



BULLETIN

FACILITATION OF TRANSPORT AND TRADE IN LATIN AMERICA AND THE CARIBBEAN

# Latin America's infrastructure investment situation and challenges

## Background

At a time of slowing economic momentum and heavy headwinds in Latin America and the Caribbean, achieving "sustainable economic growth with equality" is even more challenging. Indeed, infrastructure and its sustainability and expansion over time have become a central focus as the recovery and continuity of a virtuous cycle of growth depend in large part on this very same infrastructure.<sup>1</sup>

The United Nations *2030 Agenda for Sustainable Development* adopted in 2015 proposes universal Sustainable Development Goals (SDGs) to be achieved by 2030.<sup>2</sup> The Agenda outlines medium- and long-term goals and targets with a comprehensive development approach that emphasizes the importance of long-term investment plans or road maps that help address the current infrastructure gaps by making use of the advantages of each country in the region, while preparing them for future challenges and opportunities.

The relevance of infrastructure in the 17 SDGs is both direct and indirect, which illustrates its cross-cutting role in sustainable development. Goal 9 specifically mentions quality, reliable, sustainable and resilient infrastructure. Similarly, Goals 6, 7 and 11 are tied to different types of infrastructure, referring to the need to: "ensure availability and sustainable management of water and sanitation for all", "ensure access to affordable, reliable, sustainable and modern energy for all" and "make cities and human settlements inclusive, safe, resilient and sustainable", respectively.

Including infrastructure in the SDGs implies that public policies will play a larger role in securing more of the top-quality investment required to improve the quality of life in the region.

This bulletin aims to describe the situation of public and private investment in Latin America's economic infrastructure in recent years (2008-2013), explain some of the challenges and briefly discuss the implications of investment patterns over this period.

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This issue of the *FAL Bulletin* also includes the valuable contributions of ECLAC staff members Ricardo J. Sánchez, Azhar Jaimurzina and Pablo Chauvet. Nevertheless, the views expressed in this document are those of the author and do not necessarily reflect the views of the Organization.



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UNITED NATIONS

ECLAC

<sup>1</sup> This *FAL Bulletin* uses the definition of sustainable development put forward by the United Nations in the 1987 report "Our Common Future" or "Brundtland Report", where it is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

<sup>2</sup> See <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>.

The path to a better understanding of investment trends is laden with obstacles, starting with the fact that not all countries' information systems have disaggregated infrastructure investment data. The Natural Resources and Infrastructure Division of ECLAC has undertaken various initiatives to measure infrastructure investment, first independently, guided by the work of César Calderón and Luis Servén (2010) which provided the first infrastructure investment database in Latin America, covering six countries in the region from 1980 to 2006, and currently the series whose data reach the furthest back in time.

As of 2012, ECLAC began receiving the support of the Development Bank of Latin America (CAF). In 2014, the Inter-American Development Bank (IDB) joined the initiative, with the shared goal of achieving coverage of every country in the region. These three institutions agreed on a programme of work covering an increasing number of countries in Latin America and the Caribbean, 15 at present (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Plurinational State of Bolivia and Uruguay) with data from 2008 until 2013. The initiative's advances and outcomes are explained on the INFRALATAM website (<http://infralatam.info/>). The data form part of an initiative to continuously measure, update and improve economic infrastructure investment in Latin America and the Caribbean.

This bulletin aims to describe public and private investment in Latin America's economic infrastructure in recent years (2008-2013), explain some of the challenges and briefly discuss the implications of investment patterns over this period.

To this end, it has been divided into six sections, besides the introduction. Section I explores the impact of infrastructure investments on economic activity. Section II describes the major trends in economic infrastructure investment in some of the largest Latin American economies from 1980 to 2013, differentiating between public and private investment, as well as between investment in different sectors (transport, energy, telecommunications, water and sanitation). On the basis of INFRALATAM data, sections III, IV and V present investment trends by country from 2008 to 2013, describing: public and private sector investment; investments in the six infrastructure sectors covered by INFRALATAM; and, as a special case, the main transport subsectors, including a preliminary portfolio of transport projects earmarked for the next two years. Finally, conclusions and comments on the region's infrastructure situation are presented in section VI.

These themes are one line of work the Infrastructure Services Unit of the Natural Resources and Infrastructure

Division of ECLAC has undertaken since the middle of the last decade, first as an initiative to compile and record infrastructure investment data in a few countries, then as part of a theoretical discussion on development problems (Rozas and Sánchez, 2004), and later as a part of the analysis of obstacles to development arising from infrastructure gaps in the main countries of the region (Rozas, 2010; Perrotti and Sánchez, 2011; Rozas, Bonifaz and Guerra-García, 2012; Lardé and Sánchez, 2014; Lardé, Marconi and Oleas, 2014).

The infrastructure investment data presented in this bulletin are drawn from two different sources: from 1980 until 2006, they are from César Calderón and Luis Servén (2010), while the public investment series covering 2007 to 2013 comes from ECLAC and the IDB/CAF/ECLAC initiative. Consequently, the data series from the two periods are not necessarily consistent in time. Additionally, the aggregate of public and private investment data for the 2007-2013 period is presented as an approximation for illustrative purposes only. A cautious approach to the material is advised, since the two types of investment are recorded according to different criteria: public investment is measured on the basis of public finances, while private investment corresponds to investment commitments and is measured at the financial close of each project. Furthermore, the investment data from the different countries are not necessarily comparable, as the same recording criteria are not always applied.

In addition, the 2008-2013 period covered by the INFRALATAM data is a very short time frame to draw conclusions on longer-term trends and behaviours, and on top of that, the 2008 global financial crisis makes it difficult to use this year as a reliable basis; therefore, the outcomes presented in this issue must be interpreted with due precaution.

Despite these limitations, this type of exercise has made it possible to put together preliminary figures that represent the best solution thus far to the challenge of limited resources. The endless obstacles that emerged during this process are evidence of the need for a continuous effort to update figures and improve how they have been handled up to this point.

