits emerging from community control, besides the fact that the possibility of sharing the property and the resulting benefits, for community members as well as its investors. The act of placing “hearts and minds” under public consent avoids rejection and conflict with the communities.

NGOs also supported network initiatives, such as solar clubs, Energy 21, prizes such as the Ashden Awards, Renewable Investment Club, Energy4all, cooperatives for common good that replicate cooperative models for the ownership of wind parks, among others.

However, the authors recognize that the meaning given by governmental agents of what the community signifies is narrow and instrumental. They are occupied, for example, in using government monies to stimulate the market of renewables. Community projects, in these terms,

are restricted to what is legal, state-related and not-for profit. This is what the EU rules allow, without defying the private sector.

Initially, Chilean institutions have predominantly adopted a welfare perspective of the communities. These include territories where they are responsible for providing basic services of modernity, Education, work, health, electricity. However, rural electrification programs since the end of 1994 in Chile have been able to grow steadily, reaching electrification ratios of close to 95% of the households, which is notable within the country's regions. According to Opazo (2012), this could be explained by initiatives that combine niche dynamics and traditional electrification practices.

Neglected and isolated communities, now threatened by imposed electric projects such as hydroelectric dams or large scale carbon thermoelectric plants, become vulnerable in the face of promises of fulfilling the promises of first generation rights, which are still not satisfied, thanks to the installation of these projects. But if they managed to politicize their claims of resistance, they could become counterproductive communities for the national aspirations of energy intensive development.

During the last decade, concern for the participation of communities and localities in recent Chilean energy institutionalization arises from high conflict and prosecution of electricity generating projects. According to the National Institute for Human Rights, between January 2010 and June 2012, there were 97 socio-environmental conflicts from the human rights point of view. The 2015 report on human development for Chile of the United Nations Development Program identified a society politicization process.

Paralyzing the carbon thermoelectric project of Barrancones by the community organized in August of 2010 paved the way for the Chilean citizen awakening in 2011, which caught on hand in hand with mass mobilizations against hydroelectric dams in the Aysen Patagonia.

With a recent energy institution, these mobilizations were able to create and unprecedented turnover of energy ministers during the past government. As a result of citizen concern, the current energy agenda highly acknowledges citizen participation, giving special mention thereof in the energy plans for the Patagonia. This version of state concern for energy policy has been demonstrated, particularly in the Aysen region, where it was impossible to impose hard energy patterns as a hydroelectric dam.

Now, the responses of the current government, focused on strengthening state energy policy, has proposed associative practices and shared benefits for localities. However, it seems that democracy is still camouflaged under corporate business interests. This is noted in the report by Universidad de Chile as an input for the associative law. Here it is emphasized that the lead role should be given to the localities.

> Associative practice is generating, developing and implementing organizational capacities to enable local actors as protagonists and main beneficiaries of all acts of economic, social and cultural investment that are conducted for a place (Romero et al., 2015: 6)

And it is particularly counterproductive to consider communities as receptors of environmental impact that must be evaluated for compensation facing undesired energy projects.

> From the community management point of view, associativity also implies coordination between public initiatives of local development and electricity generating projects, the possibility of

> facilitating innovation and change that may be perceived as highly favorable by local communities. Consequently, it is obvious that the complexity of associativity cannot be fulfilled by traditional measures of mitigation, repair and compensation for environmental damage caused by the intervention of the natural and human ecosystem covered by the Environmental Impact Assessment System. Neither is it possible to achieve it conventionally as in Corporate Social Responsibility, or through different philanthropic expressions carried out by companies in their relations with local communities. The centralized welfare measures (such as the case of national programs or for vast regions) which may be adopted top-down by the government do not necessarily constitute the appropriate answer to local social demands, which as such are heterogeneous and diverse (Romero et al., 2015: 6)

Although the ministry has not abandoned the advice of this university, criticism has readily been unleashed toward the proposals of associativity and pre-investment voluntary agreements, expressed mainly in terms of economic compensation and without participatory land use planning (Schaeffer, 2015). In Austria, this aspect was considered key for planning energy systems transitioning toward sustainable methods: Special organization (Wächter et al., 2012)

The lack of territorial planning adds to the institutionalization of a constitutional water code, which completely deregulates a market that has become speculative and concentrated. For example, ENEL transnational energy boasts over 90% of the water rights.

The concern of Chilean authorities appears to be closely linked to the interests of the companies: Reducing local conflict. Thus, care for what supposedly is communitarian could become counterproductive for this state concern (Walker et al., Schreuer et al., 2010).

