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FACILITATION OF TRANSPORT AND TRADE IN LATIN AMERICA AND THE CARIBBEAN

Governance of infrastructure for sustainable development in Latin America and the Caribbean: an initial premise

Background

During its "Governance Week on Natural Resources and Infrastructure" (7-11 November, 2016), ECLAC launched a dialogue aimed at constructing a common vision for a new approach to infrastructure governance in order to support the Sustainable Development Goals and to make a sectoral contribution to the Forum of Latin American and Caribbean Countries on Sustainable Development, established as the regional mechanism for implementing and monitoring Agenda 2030.

In this context, this *FAL Bulletin* puts forward some of the basic elements relating to infrastructure governance in order to achieve a vision of infrastructure services geared to sustainable development and to identify the agents of change for its implementation in the region. In line with this objective, the paper contains four sections. The first provides a brief introduction to the issue of infrastructure conducive to sustainable development. The second offers a brief diagnosis of the current state of infrastructure services. The third section contains a proposal concerning the changes needed in public infrastructure policies, as well as the manner in which the State articulates its activities with the private sector and civil society, developing the theme of sector governance. The last two sections propose a roadmap for ECLAC in working with its member States on the transition to a new model of governance for infrastructure services in favour of development based on equality and sustainability and the 2030 Development Agenda.

I. Infrastructure in support of development based on equality and sustainability

In its most recent institutional document, "Horizons 2030: Equality at the centre of sustainable development", ECLAC, in line with Agenda 2030 and the Sustainable Development Goals, highlights the need to promote progressive

This *FAL Bulletin* presents an initial approach to the topic of infrastructure governance, which was the main theme of discussions during the Governance Week on Natural Resources and Infrastructure organized by ECLAC in Santiago, from 7 to 11 November, 2016.
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Natural Resources and Infrastructure Division, UNECLAC

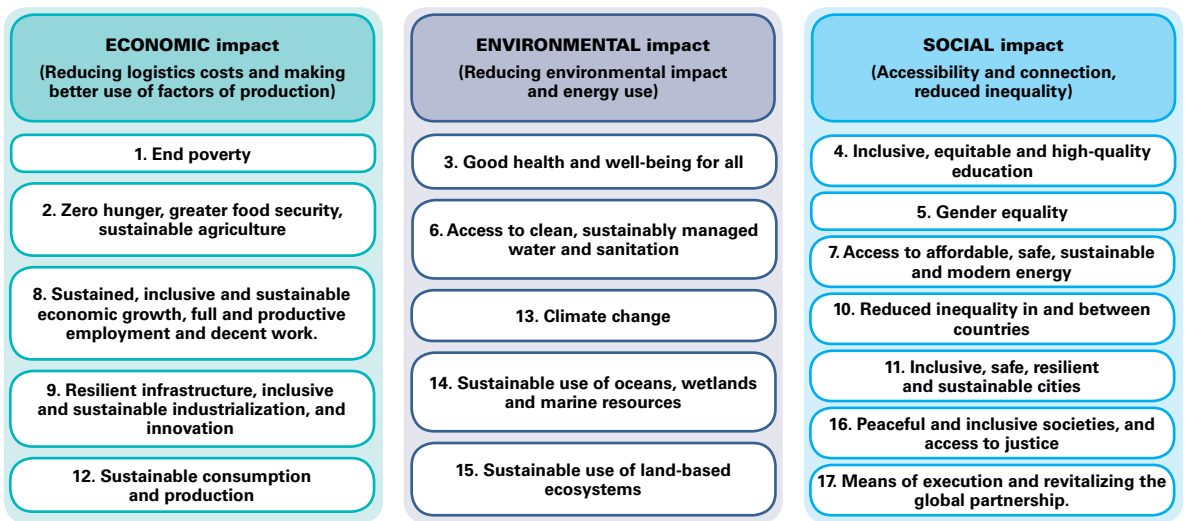
structural change that will enhance the incorporation of knowledge into production, guarantee social inclusion, and combat the negative effects of climate change. This is a process that involves institutional changes and the coordination of various policies for moving towards sustainability and equality in the region.

