

Can Colombia's 4G Toll Road Concession Program Shift To A Faster Lane?

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Since the Colombian government rolled out an ambitious infrastructure investment plan, the 4G Toll Road Concession Program, in 2013, it has awarded concessions for 30 projects out of a targeted total of 40. Nevertheless, only six concessions are currently under construction present more than 10% degree of advance as of March 31, 2017. Moreover, only few projects were able to secure financing in order to advance the construction phase.

The slowing implementation pace of the 4G program has shed light on the uncertainties about the construction phase following the completion of concession granting. S&P Global Ratings believes that that credit risk to the 4G projects currently stem from the four factors. First, the construction design complexity, given Colombia's difficult geography that requires the building of many bridges and tunnels for the greenfield infrastructure projects. Second, sponsor concentration, owing to a high number of sponsors involved simultaneously in several 4G projects, and fairly short track record of Colombian contractors. Third, due to the difficult geography and heavy rain season in the country, a fairly short-term period for completion of the projects—five years—may cause many contractors to struggle to do so on time. Finally, risk allocation, which through the new legal and institutional framework the government intended to shift the burden away from the concessionaires, has yet to diminish delays and cost overruns related to unpredictable events.

Yet the legal reforms and establishment of the institutional framework—including a state agency to oversee the 4G program implementation and the development bank to provide financial solutions—have created favorable conditions for the development of these projects. Moreover, we believe that to overcome the four main obstacles is through clearly defined risks, in the form of thorough independent engineering studies and the EPC contracts' clear risk allocation, as well as establishing efficient channels to address opposition to projects from the local communities. In such a scenario, we believe that local and international players will provide greater financings for the 4G projects. Out of the \$4.6 billion financing already closed for the 4G projects,

less than 40% came from international banks and capital markets, while the domestic banks and infrastructure debt funds provided more than 50%, and 9% was granted by Colombia's development bank—Financera de Desarrollo Nacional (FDN).

We believe that once the construction of these projects is completed, the operations phase shouldn't be difficult or a major risk from a credit perspective. In our view, operation of a toll road is relatively simple and its ability to repay the construction financing would be tied to traffic volume risk, which is mitigated by the limited competition from other transportation modes in Colombia and the country's currently inadequate transportation network.

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Overview

- We expect construction phase to limit the credit quality of most of the projects under Colombia's 4G program, because we typically view toll road operations as a simple task.
- The 4G construction phase risks stem from the construction difficulty because of Colombia's three Andean mountain ranges and heavy-rain season, high concentrations of sponsors domestic contractors, relatively short-period to complete the construction, and risk allocation mechanism's deficiencies to prevent delays and cost overruns.
- Clearly defined risks and which party is responsible for each of them are key factors for projects, in particular during construction. Well designed and structured projects will attract financing, even though capital market investors are more averse to construction risk, which is usually linked to the contractor's credit quality and experience to deliver the construction.

The 4G Toll Road Program In A Nutshell

The main objective of the program is to improve and expand the country's transportation network, which currently acts as a drag on economic performance. According to the 2016-2017 Global Competitiveness report by the World Economic Forum, the quality of toll roads in Colombia ranks as 120th out of 138 countries. The 4G Toll Road Concession Program (Cuarta Generación de Concesiones) consists of 40 projects that will comprise of 7,000 kilometers (km) of toll roads, totaling around COP47 trillion to construct. The concession granting for the first 30 projects of public initiative was divided into three waves: Primera Ola (10 projects), Segunda Ola (nine projects), Tercera Ola (two projects). The government also granted concessions for the development of nine private public partnerships (Alianzas Público Privadas de Iniciativa Privada [APPs-IP]). Please find the details of each project in the summary table at the end of the report.