3. Regulation and Programs

Within the European regulation, a sustained increase of the share of renewable energy to 20% of the total energy demand by 2020 is proposed. Programs for strengthening small and medium businesses such as EASME[1], an heir to the Intelligent Europe program, are included. Financial aid focuses on industrial entrepreneurship and the so-called social challenges considered such as community and organized group initiatives to reduce consumption and increase energy efficiency. For the latter, there is also specific support[2]. In short, the transition toward sustainable ways fits in as part of the market liberalization[3], without endangering the main energy regime.

The European Community considers its communities bottom-up governance and innovation niches in the transition toward more sustainable forms of energy. Residential consumers are perceived as active citizen generating change and modifying practices by measuring, analyzing and modifying electricity, transport, heating and hygiene in their homes.

The energy agenda is in the process of participating to deliver an energy policy for 2050 advances the commitment of obtaining 45% of the electricity generating capacity based on Non-

[1] Executive Agency Executive Agency for Small and Medium-sized Enterprises (EASME). More information here: http://ec.europa.eu/easme/

[2] **http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/2374-ee-10-2015.html**

[3] Feed in tariff models have come to be considered feed in value.

Conventional Renewable Energy for 2025, with the goal of saving 20% based on the expected consumption to that date.

Within the action plans of the Chilean Energy Agenda to use its own resources, a specific point is considered (point 5) to develop, with the regions and municipalities, special plans for isolated or extreme areas (ME, 2014: 52).

> **5.1 We will reduce by 50% the number of Chilean families that have no electricity supply.**
> Together with the Subsecretaría de Desarrollo Regional (Undersecretary of Regional Development) and the Ministerio de Desarrollo Social (Ministry of Social Development), we will develop during this Government's term the energy projects that are needed so that by 2018 we have provided energy to ten thousand out of the twenty thousand homes that have not yet received electricity supply. This will be conducted by collectively working on the solutions to be implemented.
> **5.2 We will ensure that 100% of the country's rural and isolated schools and public accident and emergency centers have a permanent electricity supply by 2017.**
> **5.3 We will develop a renewable energy program to resolve the electricity supply of indigenous communities throughout the country.**
> This project will have a special participatory process to identify the most proper solution, taking into account priorities and world view.
> **5.4 We will encourage the development of a diesel replacement program.**
> To improve the energy supply to the families living in the insular territory whose energy supply is based on diesel, we will introduce renewable energy technologies to reduce the use of this fuel for the electricity generation, thus improving their life conditions.
> **5.5 We will support the development of an Energy Policy for Aysén and an Energy Policy for Magallanes.**
> There are key issues that must be approached in this area: to improve the existing regulations governing the electricity grids of each of these areas, to regulate the natural gas tariffs, and to suggest solutions for the energy used in transportation and industry. Therefore, we will include a process of technical and participatory discussion in each of these areas for the design of a long- and short- term Energy Policy to ensure a safe energy supply at reasonable costs and making best use of the country's own resources (wind power and minihydraulic energy) and the Energy Efficiency. This process will be drafted with the relevant Regional Government, the University of Magallanes, ENAP, and any other organizations relevant to the location at issue. This process will derive from the proposed legislative change to the regulatory framework existing for the Medium Grids in the Electricity Law.

Here the interest of the Chilean government in the participation of public, regional and local institutions in the design if an energy policy to ensure safe sources of energy at reasonable cost, is noteworthy. Wind and mini-hydraulic generation technologies stand out, together with energy efficiency. A change in the regulation framework is also acknowledged for medium networks in the electricity law (ME, 2014).

Although the official website of the ministry of energy shows a view called Local Energy Strategy (EEL for its name in Spanish, Estrategia Energética Local), which considers municipalities as the main actor, these appear as an almost inexistent tool, because only two municipalities are eligible: Frutillar and Vitacura, two districts with high socio-economic strata. This program, which is interesting due to the participative and long term components, proposes a roadmap of 15 steps, which, rather than state the public funds to be allocated, it acknowledges the twist of financing these bottom-up governance initiatives[4], with municipal sources, external sources and the private sector of the district. Without question, this program makes the municipality an entrepreneurial agency, which has:

> A strong market component and seeks innovative business models that generate value for the private sector and the citizens. Some examples of new business models are energy

[4] Local Energy Strategic Program (Programa Estrategias Energéticas Locales (EEL)) here: **http://www.minenergia.cl/estrategialocal/?cat=20** (accessed on April 23, 2015).