## I. Infrastructure investment and economic activity

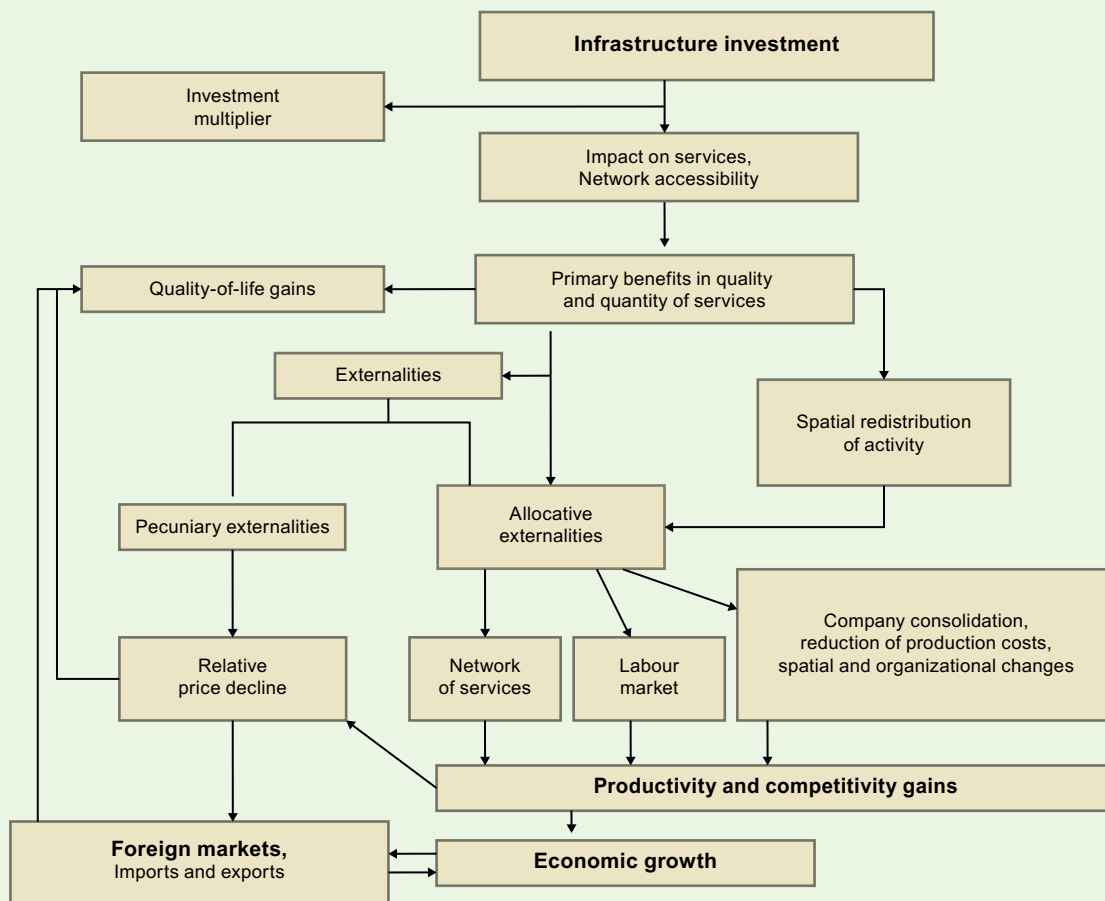
This document (along with the INFRALATAM website) focuses on six infrastructure sectors: transport, comprising roads, railways, inland waterways, ports and airports; energy, comprising electricity generation, transmission and distribution, and the transmission and distribution of natural gas; telecommunications, with its respective

services of fixed, mobile and satellite telephony, in addition to internet connectivity; safe drinking water, sanitation and sewerage treatment; agricultural irrigation projects; and flood prevention.

Greater coverage with better infrastructure projects impacts different areas of the economy and society on multiple levels. First, infrastructure is an essential factor in the production process, making it possible to transport and connect a large quantity of people, goods, services and information or know-how; hence,

having suitable infrastructure in place is fundamental if the production apparatus and the economic system are to operate efficiently. Second, infrastructure projects impact people's quality of life by providing greater and improved access to social and public services such as health and education. Third, infrastructure increases well-being, insofar as it allows people to integrate into society in different ways, through daily relationships and interactions that lay the foundations for social networks (those that enable the construction of social capital) (see diagram 1).

**Diagram 1**  
**THE BENEFITS OF INFRASTRUCTURE INVESTMENT AND GROWTH**



Source: Rozas, Patricio and Ricardo Sánchez (2004).

Greater infrastructure access, along with other public policies, would make it possible to begin bridging the gaps (inequality, poverty, productivity, innovation, education, health, gender and environmental, among others) that have historically limited countries' development, by reducing the enormous heterogeneity among and within the countries of Latin America and the Caribbean.

Generally speaking, Latin American countries suffer from a significant scarcity of infrastructure, although this situation is not the case in every country. The lag is particularly striking compared with both developed and developing countries that had the same level of infrastructure provision as Latin America in the 1980s. Moreover, in terms of infrastructure quality and not



just availability, the current situation of Latin American countries raises even more concerns, highlighting the pressing need for significant efforts to boost investment in the sector.<sup>3</sup>

The persistence of gaps in infrastructure and other fields in Latin America and the Caribbean obstructs the path towards “development based on equality and sustainability”, a goal ECLAC has stated in various institutional documents.<sup>4</sup> Infrastructure gap estimates by Perrotti and Sánchez<sup>5</sup> in 2011 indicated that average annual spending accounting for nearly 6.2% of gross domestic product (GDP) was needed in the region for sufficient infrastructure investment flows to meet the needs of companies and end consumers between 2012 and 2020. This calculation is an aggregated approximation that would clearly be different for each country after taking into account their specific characteristics. It also assumes that in the future the same pattern seen up until now will be repeated without considering conditions of better-quality, more comprehensive, efficient and sustainable investment.

Infrastructure projects boost economic growth during the construction and operation phases as well as over the longer term. During the construction phase, infrastructure investment directly increases hiring of labour and stimulates demand for supplies and services, instantly raising economic value added. Operational infrastructure directly supports the sectors in which it is used, but may also have multiple impacts on the rest of economic activity by enhancing efficiency, productivity and competition, stimulating growth in the process.

In the long term, infrastructure investment will promote sustained, inclusive and sustainable economic growth<sup>6</sup>

as long as this investment is aligned with the country’s development goals, which could be the same ones contained in the Sustainable Development Goals. It is therefore necessary to prepare a long-term infrastructure plan, aligned with national objectives and based on the country’s outlook, citizen participation, multi-scale coordination and transparency; in other words, this long-term plan must be the result of public policy that is in keeping with these principles and the national development model<sup>7</sup>.

Nevertheless, there are some infrastructure investments that, beyond the initial stimulus, may fail to spur medium- and long-term growth or lead to improved social benefits. Such is the case of infrastructure projects that are poorly designed in the engineering phase, poorly planned, or cancelled at some point in the process due to a lack of funding.

As with every human activity, building and operating infrastructure may have positive or negative impacts on the environment, making it necessary to design infrastructure models that are as sustainable as possible, given the available resources.

Public infrastructure policy is a constant challenge. Once a certain level of infrastructure is reached, new infrastructure must be built or the existing infrastructure must be expanded or improved; periodic maintenance must be performed on the extensive networks (of transport, energy, telecommunications, water and sanitation, irrigation and flood prevention) and solutions must be provided for the problems of citizen and business coverage through affordable and good-quality services, with a sustained vision of the entire network. A balance must also be struck among the different infrastructures (considering how they function, complement each other and may be replaced), while taking into account environmental concerns. This approach must link and integrate sectors and territories (including local and cross-border infrastructure).

Several authors have pointed out the permanence of the challenge of building and maintaining infrastructure, which is evident in every country at different stages of development. For example, the Organization for Economic Cooperation and Development (OECD) report “*Infrastructure to 2030*” explains how these needs exist

<sup>3</sup> More background on infrastructure gaps in the region can be found in chapter IV of ECLAC (2015), *Economic Survey of Latin America and the Caribbean, 2015* (LC/G.2645-P), United Nations publication, Santiago

<sup>4</sup> See various ECLAC session documents, for example, ECLAC (2016), *Horizons 2030: Equality at the centre of sustainable development* (LC/G.2660/SES.36/3), United Nations publication, Santiago, May.

<sup>5</sup> On the basis of Perrotti, Daniel E. and Ricardo J. Sánchez (2011).

<sup>6</sup> Goal eight of the 2030 Agenda for Sustainable Development.

<sup>7</sup> “Prospective analysis makes it possible to anticipate scenarios for drafting medium- and long-term policies, while participative planning contributes to the development of democratic and inclusive processes in the design, elaboration, implementation, follow-up and assessment of public policies... Multi-scale coordination promotes vertical linkages, among different levels of government, and horizontal linkages, among ministries, to ensure the mainstreaming of multisectoral goals through different government agencies responsible for their implementation or follow-up. Finally, this process must be guided by transparency, with open governments that are accountable and answer to their citizens”. (Jorge Mattar in <http://www.cepal.org/noticias/la-planificacion-ofrece-herramientas-clave-implementar-la-agenda-2030>).



in every country, such as the major advanced economies (G7 countries and other industrialized nations), the “big five” economies and the developing countries of Latin America and the Caribbean, Africa, Asia, Europe and the Pacific.