In order to spur the pace of such a large investment plan, the government has implemented the following institutional changes:

- The creation of Agencia Nacional de Infraestructura (ANI), a decentralized state agency responsible for the structuring and management of the concessions;

- The establishment of a development bank, FDN, in partnership with the World Bank's International Finance Corporation and the regional development bank Corporacion Andina de Fomento, to provide long-term financing for the projects;
- The passage of Law 1,508/2012, called the new PPP law, to establish the framework for PPPs and to create greater accountability among private contractors;
- The approval of Law 1,682/2013, known as Ley de Infraestructura (the infrastructure law), to facilitate the construction pace by expediting land acquisition, utilities' reallocation, and environmental licensing processes.
- The enactment of other laws, such as the Legal Stability Contracts Act, Investor Protection Treaties (ratified as the U.K.-Colombia Treaty), and Double Taxation Agreements with EU countries (which prompted several Spanish construction and engineering firms to bid for the 4G concessions), to attract regional and international institutional investors to the 4G program;

The projects that were part of the three-wave concession granting developed as public initiatives (Olas 1, 2 e 3) benefit from financial support in the form of a multi-purpose

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liquidity line from FDN from the start of the construction, and a cap on cost overruns related to environmental licensing, land purchases, and utilities' reallocation at 144% of the contractual budget, which ANI covers during construction. In our view, these two features will mitigate the financial burden stemming from the potential construction cost overruns. Finally, upon the completion of the construction, these projects will receive fixed availability payments and will operate under traffic catch-up mechanisms for a pre-determined period to mitigate the vehicle volume risk.

Our Approach In Assessing Construction And Design Difficulty

S&P Global assigns a construction difficulty score on a 6-point scale (from less complex ['1'] to more complex ['6']), based on its opinion that more difficult construction tasks are more likely to lead to delays and cost overruns than a simple construction. Based on this scale, we assign a score of '3' to a heavy engineering task such as greenfield toll road that incorporates the construction of tunnels and bridges, and a score of '2' to a simple engineering task such as the

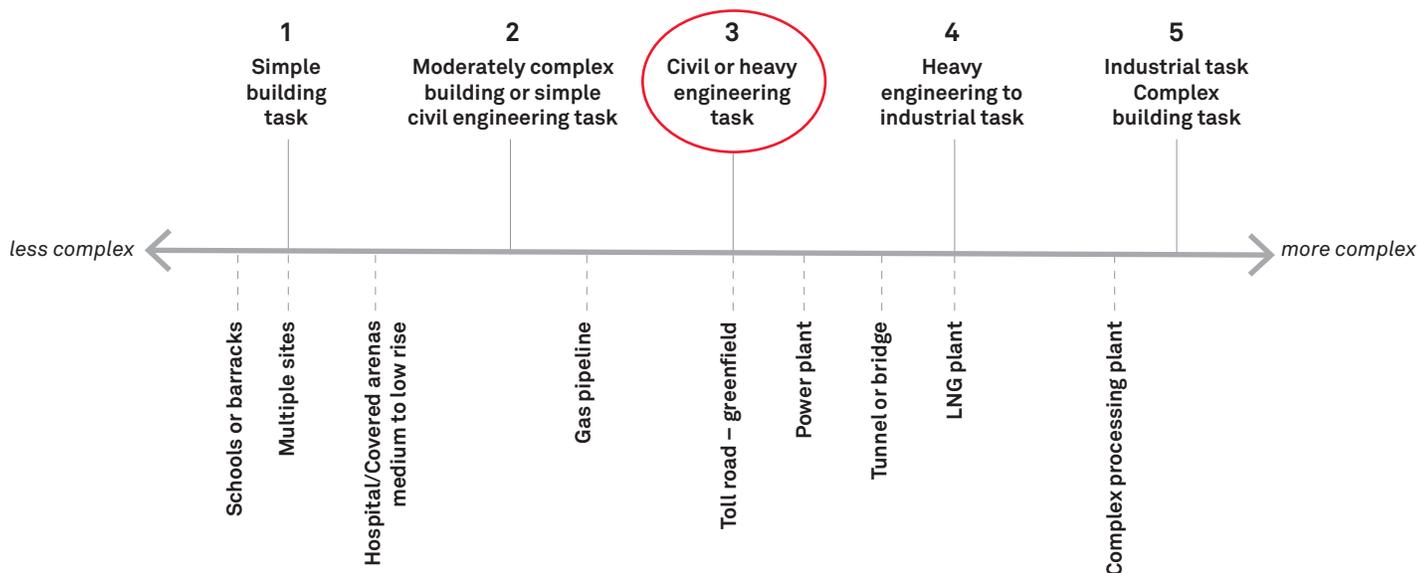
construction of a second lane, repaving works, or even a flat-surface new road (see chart 1).