The transformation of infrastructure services[1] represents a condition sine qua non for the progressive structural change proposed by ECLAC. The insufficient, inefficient and unsustainable provision of these infrastructure services represents one of the factors behind the structural imbalances that characterize the region, such as an undiversified productive structure, lagging efforts and performance in terms of innovation, high concentrations of income and wealth, and vulnerability to climate change (ECLAC, 2016a).

The ways in which infrastructure availability and functions affect sustainable development are recognized in the 2030 Sustainable Development Agenda, and in particular in Sustainable Development Goal (SDG) 9, referring to the development of high-quality, reliable, sustainable and resilient infrastructure. SDGs 6, 7 and 11, for their part, make explicit reference to infrastructure, highlighting the need to "ensure access to water and sanitation for all", to "ensure access to affordable, reliable, sustainable and modern energy for all" and to "make cities inclusive, safe, resilient and sustainable". By the same token, global action programmes for the most vulnerable developing countries, such as the Vienna Programme of Action for Landlocked Developing Countries for the Decade 2014-2024, identify transportation, energy infrastructure and information and communication technologies as among the priorities for achieving sustainable and inclusive growth in landlocked developing countries, due to their impact on trading costs, competitiveness and integration into the world market, and on productive capacity.

Thanks to its economic, social and environmental impacts, infrastructure and the use of its services has a cross-cutting impact on the Sustainable Development Agenda (see diagram 1). At the same time, as discussed briefly in the following paragraphs, in no dimension of sustainable development can the positive impact of infrastructure be achieved automatically, or guaranteed solely by an increase in the quantity of infrastructure, much less by following the rule of "business as usual".

Diagram 1
Cross-cutting impact of infrastructure services in 2030 Agenda



Source: Adapted from Jaimurzina, Prez Salas and Sanchez, 2016.

When it comes to economic growth, infrastructure has a key role to play: it articulates the territory, it supports human settlement, and it lays the foundations on which the other factors of production interact. The network services of energy, transport, telecommunications and water and sanitation infrastructure constitute a central element for integration of the economic, social, and territorial system of a country, making possible transactions within a given geographic and economic space. The improvement of infrastructure and its services promotes productivity and, with it, economic development —and the lower its initial endowment the greater will be the impact of any improvement. Similarly, infrastructure reflects and

[1] Infrastructure is defined here as a set of engineering structures and installations, of long useful life, that constitute the basis for delivering the services deemed necessary for productive, geopolitical, social and individual purposes.

conditions the productive structure of a country or a region, and it may work for or, in many cases, against structural change. In Latin America and the Caribbean, a region that has based its development to a large extent on the export of natural resources, much of the economic infrastructure has been designed to facilitate such exports, without much heed to the opportunities for creating productive linkages and boosting value added. Structural change will not be achieved without an improvement and overhaul of transportation, energy, water and telecommunications infrastructure, making it more feasible and more profitable for the region to process its natural resources into intermediate or final goods in the future. Similarly, a greater degree of productive specialization and the development of competitive advantages on regional and global markets will require the integration of physical infrastructure that provides the connectivity and accessibility needed to move goods and services within the required quantity, quality, safety and time benchmarks.

From the social viewpoint, infrastructure can for example enhance access for the poorest people to education and health services, facilitate the supply of drinking water and energy, or protect public health by offering greater defences against natural disasters. Moreover, it can have the indirect effects of boosting agricultural productivity, reducing transportation costs, fostering integration into global markets, and creating jobs. However, the relationship between infrastructure endowment and poverty reduction is not straight-forward. If infrastructure is not specifically designed to pursue objectives of sustainable and inclusive development in an orderly and systematic manner, it may not result in economic and social progress, and may even be regressive. There is a very complex set of variables and factors to be considered for ensuring that infrastructure development will contribute effectively to improving the well-being of the underprivileged.

