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Telecommunications Towers and Antennas: A Silent Guest?

Considering that shared towers are more invasive, and that there is no evidence of health damage caused by the proximity of antennas, the discussion should be reoriented towards a regulation which not only encourages the development of low impact infrastructure, emphasizing the use of smaller towers and mimicking of larger works, but also fosters an adequate participation and compensation of the citizens affected by facilities in their neighborhood.

The Senate is currently discussing, in the second constitutional proceeding, the bill regulating the installation of antennas' and towers' supports for telecommunications radiant systems, commonly known as "cell phone antennas". These systems include telephony, mobile broadband and broadcasting stations and, in the nearby future, probably digital TV systems.

The bill's proceeding has lasted three years and it has not been free from controversy, due to the multiplicity of elements at stake and the technical considerations which must be analyzed when defining standards. In this perspective, the bill seeks to reach the necessary compatibility between telecommunications development and the impact of installing support towers on the urban or rural environment.

The regulation shall be able to reconcile the community problem regarding the installation of antenna infrastructures – whose public opposition is increasingly stated – with the telecommunications market development in competitive conditions, so as to ensure the massive and equal access of the population to telephony and the Internet mainly. However, the long parliamentary discussion has brought a series of edges that delay the legislative proceeding. Its main features are presented and analyzed below.

The debate concerning the installation of antennas comprises contradictory interests on the citizen's side. On the one hand, the licensees and authorities are required to watch over and ensure the quality and coverage of telecommunications and the connectivity to the Internet. Likewise, the

response of the telecommunications systems during disaster situations has been relevant to the citizens. The government has taken care of it in the recent Law 20,478 on recovery and continuity of public telecommunications systems in critical and emergency conditions.

In order to fulfill these relevant demands, the licensees have to make investments for the construction of support infrastructure (towers) and the installation of telecommunications radiant systems (antennas). On the other hand, the authority is called to grant the necessary spectrum licenses for the telecommunications development, authorize the installation of infrastructure, and supervise the compliance with the regulations applied to this sector.

It is therefore essential for the country's development, and the desirable reduction of the digital divide, to rely on the necessary infrastructure and equipment which allow satisfying the increasing demand for telecommunications services. This will allow extending the benefits derived from connectivity and technological progresses to the entire population. Nevertheless, this benefit has consequences on the environment as a result of the propagation of towers and antennas in urban centers, a situation which has generated an increasing opposition from the communities who feel adversely affected by these facilities. In simple words, all Chileans want more connectivity, but nobody wishes to see towers and antennas near their homes.

Negative Externalities of the Installation of Towers and Antennas

As a consequence of the said contradiction, during the bill's proceeding, the core of the discussion has moved from a point centered on telecommunications, to an urbanistic one. This has derived in an increasing demand to include citizen participation in the decision of installing towers and antennas, by putting forward mainly two concern factors: (i) the urban impact of these facilities and the consequent reduction of the appraisal of real estates close to these constructions; and (ii) the population's apprehensions regarding possible health damages caused by the exposure to electromagnetic emissions.

i) Urban Impact: Discreet Technologies and Mitigations

The government and parliament members want to establish in the bill incentives for the provision of smaller antennas, thus simplifying the proceedings required for their installation. This seems a sensible measure, since these antennas mimetize adequately in the urban environment, preferring locations on the top of buildings of a specific height. This is a positive factor, since it allows reconciling connectivity needs with the

installation of infrastructure which produces low urban impact. Unlike these latter, higher towers would require a permit from the *Dirección de Obras Municipales* (Municipal Works Direction), in addition to a series of other requirements such as design measures minimizing their impact on the environment.

Consequently, the installation requirements in the current legislative analysis can be classified according to the importance of the support towers. Thus, antennas lower than 2 meters high could be installed prior notice to the Municipal Works Direction; the antennas between 2 and 12 meters shall present a simplified installation permit before the same organism; and, finally, towers over 12 meters shall require an installation permit from the Works Direction.

In either case, it is important to highlight that the possibility of installing antennas would remain open, without establishing access barriers to new actors. Likewise, it aims at the technological evolution and the maintenance of enough infrastructures to face natural disasters or other critical situations. Additionally, at this stage of the legislative discussion, a necessary and correct distinction is put forth according to the type of territory where the tower will be located, subjecting authorization in these areas to a differentiated system. Thus, in rural areas, where telephony and Internet connectivity have to be privileged, it is proposed to maintain the current installation notice without adding other requirements.

Community Participation

The discussion on the requirements imposed to install the necessary infrastructure also deals with community participation, which has been incorporated in different forms during the bill's proceeding. In the current indications' proposal, the aim has been to organize neighbors' demands through the Municipal Council, so that they do not obstruct the infrastructure installation with long discussions and impracticable solutions. This mechanism would also avoid direct money transfers to the neighbors, as a sign of transparency and certainty that the mitigation measures will actually benefit the neighborhoods or sectors in which this infrastructure is located, in equal conditions for all inhabitants. The mitigation measures shall be defined among those proposed by the interested party and the Municipal Council, who will collect the neighbors' proposals. Furthermore, a one-year term is put forth to perform the mitigation works agreed between the Municipality, the neighbors and the licensee.

This idea is an effective measure for compensating the damage perceived by the neighbors as a result of installing towers and antennas, which benefits all the people concerned and not only the person who decides to

rent his land. This would compensate the installation externalities, by turning it into a concrete benefit for the community.