We believe the construction works of most of the 4G projects in Colombia, which include many bridges and tunnels, would be classified as heavy engineering tasks or as simple engineering tasks. Technical complexity of constructing toll roads in Colombia increases due to the geographic and geological conditions (see table 1). In addition, uncertainties over the construction difficulty could relate to the type of soil and other factors such as archeological finds on construction sites, which is the case for Autopista Girardot-Honda-Puerto Salgar.

Sponsor And Contractor Experience

In S&P's view, the more experienced the contractor, the higher probability of the project's construction on time and within budget. We base our analysis on the contractor's consistent record of delivering similar projects on time, in accordance with design, and within budget, as well as on record of selecting and managing subcontractors to ensure they have the capacity to deliver by not committing to too many projects

Chart 1 – Diagram of Construction Difficulty



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Table 1 - Construction Difficulty Examples

Project	Pacifico 2	Pacifico 3	IP Vias del Nus	IP Antioquia-Bolivar Rutal Al Mar	IP Cambao-Manizales
Construction Difficulty score	3 – Heavy Engineering Tasks	3 – Heavy Engineering Tasks	3 – Heavy Engineering Tasks	2 – Simple Engineering Tasks	2 – Simple Engineering Tasks
Extension	98 km	146 km	157 km	492 km	256 km
UF 1	26 bridges 3 km of single lanes 15.3 km of second lane	8 bridges 4 km of single lanes 26 km of improvements	4 bridges 9.6 km of second lanes	60 km of improvements	76.9 km of improvements
UF 2	35 bridges 19.8 km of second lane	1 tunnel (3.4 km - tesalia) 1 large bridge (205m) 4 bridges 24 km of single lanes	4 bridges 5.1 km of second lanes	37 km of second lanes	68.8 km of improvements
UF 3	1 tunnel (2.5 km)	15 bridges 7 km of second lanes 31 km of improvements	1 tunnel (4.1 km)	7 bridges (<=50 m) 21.6 km single lane 19.5 km of improvements	55.7 km of improvements
UF 4	10 bridges 3.2 km of second lane	1 tunnel (407 m-felisa) 1 large bridge (320m) 6 bridges 15 km of improvements	7 bridges 5.5 km of second lanes	n/a (only o&m of 64.5 km)	24.7 km of improvements
UF 5	54 km of improvements	28 bridges 46 km of improvements	35.6 km of improvements	n/a (only o&m of 90 km)	29.9 km of improvements
UF 6	--	--	--	59 km of improvements	--
UF 7	--	--	--	8 bridges (<=80 m) 53.1 km single lane	--
UF 8	--	--	--	87 km of improvements	--

Source: ANI.

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simultaneously and have experienced staff. Subsequently, we benchmark contractor against its global peers for type of a project, for example, the construction of bridges and tunnels.

So far, the 4G program has attracted 11 international sponsors for the development of the 30 projects (see table 2). Nevertheless, Colombian sponsors, including in partnership with their international counterparts, have won the bidding of 25 of the 30 concessions. Particularly, we're concerned about the high number of Colombian sponsors developing multiple 4G projects simultaneously, given that they will have to

provide the equity seed contribution, which might tighten their financial flexibility, particularly because a great portion of them are also contractors of the projects (see table 3).