> cooperatives, “ESCO” models, crowdfunding platforms, among others (Ministry of Energy website, 2015).

Other municipal energy programs are energy Access Funds, efficient lighting, the energy program of the Regional Development Department (SUBDERE, for its name in Spanish), Municipal Environmental Certification (SCAM, for its name in Spanish) and the MINVU program of sustainable construction.

It should be noted that the Energizing Program, within the framework of rural electricity programs, was focused on islands and isolated locations from 2010 to 2014. In 2010, the region of Aysen was the region with most funding, with nearly 1,600 million Chilean Pesos. For 2013, 28,000 USD of public investment were declared, reaching 96% of the electricity coverage in the country. On the sustainability of self-generation projects, authorities recognize that:

> According to studies and reports carried out, self-generation systems that are self-managed by the users tend not to be sustainable for several reasons. One of them is that the lack of technical knowledge and training of the people in charge of operating and maintaining the systems and the difficulty in collecting the possible contributions or agreed upon fees, affecting the system operation and maintenance and therefore, the availability of the service.
>
> The situation of self-generation projects that are managed by established electric companies is different, because they generally have similar annual availability to those required by the norms of supply delivered through rural electricity networks.
>
> This has meant that the state is applying subsidies for the operation since 2007 in some of the self-generation projects (domestic photovoltaic systems, hybrid systems and diesel systems), therefore, the state finances practically 100% of the initial investment and part of the fee, which is not payable by the beneficiaries due to its high costs.
>
> The modality has been for users to pay their consumption at the price paid by the beneficiaries that have regulated fees (network extensions) in the district, and the difference is paid by the state with public funding (Cuadra, 2013, personal emphasis).

This shows a perspective of energy users in articulation with local government that are capable of generating decentralized planning and management processes for local energy (EEL tool), while others, without having an energy system, would not be able to manage or maintain them, because they lack interlocutors or technical counterparts, for example, in cooperative modalities (Energizing program). This shows the socio-economic asymmetry of the country and the welfare role of the state in terms of economic financing.

4. Technologies

In academic studies on energy communities, there is concern for the project scale, mainly the scale of generation and the degree of complexity, both for technical maintenance and for the management of expected results in terms of the property of the installation, which stand out as important criteria for maintaining communitarian relations. The magnitude of the wind farm projects in English communities has shown their capacity to tension and even to divide community networks, generating anti- community project groups within them.

In terms of systems distributed in Europe, it seems important to consider energy in broader socio-technical terms. Here, not only the artifacts and electricity are exclusive. The combinations of heat circuit installation in winter, from biomass, and photovoltaic solutions in the summer in Austria are successful in cooperative distribution systems.

The intensive use of firewood in the Patagonia is a concern for authorities due to the high levels of atmospheric pollution shown in cities such as Coyhaique. A practice of buying, keeping and drying wood for its use is a fertile area for socio-technical studies to assess the installation of distributed energy systems.

Chilean energy policy particularly consider the use of Non-Conventional Renewable Energy as an opportunity for isolated areas which have been disconnected or are highly dependent on fossil fuels such as diesel:

> *We need to foster the development of the energy resources available at those extreme and isolated areas, through the use of renewable energy sources and the introduction of better technologies that make it possible to reduce dependence on diesel* (Chilean Energy Agenda, :46).

Therefore, in these isolated zones, within its program, the current government proposes, the following: “

> We will promote solar-wind diesel hybrid systems in islands that are currently only supplied with diesel generation. We will also design mechanisms to foster the use of low cost renewable energy in isolated systems, such as those of the southern area (Ministry of Energy’s official website. Available here: **http://www.minenergia.cl/barras-de-navegacion/barra-principal/programa.html** (accessed on 24/04/15)).

The cost of diesel based hydroelectric equipment is more expensive for state financing, which requires public aid. The transition is proposed as replacing old diesel based equipment and installing wind and photovoltaic equipment. The size within the community is not yet a crucial discussion. Their management and how they fulfill the expected results in not yet crucial either.

As observed in the energy program for isolated zones, financing is available for almost 100% of the light bill of the consumers, and the maintenance and management of the equipment is delivered to the electric companies of the sector, due to their failed results.

Probably, the view of technology as artifact also predominates in the communities. Within the installed programs, photographs of the projects with photovoltaic panels in isolated Patagonian communities stand out. However, abandoned and unused panels due to the lack of maintenance, knowledge, spare parts, batteries, etc., still have to be tracked.