The so-called colocalization has been another relevant factor of the discussion during the legislative proceeding. It consists basically in maximizing the use of support towers by imposing the telecommunications intermediate or public service licensees, the obligation to verify the existence of operating infrastructure from another licensee or authorized company in the surroundings of the required location, where it could be feasible to locate these antennas or radiant systems.

The colocalization has been proposed as the solution for the propagation of antenna towers, because, theoretically, it would need a smaller number of facilities if this obligation is not mandatory. However, the fact that towers suitable for colocalization are precisely the bigger ones has been rather overlooked; consequently, the same number of antennas or radiant systems would be installed in fewer towers, but these would have a greater diameter and height, so they would result more impressive in the environment.
Additionally, the obligation to share towers gives rise to a constitutional problem in relation to the ownership right of the licensees, which is aggravated by the possibility that this colocalization is applied retrospectively. With regard to the future, the infrastructure intermediate operator – incorporated by the Law 20,478 mentioned above – shall materialize the colocalization, since his specific business will be precisely the infrastructure rental to several companies, which will allow reducing the highest towers by sharing the facilities among different operators.

Another factor which is being discussed in the bill, due to the indications presented by the Executive, is the possibility to declare urban territories saturated by tower structure facilities supporting antennas and telecommunications transmission radiant systems. These areas are defined as the areas in which there is the intention of installing a new tower within a radius of 100 meters, measured from the vertical axis of any of the pre-existing towers, when there are more than two, and as long as they measure twelve meters high or more, without considering the mimetized towers. In this type of areas, the government proposes that future newcomers get installed in a colocalized manner, thus allowing them to present an “installation notice” only. If this is not possible, because the party concerned refuses to do it and presents technical reasons before the *Subsecretaría de Telecomunicaciones* (Subtel – Telecommunications Undersecretariat), the newcomers are allowed to get installed with a new mimetized structure or by compensating the affected community.

Anyhow, colocalization would be mandatory in certain cases, for example, for support towers higher than 30 meters and in restricted radioelectric propagation zones. Finally, in the cases where colocalization is admissible, the bill establishes that the petitioner shall assume all the investment costs

and expenditures derived from the colocalization, including the additional investment that may be required to support the new radiant systems.

Nevertheless, colocalization does not seem the best solution for the urbanistic issue, since it could generate incentives in the direction opposite to the one this bill is trying to solve, which is, the urbanistic and aesthetic impact of the support towers. In fact, these towers are greater and, therefore, more invasive. Instead, the solution should point at the obligation to mimetize towers and foster the use of smaller antennas with less visual impact.

ii) Impact on Health

A second factor causing the installation of support infrastructure for telecommunications radiant systems to be resisted by the community is the possibility that the antennas' radiation emission produces health damages.

The bill seeks to give guarantees to the community by establishing that facilities are to be sufficiently controlled so that they do not generate this kind of risks. This is particularly important inasmuch as the antenna park densification produces citizen apprehensions regarding a phenomenon like electromagnetic emissions. The national public debate on these emissions' possible danger for health is a result of mobile telephone networks' location, even though the power levels of other applications, which have not been a matter of controversy, are quite superior. Such is the case of television, broadcasting, safety, firemen or military stations.[i]

However, there are still no technical studies which demonstrate that there is any harm to the population's health as a result of living close to towers and antennas. The World Health Organization (WHO) acknowledges the researches carried out by the International Commission on Non-Ionizing Radiation Protection which point out that there are no actual data that allow fearing a possible risk to health derived from the telecommunications antenna emissions, if these comply with the criteria and ranges determined by the WHO. The Subtel established a more restrictive technical standard than the one existing in other countries of similar regulation.

Consequently, if the Telecommunications Undersecretariat authorizes to declare a specific geographic area as saturated by telecommunications radiant systems, and thereby forbids the towers' installation, it is important that this faculty is granted in accordance with objective and truthful criteria. Its purpose is to guarantee that the legal frame is clearly defined, and Article 19 number 21 of the Constitution, which ensures freedom to develop economic activities, is not infringed.

Conclusions

The discussion about the installation of towers and antennas has been long and complex, since it mingles technical, urbanistic, economic, free competition and health factors.

The controversy, however, could be substantially reduced by disseminating more information regarding both the aesthetic consequences of the proposed measures and the existing evidence concerning the impact of emissions on the population's health.

Considering that shared towers are more invasive, and that there is no evidence of health damage caused by the proximity of antennas, the discussion should be reoriented towards a regulation which: (i) encourages the development of low impact infrastructure, emphasizing the use of smaller towers and mimicking of larger works; and (ii) fosters an adequate participation and compensation of the citizens affected by facilities in their neighborhood.

In this way, it is highly probable that in the future we may fulfill the technological needs which the country and the inhabitants require, without causing greater damage to the environment in which we live.

[i] As an example, in the case of a base station for a mobile, cell or PCS antenna, power fluctuates between 100 and 1,000 watts; in the case of amplitude-modulated sound radiobroadcast, the usual power goes from 1,000 to 50,000 watts; in the case of frequency-modulated radiobroadcast, levels go from 1 to 10,000 watts; in the case of television broadcast in VHF – open television channels – broadcasting stations issue between 1.5 and 300 watts. Legislative Profile Nº 844 LyD.