Lastly, the same reservation applies to the link between infrastructure and environmental protection. Infrastructure has a profound effect on the consumption patterns of its users: the choices as to which infrastructure facilities will be built, and the manner in which they are designed, will have a significant effect on energy consumption as well as emissions levels. For example, according priority to highway construction will favour the use of private automobiles fuelled by hydrocarbons, over the use of public transit systems, implying an enormous future demand for fossil fuels for this type of individual transportation, and hence continued growth in emissions of polluting gases. In this respect, infrastructure development that encourages the use of more environmentally-friendly modes of transport is an element that will smooth the way to an economy with lower greenhouse gas emissions. Similarly, the expansion of urban drinking water and sewage services, without a concomitant investment in wastewater treatment plants, can cause serious problems of water pollution, with negative impacts on public health and on agricultural exports.

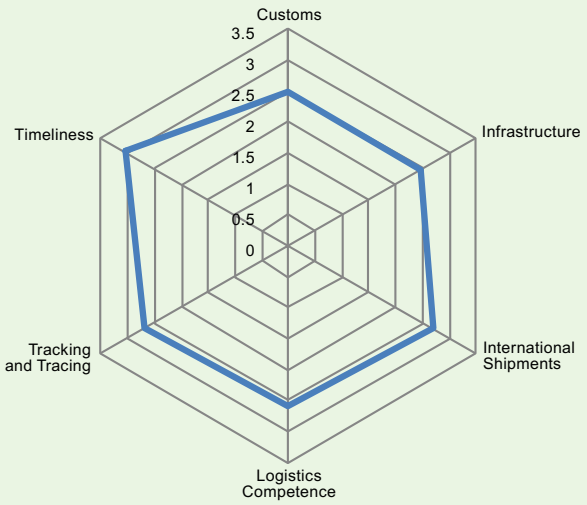
In this regard, it is a matter of great concern that, as shown in the following section, infrastructure development in the Latin American region at this time is failing to maximize support for sustainable development in any of its substantive dimensions. Thus, beyond recognizing the link between infrastructure services and development, it is essential to understand that what the region needs is a greater and better endowment of infrastructure that is specifically designed and adapted to sustainable development purposes. To achieve this transformation, there must be a profound change in the design, financing, implementation and use of infrastructure in the region, and this implies a change in the sector's governance, i.e. in all the processes involved both in taking infrastructure decisions and in implementing those decisions, in which the mechanisms, procedures and rules established formally and informally by institutions all play a role.

II. Infrastructure development in Latin America and the Caribbean: a traditional challenge of regional dimensions

The Latin American and Caribbean region is known to have inadequate infrastructure, although the situation is not uniform across countries. As noted in one of the recent editions of the ECLAC publication *Economic Survey of Latin America and the Caribbean*, the lag is especially obvious when the region is compared, not only with developed countries, but also with certain developing countries that in the 1980s had the same level of infrastructure endowment as Latin America (ECLAC, 2015). Moreover, applying to infrastructure the criteria of quality, reliability, sustainability and resilience, and not only availability, the current situation of Latin American countries appears even more alarming, highlighting the profound need for significant efforts in terms of investment and other improvements in the sector.

In the transport and logistics sector, the scarcity of infrastructure shows up in various global indicators of logistics performance, such as the World Bank's Logistics Performance Index, which identifies infrastructure as one of the region's weakest points, according to perception surveys of its principal economic partners. See figure 1.

Figure 1
Latin America and the Caribbean: Components of the Logistics Performance Index, 2016

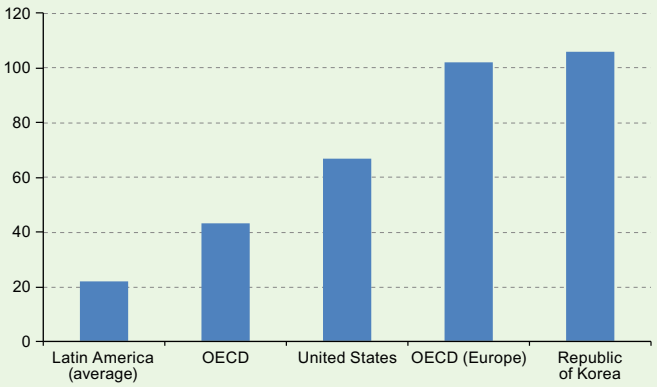


Source: Infrastructure Services Unit of the Economic Commission for Latin America and the Caribbean (ISU/ECLAC), with data from *Connecting to Compete*, World Bank, 2016.