## II. Infrastructure investment from 1980 to 2013

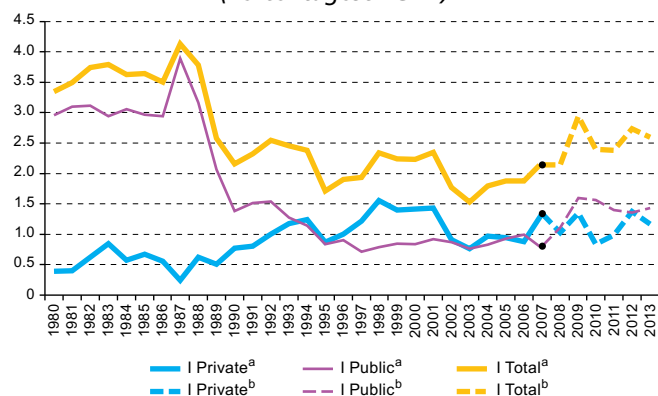
From the end of the nineteenth century until the debt crises of the 1980s, the governments of the region actively intervened to consolidate territory and promote the long-term development of their respective economies. Among other measures, interventionist policies focused on infrastructure development and the protection of export sectors (Pérez Caldentey, 2016). Indeed, during the 1980s there were high levels of infrastructure investment in assets whose main purpose was to make the exporting sector more competitive (see Sánchez and Pinto, 2015).

The rate of infrastructure investment in the region peaked in the 1980s, when the sum of public and private investment reached its highest levels (3.6% of GDP on average and a peak of 4.1% of GDP) before falling to 2.2% (1990-2001), where it remained during the 2002-2013 period. See figure 1, which lists different historical aspects of infrastructure investment in Latin America from 1980 until 2013. Nevertheless, the highest investment rates in Latin America in the 1980s are low compared with other economies such as China (8.5%), Japan (5%) and India (4.7%), according to data on the 1992-2011 period compiled by McKinsey Global Institute (2013).

In the 1980s, with a 3.0% share of GDP in total infrastructure financing, public investment began to wane owing to fiscal restrictions and debt servicing, with the government adopting a more passive role than it had assumed until that point. Consequently, public investment in the 1990s, as a proportion of total financing, fell to 1.1% of GDP.

Meanwhile, private investment took on a more active role, increasing from 0.5% of GDP in the 1980s to 1.2% of GDP in the 1990s. Nevertheless, this increase did not offset the fall in public investment, leading to a notable decrease in total infrastructure investment during these years. Beginning in the mid-1990s, concessions of public works projects significantly boosted the infusion of private capital in the infrastructure sector, increasing the involvement of private companies in the funding, construction and management of infrastructure services.

**Figure 1**  
**LATIN AMERICA: INFRASTRUCTURE INVESTMENT BY SECTOR, PUBLIC AND PRIVATE, 1980-2013**  
(Percentages of GDP)



**Source:** Prepared by the author, on the basis of the data from:  
<sup>a</sup> 1980-2006 period: Calderón, César and Luis Servén, (2010), “Infrastructure in Latin America”, *World Bank Policy Research Working Paper*, No. 5317, Washington, D.C., World Bank.  
<sup>b</sup> 2007: ECLAC. 2008-2013 period: INFRALATAM.  
**Note:** The following countries are included: Argentina, Brazil, Chile, Colombia, Mexico and Peru. The following sectors are included: transport, energy, telecommunications, water and sanitation. Transport comprises roads and railways only, except for public investment in Argentina, which includes transport as a whole. Energy includes electricity exclusively.

The recent cycle of economic prosperity in Latin America and the Caribbean, starting in 2002, was defined by a general improvement in the terms of trade, with large windfalls generated by the boom in commodity prices, leading to gains in employment and national savings, a significant improvement in public finances and, in turn, a partial recovery in infrastructure investment. More revenue in public coffers fundamentally reduced the region’s external vulnerability and provided a countercyclical response to the onset of the global financial crises in 2008 and 2009 in the form of vigorous public investment programmes.

For 10 years (2003-2013) the region experienced sustained per capita GDP growth—with the exception of 2009—and saw a partial recovery in infrastructure investment; in fact, in 2009 total infrastructure investment reached 2.9% of GDP, the second-highest level recorded in the 1980-2013 period. Despite this mild recovery, both public and private investment behaved unevenly, with peaks and troughs, reaching historically low averages of 1.2% and 1.1%, respectively.

The 2008 global crisis revealed a new global economic growth scenario with fresh restrictions and uncertainties across all regions. Since the beginning of 2011, the prices of metals and agricultural products (which are key exports for the region) have trended downwards for almost five years in a row.<sup>8</sup>

<sup>8</sup> “The latest super cycle began around 2000, lasted an average of 15 years and surpassed previous cycles in terms of its peak, reaching price levels not seen since the 1970s. Nevertheless, this latest boom is now over.” See Acquatella, Bello and Berrios (2016), *Evidencia estadística de Super Ciclos en las series de precio de los metales y el petróleo 1900-2015*, ECLAC, forthcoming.

In 2012, Latin America's growth decelerated and has yet to regain traction. In 2015 GDP in Latin America and the Caribbean fell 0.4%, which in terms of per capita GDP translates into a contraction of 1.5%.

### III. Public and private sectors (2008-2013)

Recent studies prepared on the basis of OECD country samples indicate that public investment in infrastructure has a positive effect on economic productivity, despite public capital increasing as a substitute for private capital, in the long run the dominant effect could be complementary.<sup>9</sup> Nevertheless, this effect does depend on certain conditions, such as the size and nature of the investments, which is why infrastructure assessments and planning are essential. Figure 2 presents economic infrastructure investment divided into the public and private sectors, according to the sector that committed to pay for the assets. The data include the total of four sectors (transport, energy, telecommunications, water and sanitation) sampled from 15 Latin American countries. What follows is a list of behaviours that may be extrapolated from the data.

First, in recent years the average total investment as a percentage of GDP in Latin America has been low. This is especially true when compared with the investment of the 1980s or with the levels recommended by Perrotti and Sánchez (2011). This weak investment includes insufficiencies in: regional connectivity, basic services coverage such as safe drinking water and sanitation, power grids, power supply and telecommunications, among others.<sup>10</sup>

Even though no country reached the 6.2% figure recommended by ECLAC, the good news is that on average, from 2008 to 2013, seven countries (Costa Rica, Honduras, Nicaragua, Panama, Paraguay, Peru and Plurinational State of Bolivia) invested above the regional average (3.6%) recorded in the 1980s.

During the 2008-2013 period, average public investment in five countries (Costa Rica, Nicaragua, Panama, Paraguay and Plurinational State of Bolivia) surpassed the regional average of 3.0% of the 1980s. Furthermore, in the same period in six countries (Brazil, Chile, Honduras, Nicaragua, Panama and Peru), private investment surpassed the regional average of 1.2% of the 1990s.

Second, compared with the public sector, private investment continues to be low in most countries. When viewing the average participation of the private sector in relation to the public sector for the 2008-2013 period, countries fall into four groups: those where this relationship is over 100% (Brazil and Honduras); where it is greater than 75% and less than or equal to 100% (Chile, Guatemala and Nicaragua); where it is greater than 50% and less than or equal to 75% (El Salvador, Mexico, Panama and Peru); and where it is less than or equal to 50% (Argentina, Colombia, Costa Rica, Paraguay, Plurinational State of Bolivia and Uruguay).