Renewable technology transfer programs in the country show the need for high electricity consumption scales, trustworthy institutions for transnational import companies, among others. For example, national companies in charge of maintaining the windmill blades are focused on satisfying consumption of the large mining industry (ex. Fibrovent (Pueyo, 2012). Agencies in charge of this task on small scale do not seem relevant for public policy. Problems are not yet reported, as in Austria (Schreuer et al., 2010), regarding the complexion of negotiations between nation objectives of transition toward renewable energy and the objectives, needs, interests and aspirations of energy from the communities.

The notions of innovation and technological solutions from websites of programs such as the EEL, lead to Production Development Program (CORFO) programs that promote technological capacities, which expose a notion of innovation that is still distant from the niches required by isolated energy communities[5].

The National Center for Innovation and Promotion of Sustainable Energy (CIFES, for its name in Spanish, Centro Nacional para la Innovación y Fomento de las Energías Sustentables) is in charge of supporting design, implementation, follow-up, assessment and promotion of strategic programs and projects with public funding for innovation and promotion of sustainable energy, particularly in implementing the policy and action plan for innovation in energy. The activities declared by CIFES do not recognize specific aspects on energy innovation at a local level. However, its official internet website reports an international seminar in 2012 to address some of the challenges of intelligent micro-networks in isolated zones, by the Ministry of Energy and Universidad de Chile. Similarly, in 2013, interest is focused on the development of micro-hydroelectric plants in the area of Aysen (CIFES official website available at: **http://cifes.gob.cl/sobre-el-cifes/** (accessed on April 21, 2014)).

Energy sources considered for the zone include, in first place, run-of-the-river hydroelectric generation, although they have an impact because the centers are located in populated zones. The potential of wind farms is also important, paired with new solutions for batteries that favor autonomy (ref. Tesla batteries).

Regarding autonomy: Energy efficiency is considered appropriate because it is closely linked to community education, such as home insulation, small technological solutions, such as warm air that may circulate within the household.

5. *Leadership and Agency*

The community approach to RE of European institutions based on values of cooperation, cohesion and confidence acknowledge their members as the main actors, which is a benefit not only at a local level, but also at other levels analysis. Walter et al. (2010) recognize that these narratives generally acknowledge an unproblematic view of the communities. Everyday experiences and academic studies show problematic expose problematic ways for them.

The negotiation between those who are inside and those who are outside may be tough, but above all, it is not fixed. In this sense, places and communities are not synonyms. There may be communities superimposed in one place, and communities that are extended and built on interests that transcend physical borders. Communities may be transitory and dynamic, i.e., new fragments may emerge within original members of a project.

In Chile, on the other hand, self-production, social learning, community empowerment are not after governmental concern for explicit and consolidated care for what is communitarian. Although the energy program recognizes the management of models is articulated by private companies, municipalities, cooperatives and electric committees, there are no explicit programs for energy literacy for consolidated communities.

[5] The CORFO technological capacity program is not specifically mentioned for programs in energy on at a local scale (corfo.cl: Technological capacity program here: **http://www.corfo.cl/sala-de-prensa/noticias/2015/enero-2015/capacidades-tecnologicas** (accessed on April 24, 2015).

However, it is worth noting that the programs of Local Energy Strategies (EEL), is recently installed to be led by the mayor, with three levels of participation. The first level highlights the role of the Mayor, a technical municipal team, energy distributors and a consultant. Energy distributors are those who carry out investment in infrastructure and provide information to diagnose, besides the consultants, who are the ones who elaborate local energy strategies. This is of utmost importance because consultants are those who "should have practical experience, competent professionals and leadership to elaborate the EEL in a district" (Ministry of Energy's official website, 2015). On the next level (level 2), representatives of the region and the nation are considered, delivering their national strategic outline for the municipalities. This includes:

> In elaborating the EELs, public and private schools should be considered. These produce significant benefits, carrying out EE activities with greater impact. Many of these schools have designed their own standards for energy and environmental design, and are also very good ways to raise awareness in parents of the district of renewable energy and energy efficiency topics. Well organized territorial and functional organizations (for example, neighborhood councils) should also be included in elaborating EELs, to include the local population in energy topics. The last actor included in this level should be the local press for mass dissemination of the results within the district (Ministry of Energy's official website, 2015).