In our analysis, if an experienced contractor doesn't meet these requirements but is a high-quality, second-tier construction contractor with an experienced project director and well-defined contractor interface, we would typically lower the probability of a project's delivery, adjusting assessment of its construction risk by one or two notch, all other conditions being equal (see example in table 4).

Table 2 - Examples Of International Sponsors Of The 4G Program

International sponsors	4G investments
Ortiz (Spain)	Conexion Norte (Ola 1) Concession Del Siga (Ola 2)
OHL (Spain)	Autopistas al Rio Magdalena 2 (Ola 1)
Iridium (Spain)	Autopista Mulaló-Loboguerrero (Ola 1) Conexión Pacífico 1 (Ola 1)
Sacyr (Spain)	Autopista Puerta de Hierro-Palmar de Varela y Carreto-Cruz del Viso (Ola 2) Autopista Al Mar 1 (Ola 2) Autopista Pasto-Rumichaca (Ola 2)
Constructora Meco (Costa Rica)	Pacífico 3 (Ola 1) Costera-Cartagena Barraquilla (Ola 1) Girardot-honda-puerto Salgar (Ola 1)

Table 3 - Colombian Sponsors Developing More Than One Project

Colombian sponsors	4G investments
Mario Huertas Cortes	Pacífico 3 (Ola 1) Costera-Cartagena Barraquilla (Ola 1) Girardot-Honda-Puerto Salgar (Ola 1)
El Condor	Pacífico 3 (Ola 1) Conexión Pacífico 2 (Ola 1) IP Cesar-Guajira (APP) Ruta al Mar (APP) IP Malla Vial del Meta (Vial de los Llanos – APP)
Colpatría	Costera-Cartagena Barraquilla (Ola 1) APP GICA (GIRARDOT-IBAGUÉ-CAJAMARCA)
CSS	Ruta del Sol (Ola 1) Bucaramanga-Pamplona (Ola 3) IP NEIVA-ESPINAL-GIRARDOT (APP)
Odinsa	Conexión Pacífico 2 (Ola 1) IP Malla Vial del Meta (Vial de los Llanos – APP)

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Table 4 - Preliminary Construction Phase Business Assessment

		Construction risk				
		- Construction Difficulty - Contractor Experience & Risk Transfer				
		1	2	3	4	5
Technology and design risk - Technological Performance & Track Record - Design Complexity & Completion	1	a+	a	a-	bbb+	bbb-
	2	a	a-	bbb+	bbb	bb+
	3	a-	bbb+	bbb	bbb-	bb
	4	bbb+	bbb	bbb-	bb+	bb-
	5	bbb-	bb+	bb	bb-	b+

Source: Project Finance Construction Methodology, 15-Nov-2013

The Short Construction Period Pose Major Risks

The majority of the 4G projects have a five-year contractual construction period, starting with the concession signature date. We consider that the timeframe as fairly short, given the construction complexity of roads in Colombia, particularly if delays occur during the pre-construction phase, which the 4G program originally established at one-year duration. As such, delays have prompted the pre-construction phase to be extended for seven projects (see table 5).

Delays in permit granting (including environmental licenses) and land purchases typically represent the biggest bottlenecks for any construction work. To facilitate the start-up of construction and achieve contractual milestones, each concession in the 4G program was divided in smaller segments, called Unidades Funcionales (UF). Once each UF obtains 40% of its rights of way and environmental licenses, it may start construction. On one side, we view this mechanism favorably because it allows the construction to start earlier in each segment, reducing the chances of delays. On the other side,

Table 5 - Projects With Delays In The Pre-Construction Phase

Project	4G	Lenght	Rationale
Conexión Pacifico 1	Ola 1	49 km	Disagreement on condition precedent for construction start
Autopista Mulaló-Loboguerrero	Ola 1	32 km	Environmental issue
Autopista Puerta De Hierro-Palmar de Varela y Carreto-Cruz del Viso	Ola 2	196 km	Dispute on concession terms – in arbitrage
Autopista Villavicencio-Yopal	Ola 2	262 km	Road design
Autopista Popayán-Santander De Quilichao	Ola 2	76 km	Communities – Right of Way issues
IP Malla Vial Del Meta	APP	354 km	Change in volume assumptions - in arbitrage
P Cambao-Manizales	APP	256 km	Environmental issues – in arbitrage

Source: FDN, project status as of March 31, 2017.