Together with these perception indicators, traditional indicators in the area of transport infrastructure, such as the road density index, demonstrate how the region is lagging behind. For example, with an average of 22 km of road for every 100 km² of land area in 2014 (figure 2), Latin America betrays a very significant gap in comparison with the United States (67 km, the Republic of Korea (106 km) or the average for the European members of OECD (102 km).

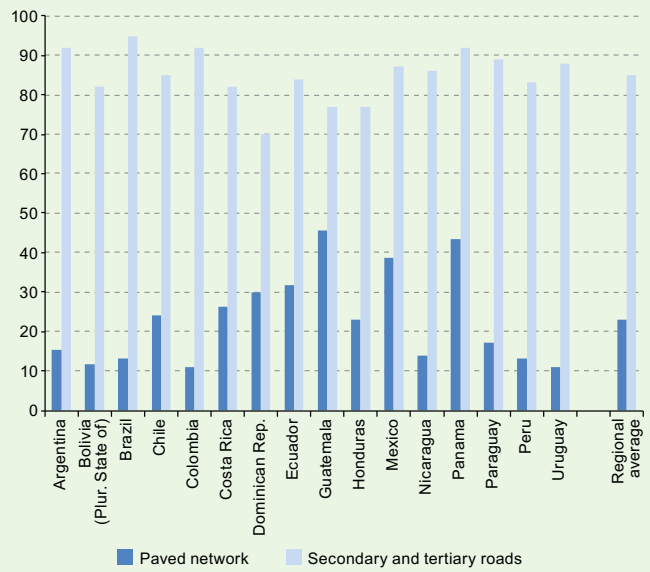
In addition, the paved proportion of the region's road network is low, particularly in its secondary and tertiary segments, which represent up to 90% of the total network. According to data compiled by ECLAC on the basis of national sources, in most countries of the region less than 25% of the total network is paid, on average, despite the priority given to road infrastructure in national and regional investment projects.

Figure 2
Total road network density, 2014
(Kilometres per 100 km²)



Source: ISU/ECLAC, on the basis of national source data (2012-2014 and Organization for Economic Cooperation and Development (OECD).
Note: the average for Latin America includes Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay.

Figure 3
Paved network and secondary and tertiary network as a proportion of the total road network, 2014
(Percentages)



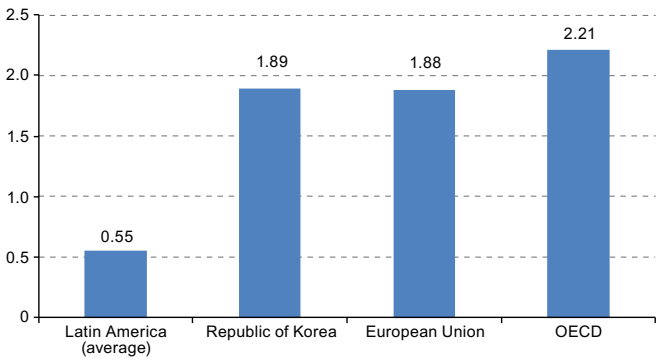
Source: ISU/ECLAC, on the basis of national source data (2012-2014).
Note: The average covers only the countries included in the graph.

The shortage of transport infrastructure is even more visible in the rail transport subsector. In fact, the best values for rail network density recorded for countries of the region, such as those of Argentina, Brazil or Mexico, are still far from comparable with the rail density of the United States and European countries (ECLAC, 2015). The same pattern prevails with river transport, although Latin America has one of the most important river basin systems in the world (Wilmsmeier, 2013).

Infrastructure shortage can also be seen in other economic infrastructure services.

In the energy sector, according to OLADE data, the region's installed electric generating capacity showed average annual growth of 4.1% between 1980 and 2012, rising over those years from 86 GW to 310 GW. That increase in installed capacity still falls short of the population growth rate and the new demand for energy in countries of the region and, in relative terms, is far below that recorded for European or Asian countries. Moreover, there are segments of the population (generally poor and rural), amounting to some 28 million persons, who still have no access to energy. All countries of the region witnessed an increase in electricity coverage between 1990 and 2010, but only a few (Brazil, Chile, Costa Rica, Mexico, Uruguay and the Bolivarian Republic of Venezuela) have nearly full coverage, while the remainder still face serious challenges. See figure 4.

