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Agenda for Boosting Investments in the Energy Sector

The recommendations of the study requested by the Confederation for Production and Commerce (CPC,) deal with subjects such as citizen participation, contributions to local communities, land planning, proceeding of administrative permits, expansion of the transmission system and supply biddings for distribution companies; all of them key factors to unblock the sector's investments, which are essential for Chile's social and economic development.

The electricity generation and transmission projects have faced increasing development problems due to social and environmental oppositions, and the judicialization of approval processes. This has entailed a concerning shortage in long-term electricity contracts, given the uncertainty of the medium and long-term capacity availability to comply with the supply commitments. Currently, close to 4,000 MW of coal and water projects have been discarded or postponed, thus illustrating how complex the situation is.

The troubles to carry forward energy projects are concentrated in the Central Interconnected System (SIC, in Spanish), which can only ensure an economic power supply until 2016. If some projects included in the portfolio (such as Maipo or Punta Alcalde) are carried out, we could rest a while longer. However, we know that the execution of new projects has become a titanic task, which makes us fear that it may be impossible to cover the energy demand at reasonable prices and with the adequate security in a future that is increasingly near. Therefore, it is urgent to unblock investments and search for solutions that prevent our energy from getting more expensive every day, together with guaranteeing a supply that is safe and friendly with the environment.

In this scenario, the Confederation for Production and Commerce (CPC) entrusted the recently

published survey "*Agenda para impulsar las inversiones en generación eléctrica de base*"[i] (Agenda for Boosting the Investments in Base Power Generation") to the following experts: Sebastián Bernstein, Gabriel Bitrán, Alejandro Jadresic and Marcelo Tokman. The Report complements a previous one, entrusted to the same authors, which includes a diagnosis of the current difficulties to develop base power generation projects,[ii] mainly concentrated in the period 2014-2020.[iii]

The new report is focused on energy requirements for the period 2020-2030, and analyzes different possible scenarios for developing the electricity grid and proposes an agenda to reactivate investments on large base generation plants in the SIC and the associated electric power transmission. The challenge is no doubt important, since the investment decisions to cover the next decade's energy requirements shall be made in the following three years, because a long time is required to put new centrals into operation.

Projections

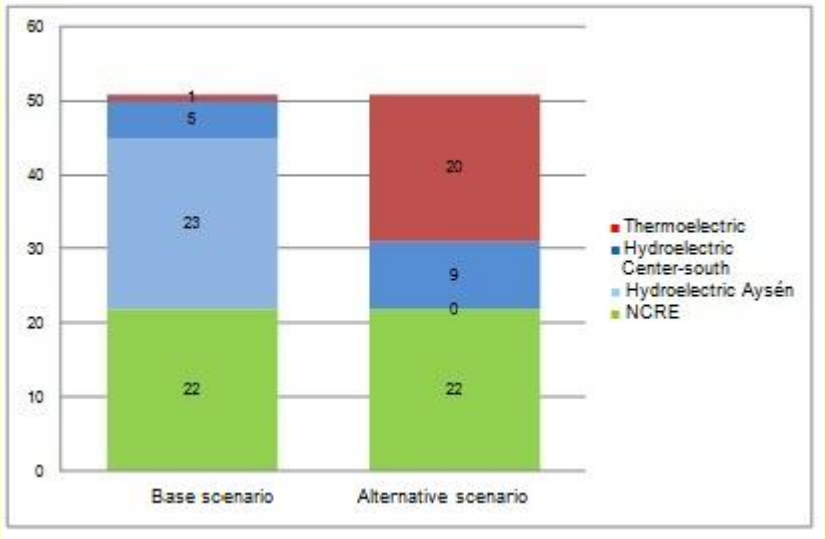
The Report makes a projection of the demand and the generation capacity for the period 2020-2030, considering that the interconnection of the main power systems (SIC and SING) will have materialized by then. It is estimated that the gross SIC-SING generation, which currently amounts to 65 terawatt hour (TWh), will increase to 101 TWh in 2020 and 152 TWh in 2030. The increase of 51 TWh in the gross generation, which could materialize during this decade, is equivalent to an annual growth of 4.1%, less than the historical figures, partly due to the energy efficiency incentive policy.