Nevertheless, private investment has shown signs of growth in some countries, and this growth could continue in coming years. This behaviour may be related to institutional changes associated primarily with public-private participation models, with the evolving expectations of private economic agents or with changes to the economic policies being implemented (for example, more and more investment instruments or mechanisms based on pension funds are being sought).

Figure 2  
LATIN AMERICA (SELECTED COUNTRIES): INFRASTRUCTURE INVESTMENT BY SECTOR, PUBLIC AND PRIVATE, 2008-2013  
(Percentages of GDP)

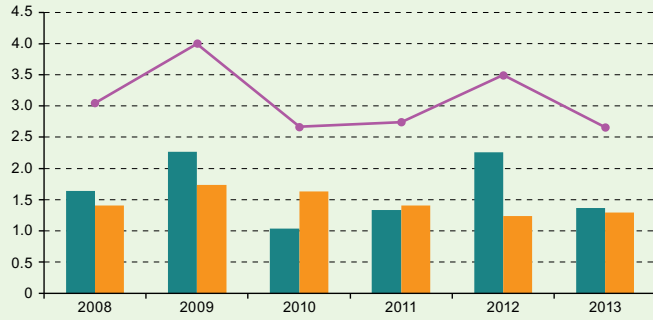


<sup>9</sup> See OECD (2006) and Aschauer (1989).

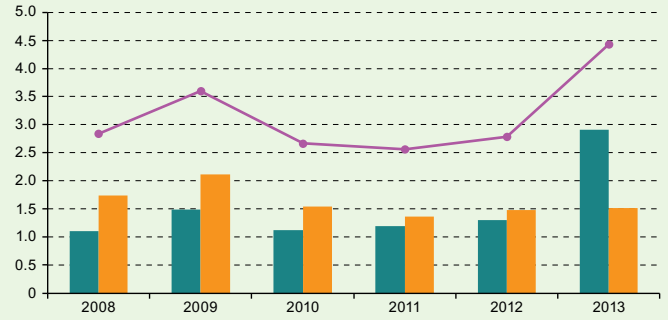
<sup>10</sup> See Sánchez and others, 2015.

Graph 2 (continued)

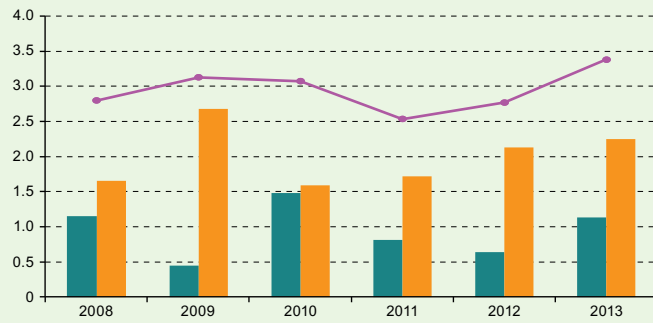
C. Brazil



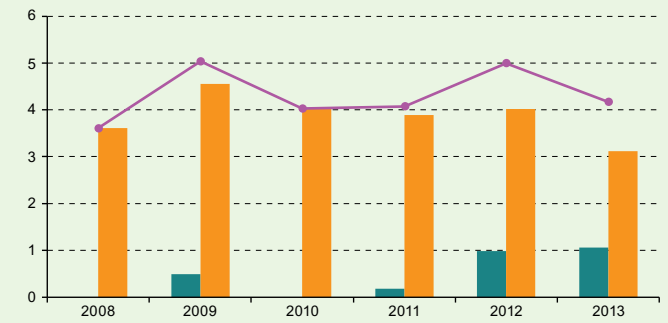
D. Chile



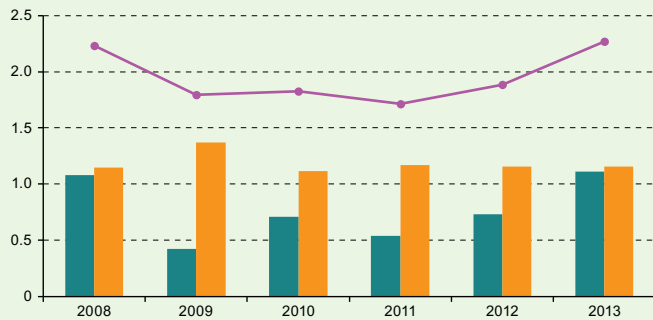
E. Colombia



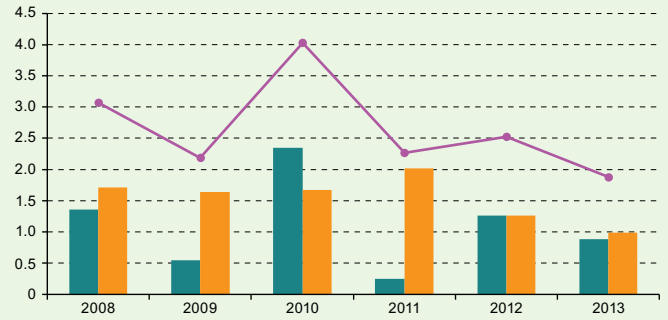
F. Costa Rica



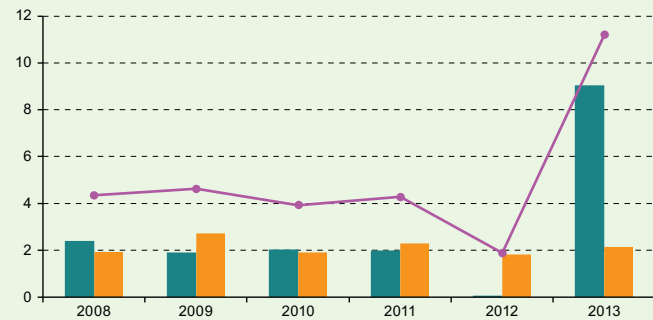
G. El Salvador



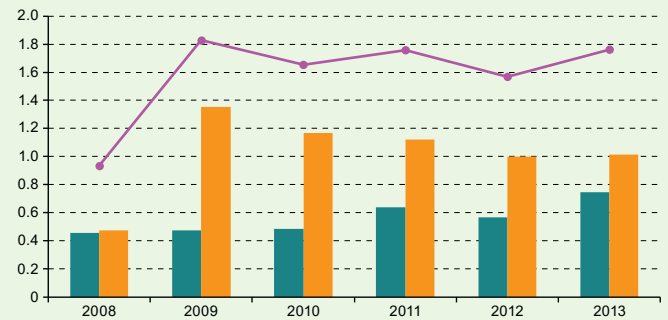
H. Guatemala



I. Honduras



J. Mexico



■ Private ■ Public — Total

Figure 2 (concluded)



Source: Prepared by the author, on the basis of INFRALATAM data.

Note: The following sectors of economic activity are included: transport, energy, telecommunications, water and sanitation. Transport comprises roads, railways, inland and maritime waterways, and aviation projects.

#### IV. Review of six infrastructure sectors (2008-2013)

The greatest concentration of investment among the six sectors studied for 11 of the 15 countries under consideration was in transport, with the exceptions of Brazil, Costa Rica, Paraguay and Uruguay. Additionally, several countries (Chile, Colombia, Nicaragua, Panama, Peru and Plurinational State of Bolivia) surpassed the simple regional average for transportation investment of 1.7% of GDP (see figure 3).