Figure 4
Installed capacity for producing electric power, 2012
(Megawatts)



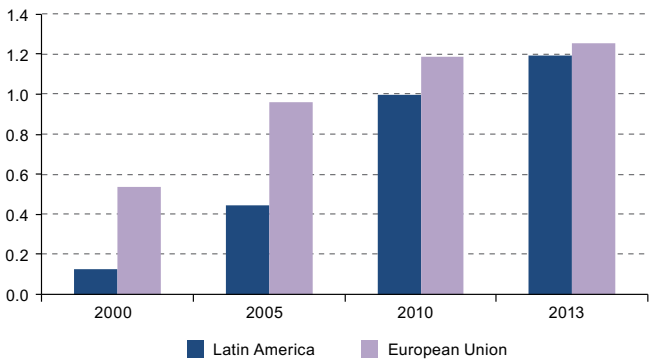
Source: ISU/ECLAC, on the basis of data from the Latin American Energy Organization (OLADE), United States Energy Information Administration, and World Bank.

In environmental terms, the increase in electric power generation capacity noted above has been covered essentially through an expansion of thermoelectric (fuel oil, coal and, more recently, natural gas) and nuclear capacity, which implies that the region continues to depend heavily on fossil fuels (ECLAC, 2015).

When it comes to telecommunications, Internet access, measured by fixed broadband subscriptions per 1,000 inhabitants, was the fastest-growing subsector between 2000 and 2013, with an average annual rate of 56.2% (or 25.2% for 2005-2013, recognizing that mass use of the Internet began to increase only in 2000), reaching 94 subscriptions for every 1,000 inhabitants in 2013. According to ITU data, the rate of growth of this technology in the region exceeded that in the European Union, but there is still a major coverage gap vis-à-vis those countries (294 subscriptions for every 1,000 inhabitants).

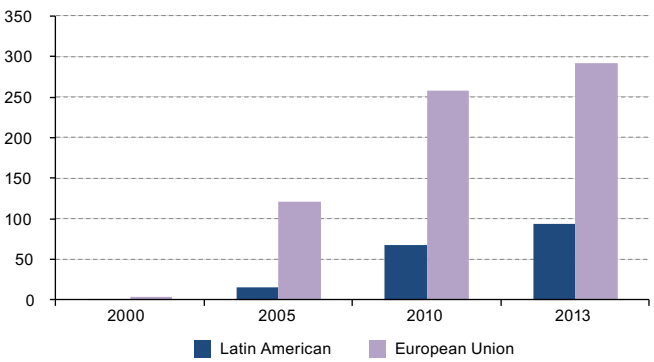
The performance of mobile telephony was similar to that for Internet access, although it expanded somewhat more slowly. Measured by the number of subscriptions per 1,000 inhabitants, mobile telephony rose by 18.9% in the region between 2000 and 2013 (or by 13.1% from 2005 to 2013), and in 2013 it overtook the European Union, with 1,190 subscriptions for every 1,000 inhabitants. See figures 5 and 6.

Figure 5
Mobile telephony subscriptions
(Per 1,000 inhabitants)



Source: ISU/ECLAC, on the basis of ITU data.

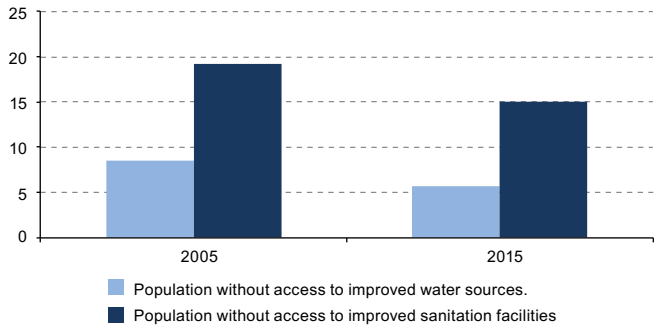
Figure 6
Fixed broadband subscriptions
(Per 1,000 inhabitants)



Source: ISU/ECLAC, on the basis of ITU data.