The benchmark scenario assumes that the offer satisfies the projected demand efficiently, fulfilling the 20% goal of non-conventional renewable energies (NCRE) by 2025. In this context, the NCRE would cover a significant part of the decade's consumption increase, reaching 22 TWh, which corresponds to 43% of the required additional offer. The rest should be supplied mainly by hydroelectric projects of the Aysén Region, and partially by smaller projects located in the center-south region of the SIC.

The alternative scenario assumes that it is impossible to build the Aysén hydroelectric projects: they could be partially replaced by developing more hydroelectric centrals in the SIC's center-south region (because the prices would be higher and could sustain such projects) and mainly by installing many thermoelectric centrals, operated with either coal or natural gas. It highlights that it is impossible to increase the generation coming from NCRE, since a high percentage of this increase would have an intermittent character, which would imply high regulation costs if the purpose is to exceed the 20% goal by 2025.

It should be noted that both scenarios assume that the existing problems will have been solved in order to undertake base power generation projects.

Chart 1
ADDITIONAL ELECTRIC POWER REQUIREMENTS
2020-2030 (MW)



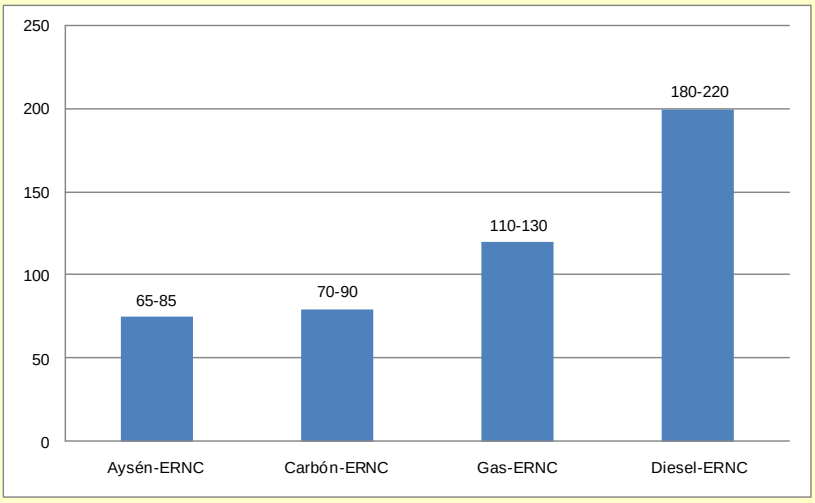
Source: "*Agenda para impulsar las inversions en generación eléctrica de base".*

The above scenarios demonstrate the key role that the decisions on the Aysén water resources play in the composition of the grid (specifically the projects *HydroAysén* and *Energía Austral*). As indicated by the authors of the Report, maximizing these water resources allows, among others, to obtain a generation that is friendlier with the environment and relying on enough regulation capacity to absorb the intermittencies and variability of the wind and solar photovoltaic generation. In fact, the exploitation of water resources in the southern region of the country should be part of the clean generation policy to which we all aspire, because it would substantially increase the quota of renewable sources in the energy grid, contributing at the same time to a more competitive and highly regular power generation.

Likewise, the authors give an explicit support to the undertaking of thermoelectric projects, particularly coal ones, given its relevancy to the sector's competitiveness, and they declare to be in favor of making further studies and developing the regulatory and institutional frameworks that are needed to boost the nuclear option in the future. This aspect is quite sensible in a scenario where all and each one of the power generation technologies –thermoelectricity, hydroelectricity, NCRE and nuclear- will be necessary to sustain the social and economic growth that the country aspires to.