In energy investment, the highest rates were seen in Costa Rica with 2.1% of GDP, Nicaragua (1.8%), Paraguay (1.6%), Uruguay (1.2%) and Brazil (1.2%).

Central America and Panama were notable for their heavy investment in telecommunications from 2008 to 2013. The investment effort as a percentage of GDP was as follows for these countries: Nicaragua (1.6%), Honduras (1.2%), Costa Rica (1.1%), Panama (0.8%), El Salvador (0.8%) and Guatemala (0.6%).



In water and sanitation, the countries investing most heavily on average from 2008 to 2013 were Nicaragua and Peru, with an investment of 0.62% and 0.61%, respectively.

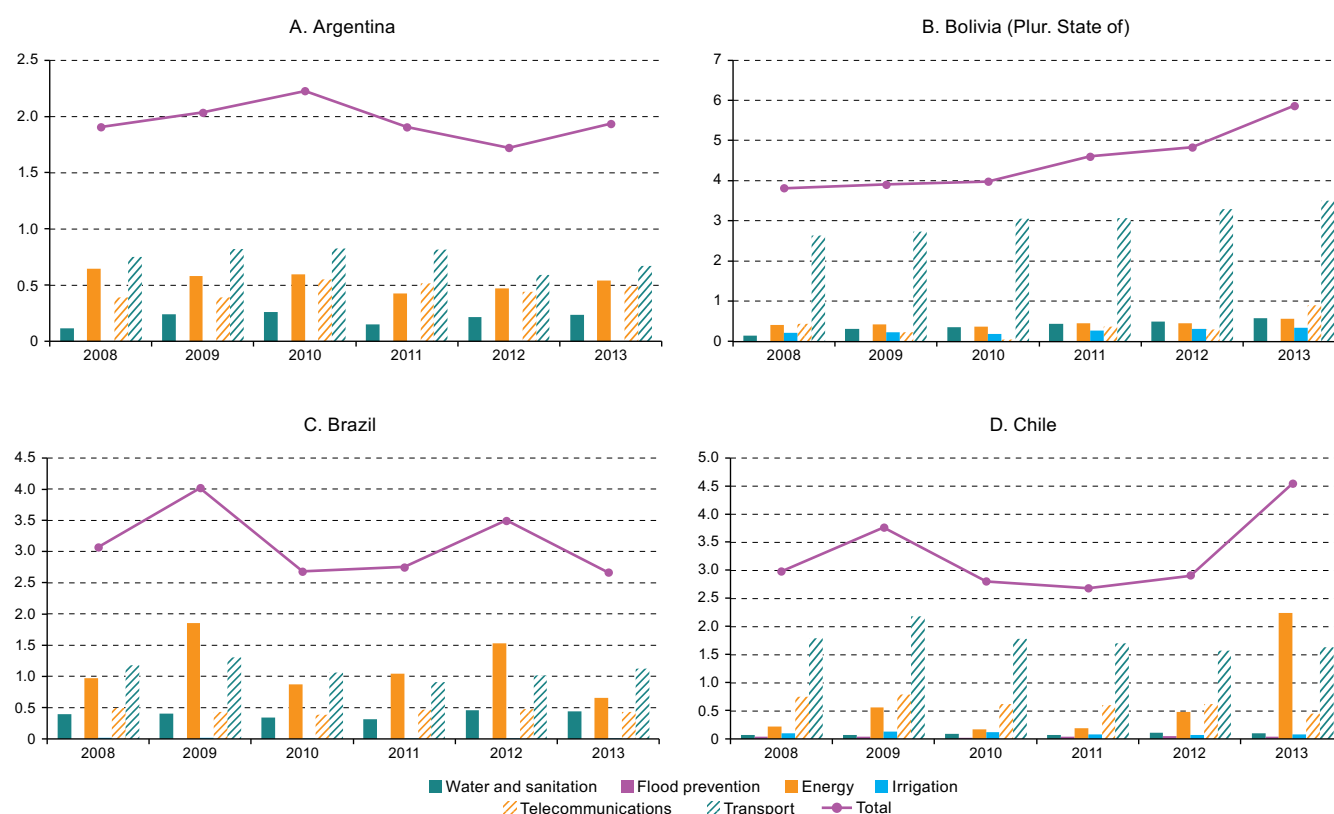
Irrigation projects comprise reservoirs and irrigation channels for agriculture purposes<sup>11</sup>. Figure 3 provides the available information on public sector investment in irrigation projects. Currently, information is only available for the following countries: Chile, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Panama, Peru and Plurinational State of Bolivia.

The most frequent natural phenomena in Latin America and the Caribbean are hurricanes, tropical storms, floods, drought, earthquakes, volcanic eruptions, tsunamis and land or mudslides<sup>12</sup>. Some examples include the tsunami following the earthquake in Chile in February 2010 and Tropical Storm

Agatha in 2010 in El Salvador, Guatemala, Honduras, Nicaragua and Mexico, which claimed thousands of lives, displaced thousands of people, caused landslides and uncountable floods, and destroyed homes and other types of infrastructure.

The available information on public investment in construction projects to prevent flooding corresponds to the following countries: Chile, El Salvador, Mexico, Peru and Uruguay. Despite investment efforts, one response model has predominated in the countries of the region to address the needs of victims and rebuild infrastructure after an event occurs; it is based on collecting funds for recovery assistance, which in general has not led to immediate action. Nevertheless, little by little, more awareness is emerging about the importance of reducing these risks and maximizing the use of available resources to face and manage adverse conditions (see figure 3).

**Figure 3**  
**LATIN AMERICA (SELECTED COUNTRIES): INFRASTRUCTURE INVESTMENT BY SECTOR, 2008-2013**  
(Percentages of GDP)