Lastly, with respect to drinking water and sanitation services, despite the region's significant progress over the last decade, it still lags behind in the coverage of improved services: nearly 6% of the total population of Latin America and the Caribbean lacks access to improved water sources, and 15% has no access to improved sanitation facilities (see figure 7). According to data from the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, in 2015 there were still 33 million people in the region without access to improved drinking water sources, and 106 million people without access to improved sanitation facilities.

Figure 7
Latin America and the Caribbean: population without access to improved water and sanitation sources
(Percentages)



Source: ISU/ECLAC, on the basis of data from WHO/UNICEF 2016.

Access to these services remains, in many cases, insecure and of poor quality: intermittent water services (available a few hours a day or a few days a week), with no effective quality control over the water delivered to households, sanitation by means of latrines with low levels of access to sanitary sewers, inadequate level (20%-30%) of treatment of wastewater collected in sewage networks, high level (around 40%) of losses (unmetred water), and persistent overstaffing in utility entities. Moreover, there are still concerns over the great and persistent discrepancies in the situation between urban and rural areas: 61% of people without access to improved water sources in the region (21 million people) live in rural areas (WHO/UNICEF, 2015).

In summary, the shortage of economic infrastructure endowment remains one of the main features of the region, affecting directly and indirectly its capacity to maximize the positive impact of infrastructure on the road to sustainable development. Public infrastructure policies have a direct role to play in improving the infrastructure endowment but, as discussed in the following section, until now those policies have not been able to achieve the required progress: a profound change is needed, then, in the way these policies are designed, implemented and assessed.

III. Improving infrastructure in Latin America and the Caribbean: another governance issue for the region

The ECLAC assessment with respect to the current situation of infrastructure services in the region highlights two major shortcomings in public infrastructure policies that explain, in large part, the persistent shortage and poor quality of infrastructure services. First, the region is not investing enough to satisfy the needs arising from its growth over the medium and longer term. Second, the shortage of investment is compounded by the scattered and haphazard nature of public actions and approaches to infrastructure and its services, resulting in an inefficient supply of services and a lack of adequate infrastructure.

A. Low levels of investment in infrastructure

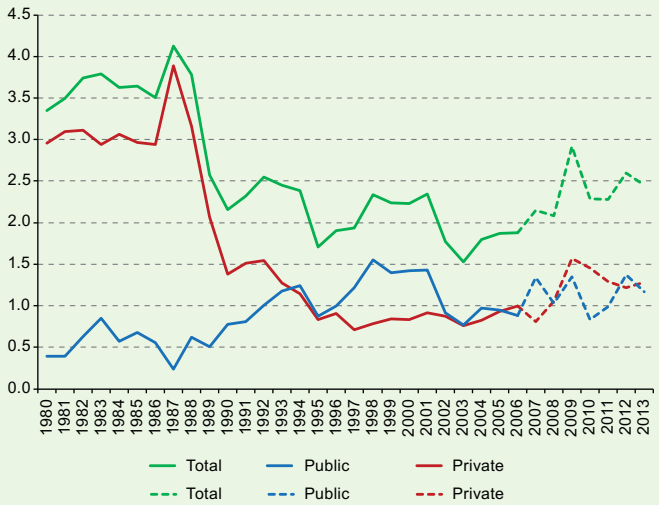
In 2011, an ECLAC study examined the various dimensions of the infrastructure gap in Latin America and the Caribbean, concluding that the region would have to commit to an annual average investment in the order of 6.2% of GDP in order to meet the infrastructure needs of businesses and final consumers during the period 2012-2020. Yet the average investment has been barely one-third of that figure (Perrotti and Sanchez, 2011). Work now under way to update that study suggests that investment needs will remain at nearly the same level for the period 2016-2030, amounting to between 5.4 and 8.6% of GDP, depending on the projected pace of economic growth. It should be noted that this calculation presupposes maintenance of the investment pattern for the period analysed, i.e. continuing with the "business as usual" investment decisions with respect to technological alternatives for transportation and energy, among others. For this reason, the value is bound to change if, as ECLAC proposes, infrastructure investment decisions shift towards a more sustainable and inclusive pattern.