Consequently, the Report's recommendations listed below seek to unblock the investments in the electric power sector, in order to satisfy the larger energy demand in a competitive way and prevent an increasing deficit over time. The actions taken –or not taken- will have a direct influence on energy prices, since if the cooling of investments on base power is not dealt with, the long-term marginal costs could reach US$200 per MWh, something qualified as a "catastrophic scenario" by the authors of the Report.

Chart 2
LONG-TERM MARGINAL COSTS UNDER
ALTERNATIVE ENERGY SCENARIOS



Source: "*Agenda para impulsar las inversions en generación eléctrica de base".*

Citizen Participation

In recent years, citizens have strengthened their organization and mobilization abilities, deriving in active demonstrations against the projects they consider undesirable. There is an additional perception of institutional weakening and lack of leadership to carry forward the projects. Thus, the authors of the Report believe that it is of the uttermost importance to rely on truthful and objective information about energy matters, in order to promote a serious and constructive debate on this problematic. Likewise, they deem essential to improve the institutional spaces for citizen participation, so as to legitimize the system and avoid the opposition and judicialization of the projects.

Therefore, they propose: (i) to publish a State biannual public report and the projections of the national energy situation; (ii) to publish a biannual public report of the main industries' competitiveness in terms of annual and projected energy costs; (iii) to establish an Annual Account by the Ministry

of Energy regarding the condition of the power sector; (iv) to create a permanent public information system on energy and environmental matters; (v) to improve the mechanisms envisaged in the Environmental Impact Assessment System (SEIA, in Spanish) in order to promote an early and active participation by the communities; and (vi) to be transparent regarding the prices to regulated clients, and to implement an improved subsidy system for the most vulnerable families.

The recommendations aim at improving the availability and access to necessary information for a well-founded discussion, which should favor the necessary consensus that is even more elusive when misinformation influences the public opinion and the political class. Likewise, it is desirable to create formal mechanisms to channel the observations and objections of the citizens, as well as to embrace their proposals for improvement and refinement, both in the design of public policies and the development of specific projects at early stages. Only when citizens feel they are being heard, the assessment process will have total legitimacy and today's high levels of judicialization will be reduced.

Contributions to Local Communities

The general diagnosis is that there is a non-equitable geographical distribution of the projects' benefits and costs, which is certainly not solved by way of non-regulated bilateral negotiations. Therefore, the authors of the Report propose to implement two regulated compensation mechanisms for local communities, which allow improving the equity in the distribution of benefits and costs associated to the development of these projects.

The first mechanism consists in modifying the regulations for municipal licenses, so that the installed capacity (and not just workers) can become a distribution factor of the license payments between the companies' head office and the centrals (or lines). The second one is a legal amendment allowing the generation and transmission companies to make a mandatory payment to the municipalities where these facilities are localized. This contribution would be proportional to the installed capacity or the investment made (not over 1% of the total), and charged as credit against tax liabilities.

Both proposals have been widely discussed and the current Administration included a similar measure in the Competitive Impulse Agenda. There are also similar experiences in other countries, as Switzerland, where contributions to the communes or regions are an important incentive for the communities to adhere to the projects undertaken. In order to make this possible, transparency is required in the use of resources and an active citizen participation which defines the works to be developed. Only when the community feels more involved and can visualize the direct benefits

derived from the execution of these projects, will it be possible to change the negative perception which has prevailed to date.

Land Planning

A relevant source of conflict is the increasing competition concerning the land usage among different production and preservation purposes, both at the level of soil and maritime and coastline use. According to the Report's authors, this is mainly due to the lack of common criteria and definitions in the use of land planning tools, which consider the entire territory in a consistent manner, involving multiple regulations, instruments and institutions. In fact, there are more than 27 different protection categories, whose interpretation and implication do not respond to uniform and known criteria.