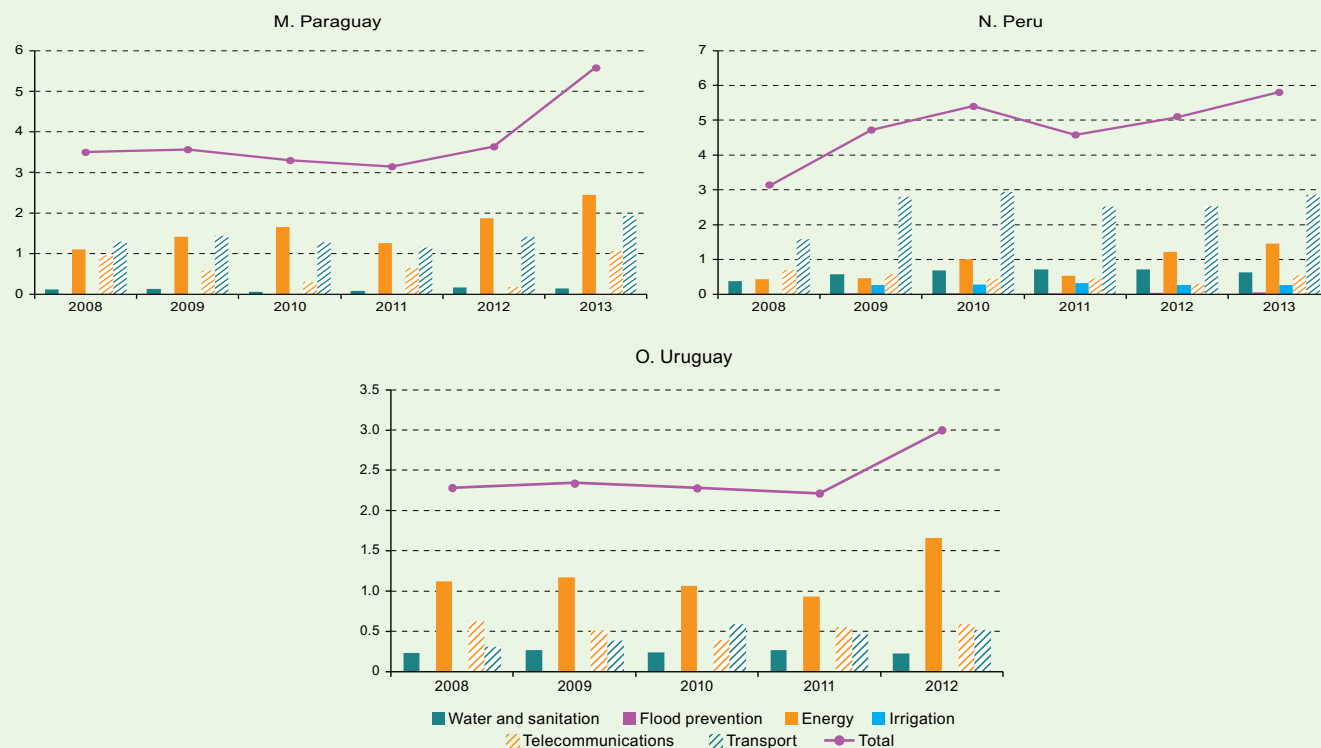


<sup>11</sup> For more information on irrigation projects, see Lardé and Marconi (2016).  
<sup>12</sup> ECLAC (2015), *El impacto de los desastres naturales en el desarrollo: documento metodológico básico para estudios nacionales de caso*, December 2005.

Figure 3 (continued)



Figure 3 (concluded)



Source: Prepared by the author, on the basis of INFRA LATAM data.

Note: The data cover both the public and private sectors; however, the irrigation and flood prevention sectors only include public (not private) investment. The following sectors of economic activity are included: transport, energy, telecommunications, water and sanitation, irrigation, flood prevention. Transport comprises roads, railways, inland and maritime waterways, and aviation projects.

## V. Infrastructure for transport services

As highlighted in the previous section, in recent years a growing number of countries focused their investment efforts primarily on transport. This section is dedicated to a review of the transport sector.

Transport infrastructure investment during the 2008-2013 period, according to subsector, is shown in figure 4, which highlights the following behaviours:

First, with the exception of Panama, roads benefited from the largest investment. Furthermore, road investment appears to be on an upswing in some countries.

Second, the countries that invested the most in non-road transport were: Brazil (35% of its investment), Honduras (43%), Panama (60%) and Peru (33.2%) as a percentage of GDP. Brazil is giving increasing importance to air transport, and has invested most heavily in railways (as

a percentage of GDP). Honduras and Panama focused more on river and maritime transport.

For comparison purposes, figure 5 depicts the distribution of transport investment in the European Union, where the proportion of the total allocated to non-road transport is trending upwards, from 37% to 45% from 1995 to 2011. Railways stand out as the most important, increasing from 26% to 35% over the same period of time.

This is not to say that roads are no longer relevant, but rather to stress the importance of other modes of transport and, above all, the need for taking co-modality into account when designing transport plans.<sup>13</sup>

<sup>13</sup> A co-modal approach to transport is understood as the achievement of efficiency "in the distribution of transport and related services for every trip, by making optimal use of each mode of transport or combining different modes. As part of this paradigm, market regulation and technical aspects of transport should be optimized to drive the modal shift towards sustainability." (Sánchez and Cipoletta Tomassian, 2012).

**Figure 4**  
**LATIN AMERICA (SELECTED COUNTRIES): TRANSPORT INFRASTRUCTURE INVESTMENT BY SECTOR, 2008-2013**  
*(Percentages of GDP)*