The latest measures of infrastructure investment in Latin America[2], from the 1990s through 2013, show that such investments have been low (at 2.2% of GDP) in relation to the values recommended by ECLAC, and in comparison with what is being invested in other economies such as China (8.5%), Japan (5%) and India (4.7%).

At the same time, in recent years (2008-2013), on average, eight countries (Colombia, Costa Rica, Honduras, Nicaragua, Panama, Paraguay, Peru, and Plurinational State of Bolivia,) made investments above the regional average (3.6%) observed in the 1980s. During that time, average public investment in six countries (Colombia, Costa Rica, Nicaragua, Panama, Paraguay and Plurinational State of Bolivia,) exceeded the regional average of 3.0% in the 1980s. Over the same period, private investment exceeded the 1990s regional average of 1.2%, again in six countries (Brazil, Chile, Honduras, Nicaragua, Panama and Peru). Meanwhile, in a greater number of countries the rate of private to public participation remains low. Taking the average rate of private to public participation during 2008-2013, countries can be classified into four groups: those where this ratio exceeds 100% (Brazil and Honduras), those where it is between 75% and 100% (Chile, Guatemala and Nicaragua), those where it is between 50% and 75% (El Salvador, Mexico, Panama and Peru), and those where it is 50% or less (Argentina, Plurinational State of Bolivia, Colombia, Costa Rica, Paraguay and Uruguay).

[2] For a more detailed analysis, see Lardé, 2016.

Figure 8
Latin America: infrastructure investment by sector, 1980-2013
(Percentages of GDP)



Source: ECLAC, on the basis of ECLAC and INFRALATAM; Calderón, César and Luis Servén (1980-2006); World Bank (2010).

In light of the scope of the existing infrastructure gaps, a review of the investment plans of Latin American countries such as Brazil, Costa Rica, Mexico and Peru shows that this is increasingly a strategic and priority topic for countries. Programmed investments are higher then those executed in previous periods, as are long-term projections (to 2018 in the case of Mexico, to 2021 in Peru, and to 2030 in Brazil). Despite the increased importance of infrastructure in national plans, the amounts remain low in comparison with those considered by ECLAC and other international agencies (Lardé, 2016).

The challenge of infrastructure investment is rising in the region's current context, where the economic cycle is in its least dynamic phase, marked by weaker external demand, a downward trend in natural resource prices, financial market volatility, and slowing domestic demand, with lower levels of investment and consumption (ECLAC, 2016b). Historic trends in the region show that investment contractions in the downward phase of the cycle are more lasting and much more intense than the decline in GDP. According to data for the period 1990-2014, investment contraction averaged 30% more than that of GDP at the regional level. The scale of the investment contraction is on average four times greater than that of GDP. On the other hand, the duration of the expansionary phase of investment is shorter than that for GDP and, on average, its amplitude exceeds that of GDP by only 60% (ECLAC, 2015). More recent studies focusing on the relationship between public savings and total investment in infrastructure have confirmed that the increase in infrastructure investment at times of rising public savings is less than the decline in economic infrastructure investment when public savings are shrinking (Serebrisky, Tomás and others, 2015).

In this context, it is essential to evaluate all the alternatives and combinations of financing sources and instruments, and to recognize that mobilizing financial resources for infrastructure development has a potentially decisive impact on regional physical integration, which presents advantages in this area, with outcomes greater than those that would be achieved at the domestic level, in particular those linked to reducing the economic infrastructure gap and cutting logistics costs.

The integration of economic infrastructure (transportation, energy and telecommunications) to provide subregional services would represent an alternative, lower-cost solution for reducing the gap, by taking advantage of economies of networking and of scale. This will require specialization and prioritization of infrastructure works intended to provide subregional services, in order to:

- Avoid the multiplicity of infrastructure undertakings that lack regional synergies and to focus investment on "missing links" that are one of the factors underlying the high logistics costs that the region now presents.
- Promote greater connectivity and reduce existing asymmetries between territories, allowing the same level of service in terms of coverage, quality, reliability, sustainability and resilience, with less investment and lower operating costs, thereby freeing up public resources for social spending or for other sectors of the national economy.