Finally, the third phase includes those in charge of implementing EELs: Relevant industries, universities and academics, trade associations, businesses. It is also acknowledged that: "This third level also considers citizens at large because they are a key in elaborating and validating EELs".

Although a participative perspective is seen in this tool, how consultants, considered as agents with experience in implementing these programs realize, design and elaborate these EELs remains to be seen. Innovative in the country. Analysis of participatory techniques are pending, i.e., how technical teams in areas of energy and efficiency that have never done it before, engage, discuss and empower citizens in these highly technical topics.

A particular initiative is one that is part of the "Communitarian Energy Eco-literacy," launched in December, 2014, based on the education principles for electric consumption and led by Austral University of Chile, Patagonian Campus, which had been worked with Enercoop Aysen, supported by the NGO of the Institute of Political Ecology and the Ministry of Energy. However, the cooperative, aside from educational workshops, does not present specific articulated initiatives on other particular levels with specific energy projects and with clear financing for islands and isolated communities.

Notwithstanding, the Aysen Patagonia has proven to be active in receiving programs and in articulating cooperative initiatives. But these initiatives that have been presented must still be realized. It remains to be seen if the districts of Tortel and Melinka join these EEL programs, or they wait for specific programs for them.

The local lifestyles along with the considerations regarding the assumptions that make up the social capital (associativity, socio-economic, educational, conflict levels, etc.) could contribute to a notion of communitarian capital derived from studies in these zones.

Preliminary Summary Table. Energy Communities and some compared axes between Europe and the Aysen Patagonia

Axes	Europe	Chile and Aysen Patagonia
Socio-cultural Landscape	Alternative energy movements since the 70s (pacifism and anti-nuclear resistance) Notions of community based on confidence, reciprocity, collaboration and pacifism Soft energy patterns (decentralization, NCRE, local sovereignty)	Latin American critical thinking + countercultural European and North American movements Decolonization Literacy for liberation of the oppressed Recent installation of the notion of innovation, entrepreneurship and special interest tourism
Institutionality	Bottom-up energy governance in the context of multilevel climate change Bottom-up energy transition toward sustainable ways, since the 90s	Contemporary concerns for localities from local resistance and anti-dam and carbon thermoelectricity mobilization Criminalization of protesting Predominant welfare approach toward localities Energy policies for Aysen pending discussion
Programs and Regulation	Financial support of EC Norms to strengthen NCRE Energy efficiency measures for residential and local consumption Local and distributed networks that differ from the base generation	Successful energy programs to supply electricity since the end of 1994 Emerging EEL programs and Communitarian Energy Literacy
Technologies	Non-Conventional Renewable Energy: Wind, photovoltaic, biomass, hydro, mainly, small scale. Distributed networks of electricity, heat and refrigeration	Run-of-the-river hydroelectricity, diesel motors. Off grid photovoltaic panels, wind National Center for Innovation and Promotion of Sustainable Energy (without local initiatives) Energy Center (UChile) Intelligent networks and distributed generation (Micro-hydraulics, Diesel, biomass). Local wireless controller CORFO research centers. Ex. Coyhaique Biomass Center (Swiss company Ernstbutler + Partner and

		INFOR Patagonia)
Leadership/ Agency	Organized communities and cooperatives. Participation with different degrees of participation in the program management	Mayors Participative citizenship in government proposals and consultancies. European consultants stand out Some cooperatives (Enercoop Aysen, IEP NGO, Austral University of Chile, Patagonian Campus)

6. Considerations on Lights and Shadows for IECs in Aysen

It may be considered that shadows cast in 2010 of British and Austrian experiences on the tensions between institutions and communities to work collectively and consensually toward the transition of common sustainable energy. Interpersonal variables and social confidence (in institutions) would be implicated in multiple pathways, particularly linked to the use of the space for negotiation (Walker et al., 2010, Schreuer et al., 2010).

Given the program initiatives of the current government and the expected norms and regulations for local energy governance of energy in Chile in general, and the Patagonia, in particular, these shadows contribute toward a view of prevention.

One of the challenges of the energy communities is to conceive energy in distribution terms. Distributed energy systems that link heat, refrigeration and electricity and not only electricity are a challenging task that goes hand in hand with energy efficiency measures, in socio-technical terms. Studies on local and communitarian practices as energy efficiency measures are still invisible as bottom-up governance practices.

Several specific legislative and normative aspects for Chile on the regulation of energy and water are pending. At the same time, the background of the Austrian experience is also pending.

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