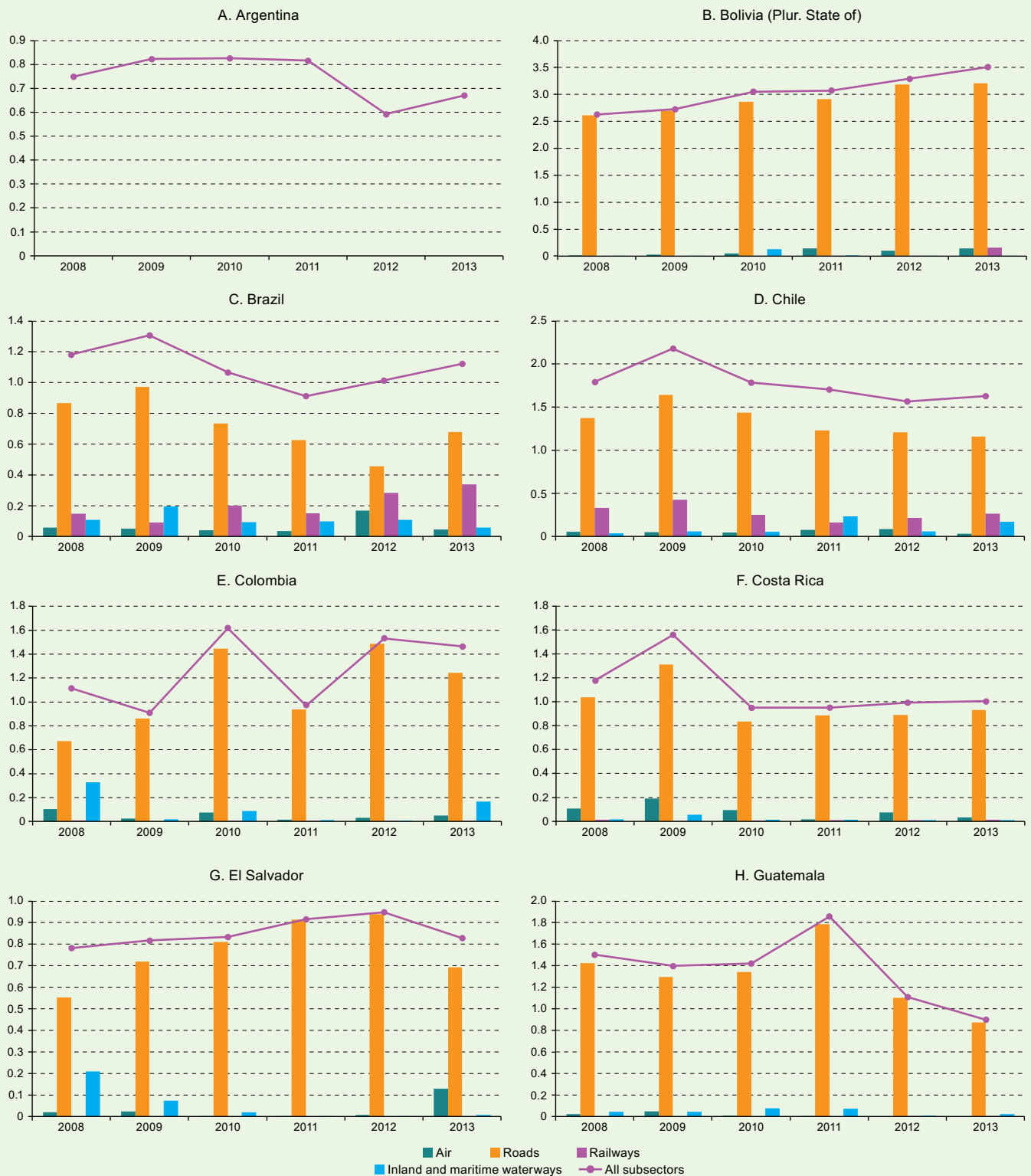
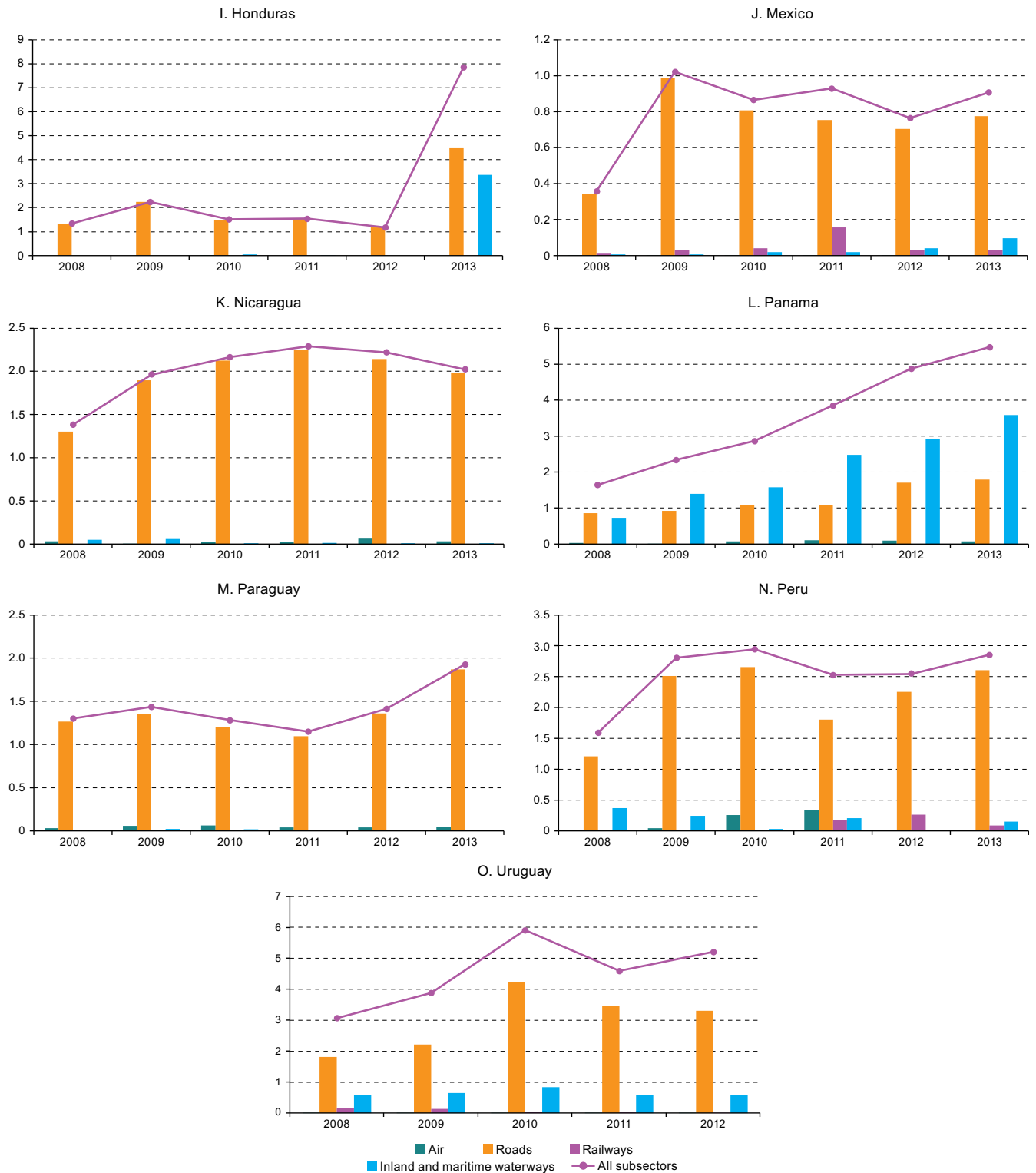


Figure 4 (concluded)

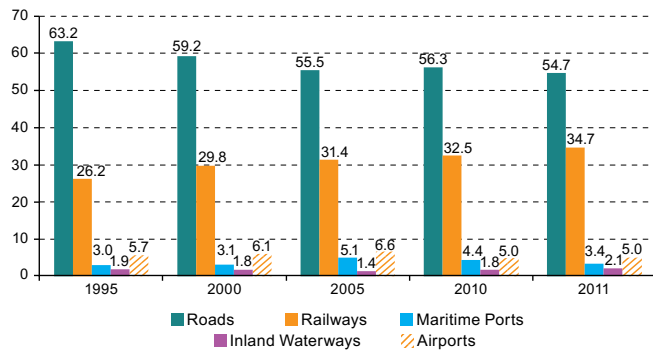


Source: Prepared by the author, on the basis of INFRALATAM data.

Note: Data include both the public and private sectors.



**Figure 5**  
**EUROPEAN UNION: DISTRIBUTION**  
**OF TRANSPORT INVESTMENT BY SUBSECTOR,**  
**1995, 2000, 2005, 2010 AND 2011**  
*(Percentages of the total of each country or group of countries)*



Source: Prepared by the author, on the basis of *International Transport Forum Statistics* data (see online: <http://stats.oecd.org/>).

A review of some of the transport projects in the pipeline of Latin American and Caribbean countries reveals that Brazil and Mexico have invested the most heavily, which is to be expected given that they are the region's two largest economies. It is surprising that Nicaragua, with a much smaller economy, follows these two countries in third place owing to its enormous interoceanic canal project. See table 1 for a preliminary view of investments earmarked for transport infrastructure projects.

As table 1 demonstrates, a long-term time horizon is becoming an increasingly common parameter for infrastructure projects. Table 2 shows countries such as Colombia (Autopista al Mar 2), El Salvador (international airport expansion) and Honduras (inter-oceanic railway) that have projects in the pipeline extending to 2038, 2032 and 2030, respectively. Indeed, the long-term nature of these investments is hopefully not the result of delayed projects needed in the nearer term, but rather of strategic planning, with a long-term view focused on ensuring sufficient and timely transport infrastructure investment, with the ultimate goal to maximize social well-being.

**Table 1**  
**LATIN AMERICA AND THE CARIBBEAN: PRELIMINARY INVESTMENT PORTFOLIO**  
**OF TRANSPORT INFRASTRUCTURE PROJECTS, BY COUNTRY<sup>a</sup>**

Country	Estimated investment (billions of dollars) <sup>b</sup>	Percentage of total (%)	Number of projects	End date of the last project in the pipeline	Projects including more than one country <sup>c</sup>		
					Amount (billions of dollars)	As a percentage of the total of each country	Number of projects
1 Brazil	166 126	31.67	123	2025	8 103	4.9	5
2 Mexico	57 744	11.01	96	2020			
3 Nicaragua	50 102	9.55	3	2020			
4 Colombia	46 778	8.92	86	2038	32	0.1	1
5 Peru	44 024	8.39	63	2031	612	1.4	4
6 Chile	27 725	5.29	72	2024	4 904	17.7	4
7 Argentina	23 888	4.55	32	2022	12 720	53.2	5
8 Panama	16 524	3.15	18	2025	15	0.1	1
9 Guatemala	14 873	2.84	11	2019			
10 Bolivia (Plurinational State of)	13 379	2.55	46	2025	7 798	58.3	3
11 Paraguay	12 910	2.46	17	2021	7 773	60.2	3
12 Honduras	11 845	2.26	9	2030			
13 Uruguay	10 257	1.96	13	2025	7 946	77.5	3
14 Venezuela (Bolivarian Republic of)	9 812	1.87	7	2017	32	0.3	1
15 Ecuador	6 362	1.21	21	2024			
16 Costa Rica	4 082	0.78	15	2017	15	0.4	1
17 Dominican Republic	2 902	0.55	8	2016			
18 Jamaica	2 573	0.49	3	2013			
19 El Salvador	1 215	0.23	5	2032			
20 Cuba	1 164	0.22	2	2020			
21 Suriname	116	0.02	1	n.a.			
22 Haiti	40	0.01	1	n.a.			
23 Belize	30	0.01	1	n.a.			
Total	524 471	100.00	653		49 950	9.5	31

Source: Prepared by the author, on the basis of BNAméricas data.