In this context, the proposal is to advance in elaborating a land planning system that allows a rational and sustainable usage of the land. This would require reforming all the tools related to land planning and special zonings, a process which should be led by the combined Ministry of Housing and Urbanism and National Assets. Specifically, the following is recommended: (i) to complete a zoning information system with a single interpretation of the scope of the existing regulations; (ii) based on the latter, to build a map with the areas that are suitable for developing electric power works; (iii) to propose a structured policy framework which contains coordination mechanisms among institutions who hold powers in land planning matters; and (iv) to incorporate citizen participation and dispute settlement mechanisms to the policy framework.

It is important to point out that the proposals aim at collecting data on land usage that enable the selection of localizations for developing generation centrals, and at a land planning system that allows establishing competencies, coordination and consistency among the institutions involved. This is absolutely necessary to improve the projects' legal certainty, since inconsistency and lack of coordination in the use of land planning tools and in the interpretation of the scopes of such designation are a permanent source of conflicts and further judicialization. As a matter of fact, the recommendations do not pretend to advance towards centralized land planning, which is highly inefficient and undesirable, since it would not only paralyze investments while waiting the great land definition –which could take many years to be discussed and materialized- but it would also face huge social and political pressures, and in the end very few or no zone at all would be declared qualified for the development of electric power projects. Instead, more information and rationality is needed, that allows making the protection objectives compatible with the development of electric power projects.

Administrative Permits

The generation and transmission projects have to process nearly 57 permits, and many of them are cumbersome and demand a lot of time. Some of the permits processed in the SEIA are especially complex, as well as the maritime concessions, purchase, renting or onerous concession of public-owned properties (*concesiones onerosas*[iv]), geothermal concessions, electric power concessions, and applications for water rights and transfer of water intake points and restitution channels.

The authors identified several problems for which they propose measures intended to facilitate permit processes, including the following: (i) to simplify proceedings and prepare explanatory guidelines; (ii) to set objective criteria for the enforcement of regulations and control mechanisms; (iii) to strengthen the coordination among public services, through the creation of a sectoral committee focused on facilitating the development of electric projects; (iv) to provide public services with more human and financial resources; (v) to improve the applications presented by investors; and (vi) to limit the judicialization incentives by establishing specialized dispute settlement bodies and regulations that discourage the introduction of speculative or hasty demands, among others.

These recommendations point at making the "red tape" a more expedite, transparent process, based on objective criteria, and overcoming the weak points derived from the public services' lack of financial resources and technical capabilities and the applicants' information delivery deficiencies. Taking these measures would allow expecting fewer pressures from the public opinion regarding the granting of permits, since sectoral processes and environmental assessments would have more legitimacy, and it would reduce frequent judicial remedies against the projects.

Electric Transmission

The transmission projects also face important development troubles, due to the long terms needed for their approval and execution, the obstacles to establish right of way and negotiate compensations and the increasing citizen opposition. This results in electric rate decoupling derived from the transmission lines' congestion and a higher risk for the future development of generation centrals. The passing of the Law of Electric Concessions meant a significant progress, but the proceeding of the bill for Public Electric Highway –also important- seems complicated.

According to the authors of the Report, the main challenge is to build the routes required for the new large-capacity trunk transmission lines with a long-term view. The proposal suggests establishing a

mechanism that allows facilitating and coordinating the procedures needed to build the transmission infrastructure, through a more simplified system than the one which defines the current electric highway project. The purpose is to improve the feasibility of large-scale projects, whose development through regular proceedings is almost impracticable. This is absolutely necessary, among other things, to execute the NCRE atomized projects and different-sized hydroelectric centrals, including the exploitation of water resources in the southern region, which would not be feasible without more legal certainty, given by an improved proposal such as the one we have put forward.