Consistent with these considerations, the integration of infrastructure constitutes a key theme for promoting growth and achieving greater levels of development in the region. Moreover, having the region function as an integrated space via an economic infrastructure that provides high-quality services is crucial not only for maintaining and enhancing competitiveness but also for reducing the costs of imported consumer products.

The various processes of regional integration are based on the quest for improvements that will boost economic complementarity, expand local markets, and improve international negotiating leverage, with the objective of gaining greater benefits than those that could be achieved individually (ECLAC, 2011). While economic and trade integration as well as political integration are perhaps the most widespread aspects of integration, the physical integration of infrastructure deserves special regional attention as the basis on which all the rest of integration architecture must rely. This is truly a "silent integration" that is maintained over time and, in general, is more immune to the political vagaries that can capture

political and economic integration (ECLAC, 2011). This makes it possible, in all clarity, to expand the economic vision of integration to cover all the remaining aspects, such as social, cultural and productive integration. The participation of local governments as well as the private sector in these processes means that, once the connection is achieved, the installed works can be used to broaden markets, promote tourism and increase intraregional trade among subregions that formerly engaged in little or no trade among themselves, for lack of high-quality, reliable, sustainable and resilient connectivity.

But together with the challenges of mobilizing financial resources and seizing the potential of regional integration, it is essential to face some of the fundamental shortcomings in infrastructure and logistic policies that prevent the infrastructure investments made by countries of the region from contributing to greater availability and quality of infrastructure.

B. The shortcomings and obsolescence of the region's infrastructure policies

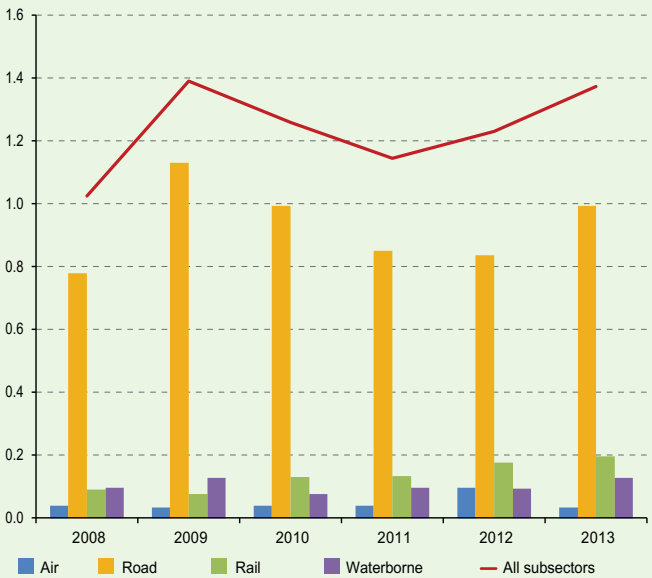
The fundamental flaws in public policies as they relate to the development of infrastructure in Latin America and Caribbean countries merit the same level of concern as the failure to mobilize financial resources for infrastructure development.

In its activities and collaboration with countries over the last decade ((Jaimurzina, Pérez Salas and Sánchez, 2015; Cipoletta Tomassian, Pérez Salas and Sánchez, 2010) ECLAC has revealed the pressing situation that prevails in the majority of Latin American and Caribbean countries with respect to the failings of public policies as they relate to infrastructure development:

- Lack of sustainability criteria in infrastructure service policies, which has a direct impact on the region's capacity to implement the big environmental push

logistics and mobility in the region. As shown in figure 9, investment in other types of infrastructure beyond road transport, in most countries of the region, did not exceed 25% of total investment in transport infrastructure during the period 2008-2013.

Figure 9
Distribution of infrastructure investment in the transport sector
(Percentages of GDP)



Source: ISU/ECLAC, on the basis of INFRALATAM data.
Note: The data include both the public and the private sector. The countries included are Bolivia (Plurinational State of), Brazil, Chile, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay.

As to the dispersal and multiplicity of public actions and decisions and the various regulatory and institutional failings, technical assistance activities conducted by ECLAC on the quality of current infrastructure and transport policies in the region (Jaimurzina, Pérez Salas and Sánchez