<sup>a</sup> This data is not definitive as it includes projects at different stages of development or for which the bidding process is not complete. Including a project in the investment portfolio does not guarantee its completion.

<sup>b</sup> Estimated investment data are not available for some projects. Both public- and private-sector projects are included.

<sup>c</sup> These future investments do not include the Mesoamerica Integration and Development Project (or Mesoamerica Project). According to Pérez-Salas (2015) data, planned investments came to US\$ 3.199 billion in 2015.

Note: n.a.: not available.

According to this same portfolio, there are a total of 636 transport investment projects at different stages of development, worth some US\$ 488.119 billion. This amount is slightly less than the Bolivarian Republic of Venezuela's GDP in 2014 and represents just 35% of the transport investments needed in the entire region until 2020, according to Perrotti and

Sánchez (2011). Modal distribution highlights the growing importance of non-road investments, which together account for 78.1% of the total and are split between railways, internal waterways, maritime ports, logistics platforms, airports and urban transit (subway, bus rapid transit (BRT) and light rail systems, among others) (see table 2).

**Table 2**  
**LATIN AMERICA AND THE CARIBBEAN: PRELIMINARY INVESTMENT PORTFOLIO OF TRANSPORT INFRASTRUCTURE PROJECTS, BY TYPE<sup>a</sup>**

Stage	Investment (billions of dollars) <sup>b</sup>	Percentage of total	Number of projects	End date of the last project in the pipeline	Number of projects that include more than one country <sup>c</sup>
1 Roads	106 703	21.9	307	2038	7
2 Railways	105 902	21.7	48	2030	5
3 Internal waterways	65 640	13.4	10	2020	2
4 Maritime ports	51 683	10.6	94	2025	0
5 Logistics platforms	2 396	0.5	5	2017	0
6 Airports	32 277	6.6	57	2032	0
7 Urban transit	123 518	25.3	115	2022	0
Total	488 119	100.0	636		14

**Source:** Prepared by the author, on the basis of BNAmericas data.

<sup>a</sup> This data is not definitive as it includes projects at different stages of development or for which the bidding process is not complete. Including a project in the investment portfolio does not guarantee its completion.

<sup>b</sup> Estimated investment data are not available for some projects. Both public- and private-sector projects are included.

<sup>c</sup> These future investments do not include the Mesoamerica Integration and Development Project (or Mesoamerica Project). According to Pérez-Salas (2015) data, planned investments came to US\$ 3.199 billion in 2015.

In terms of regional infrastructure integration, 11 countries have 14 projects in the pipeline. This list includes: the Agua Negra binational tunnel (Argentina and Chile), the Aconcagua bioceanic corridor (Argentina and Chile), the Paraná-Paraguay inland waterway (Argentina, Brazil, Paraguay, Plurinational State of Bolivia and Uruguay), the Southern Trans-Andean railroad (Argentina and Chile), the dredging of the Uruguay River (Argentina and Uruguay), the central bioceanic railway corridor (Brazil and Plurinational State of Bolivia), the Puno-El Alto rail line (Peru and Plurinational State of Bolivia), the second Presidente Franco-Porto Meira bridge (Brazil and Paraguay), the Pucallpa-Cruzeiro do Sul highway (Brazil and Peru), the second Brazil-Paraguay binational bridge (Brazil and Paraguay), the Tacna-Arica railway (Chile and Peru), Las Tienditas bridge (Colombia and Bolivarian Republic of Venezuela) and the binational bridge over the Sixaola River (Costa Rica and Panama), all of which total some US\$ 13.598 billion (although the cost of each project is not available). Furthermore, investments earmarked for the Mesoamerica Project have yet to be included.<sup>14</sup> According to Pérez-Salas (2015) data, these will approach US\$ 3.199 billion in 2015 (see tables 1 and 2).

<sup>14</sup> The countries belonging to the Mesoamerica Integration and Development Project are: Belize, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama.

## VI. Conclusions and final remarks

From the 1990s until 2013, infrastructure investment in Latin America has been weak (2.2% of GDP) compared with the levels recommended by Perrotti and Sánchez (6.2%) or with the investments being made in other countries such as China (8.5%), Japan (5%) and India (4.7%). This means that the economies of the region have been functioning almost exclusively on their obsolete stock of infrastructure, which clearly limits the possibilities for sustained growth and for bridging the different gaps that hinder “development based on equality and sustainability”.<sup>15</sup> Meagre growth then reduces infrastructure funding opportunities, stimulating a vicious cycle that is increasingly harder to break.

For the six years studied (2008-2013), certain specific behaviours stand out:

1. Public investment continues to lead the way, even when private investment could play a more significant role in some countries. In 13 of 15 countries, public investment is greater than private investment (Argentina, Chile, Colombia, Costa Rica, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Plurinational State of Bolivia and Uruguay).

<sup>15</sup> <http://periododesesiones.cepal.org/36/en/news/eclac-proposes-new-development-pattern-latin-america-and-caribbean>.

2. In most countries, the largest investment effort is focused on transport. This is the case for Argentina, Chile, Colombia, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Peru and Plurinational State of Bolivia.
3. Some countries have higher investment rates in energy than in transport. They are: Brazil, Costa Rica, Paraguay and Uruguay.
4. Central America and Panama have significantly boosted investment in telecommunications.
5. More and more countries are becoming aware of the importance of investing in irrigation projects and flood prevention.
6. The portfolio of transport projects for the future does not offer a better outlook (for more investment) than the current one. Furthermore, there is a lack of planned projects in non-road transport.

At the end of the cycle of high commodity prices, many governments were in a relatively sound macroeconomic position that allowed them to attempt countercyclical policies, and the countries hitched these windfall revenues to the possibility of more funding for their infrastructure projects. They were also emboldened by their experiences with public-private partnerships in infrastructure development. All of this raised countries' expectations and optimism, leading some to design specific long-term plans for improving and expanding their infrastructure.

Unfortunately, with the end of the boom, tax revenues began to fall, and the scarcity of alternative funding sources has become more evident. There is now a growing perception that implementing all of these plans within their respective time frames will be impossible. There is also evidence of shifting priorities for various reasons. Some projects that were initially considered strategic are either being suspended or delayed, while others that were once not so important are being given more priority, and many times these priorities shift back to their initial focus. The present document points out that this situation could have been avoided if planning had incorporated the long view, anticipated possible developments (with their risks and opportunities) and integrated procedures for appropriate action through different response capabilities. This planning, as stated previously, must be aligned with national objectives or with the Sustainable Development Goals of the United Nations 2030 Agenda for Sustainable Development. It must also be comprehensive, with links to different levels of government, ministries, the private sector and civil society representatives.

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