Supply Biddings for Distribution Companies as of 2020

The supply biddings for regulated clients are of such relevance, that they could play a key role in reactivating base generation projects.[v] Therefore, the authors of the Report propose a design for these biddings that allows not just covering the non-hired demand, but also facilitating the investment on new capacity and encouraging competition.

Specifically, the proposal recommends that biddings consider energy blocks with different terms (15 years and 5-10 years), different dimensions (50 to 2,400 GWh per year), and include the option of indexing the offer at spot price for a limited period (up to 18 months) if, for reasons beyond their control, the central's operation is delayed. They also suggest designing a mechanism that regulates the way of covering the distribution supplies without a contract (thereby considering the provisional Article 3 of Law Nr 20,018[vi]), incorporating improvements to the supply demand projection and discouraging subcontracting by distribution companies.

One of the most remarkable points of this section of the Report is the proposal aiming at the incorporation of NCRE with intermittent or variable generation in the biddings, something that has been discussed during the current process. The authors discard the option of engaging monthly energy volumes without making a demand coverage commitment, since it would not allow supplying the requirements according to the consumption profile of regulated clients. Furthermore, if the bidding were awarded to intermittent energy bidders, the other generators would have to cover their imbalances between energy commitments and availability at an unknown price (spot price), which would lead them to penalize their offer above their efficient production cost. In this context, the report suggests to keep the current bidding system –since it allows comparing offers of the same product- but to advance eventually in an alternative scheme, where those who are interested may deliver offers according to predefined schedule blocks and 24-hour offers as well, according to the demand profile. In this

scenario, the distribution companies would have to find the offer combination that allows filling the demand curve, minimizing the aggregate cost of supply. This would enable the incorporation of the intermittent NCRE if, and only if, they actually improve the bidding's global results.

Conclusions

The study entrusted by the CPC to a group of renowned experts of different political sensibilities, is an important contribution to the country's electric power development. Recommendations deal with matters such as citizen participation, contributions to local communities, land planning, proceeding of administrative permits, expansion of the transmission system and supply biddings for distribution companies; all of them key factors to unblock the sector's investments, which are essential for Chile's social and economic development. Once more, the report reveals that a technical and cool-headed view allows reaching consensus for the benefits of the country. We hope that the proposed measures will be seriously considered by the next Administration, with the cooperation of the Legislative and the Judiciary.

In brief…

- Given the problems to carry forward the electric generation and transmission projects and the consequences they will have on the energy costs and the country's competitiveness, the CPC entrusted four experts of different political sensibilities to carry out the survey: "*Agenda para impulsar las inversiones en generación eléctrica de base*".
- This Report is a very important contribution, which proposes specific measures dealing with matters such as citizen participation, contributions to local communities, land planning, proceeding of administrative permits, expansion of the transmission system and supply biddings for distribution companies; all of them key factors to unblock the sector's investments.
- The evidence of a diagnosis and shared recommendations reveals that, with a cool-headed, informed view and strong leadership, it should be possible to reach the necessary consensus to solve the upcoming energy impasse.

[i] The Report is available in http://www.cpc.cl/wp-content/uploads/2013/10/Informe-definitivo-CPC-10-Oct-2013-1.pdf

[ii] Base centrals are essential for the continuous, safe and efficient operation of the electric power system, because they allow providing energy blocks in a constant manner and at a relatively low generation cost.

[iii] Some of the proposals made in the first Report of the CPC can be found in: "Energy: Time to See the Light". Public Issues Nr 1,121, Libertad & Desarrollo.

[iv] An onerous concession is a special right granted for the use and enjoyment of a public property, having a pre-established objective, for a specific term that shall not exceed 50 years, and an annually-paid rent. They can be awarded through public or private, national or international biddings and they can be used solely for the execution of a specific project. (TN)

[v] The energy to be covered as of 2020 amounts to a capacity equivalent to 6,000-7,000 MW.

[vi] It defines a payment based on the base price and gradual transfers to regulated clients of the differential regarding the marginal cost.