Table 6 - Examples Of Tunnel Construction Track Record In Colombia

Tunnel	Extension	Completion on	Construction period
Túnel La Línea	8.6 km	April 2018 (estimated)	10 years (89% completed in Oct/16)
Túnel de Occidente (Medellín-Santa Fe de Antioquia)	4.6 km	2006	8 years
Túnel Buena Vista / Misael Pastrana Borero	4.5 km	2002	5 years

Source: S&P Global Ratings research, El Condor, World Highways.

we believe that potential delays still may rise, deriving from unexpected difficulties to obtain permits for subsequent UFs.

In addition to the projects listed in table 5 experiencing some delays in environmental licensing and land purchases in the pre-construction phase, two other projects are confronting construction phase delays: IP Cesar-Guarija (APP-IP) and Autopista Pasto-Rumichaca (4G Segunda Ola) due to the local communities' opposition to construction, along with environmental licensing tie-ups for the latter.

The construction of complex projects may also take more than five years, judging by the track record of building tunnels in Colombia (see table 6). In addition, local climate conditions pose a challenge. This stems from the risk of landslides, given the heavy rain season during the summer, potentially resulting in cost overruns. In addition, the poor existing infrastructure could hamper the timely supply of building materials and equipment to the construction site, particularly if several large projects are under development in the same period. These factors in aggregate pose a risk of delay, which impacts the contractual delivery date. The latter usually results in cost overruns, and consequently liquidity shortfalls, which in turn could halt construction. However, FDN's multi-purpose liquidity lines for the three wave concession projects mitigate the risk of a liquidity shortfall. The FDN liquidity line was designed as a revolving line to be used during the construction period to cover the timeliness gap in the execution of ANI's cost overrun guarantee in making risk sharing payments (please see the next section).

Risk Allocation

The risks of cost overruns for land purchases and environmental licensing are borne by the project up to 144% of the contractual budget. The cost overruns above that percentage are borne by the Colombian government in the form of reimbursements from ANI. Nevertheless, this might not prevent construction delays and liquidity shortfalls because the amount and timing to receive such a reimbursement might be uncertain if ANI and the concessionaire disagree over the cost overruns.

Also, changes to the law were made to facilitate these activities. The Colombian government passed Law 1,682 in 2013 to facilitate and expedite the land acquisition process, utilities reallocation, and environmental licensing. We believe that the law bolsters the 4G program, which was designed with a 12-month pre-construction phase, given that the law reduces the time to obtain an environmental license from five years to six months. In addition, the law enables the government to declare the lands required for infrastructure as public interest assets in order to reduce time for the rights of way acquisition. Nevertheless, the enforceability of its terms might be challenging, considering the strength of local communities in Colombia. This was one of the main causes of construction delays prior to the establishment of the 4G program framework, and as we previously mentioned has delayed the construction of Autopista Pasto-Rumichaca and IP Cesar-Guarija. In addition, the government has yet to come up with ways to mitigate delays stemming from archeological finds on construction sites.

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Summary Table - List Of 4G Concessions And Status

	Concession date	Contractual construction end date	Status	Degree of advance as of March 31, 2017	Extension
Project – 4G Primera Ola					
Autopista Conexión Pacífico 3	10-Sep-14	3-Oct-20	Construction	13.50%	146 km
Autopista Cartagena-Barranquilla Y Circunvalar De La Prosperidad	10-Sep-14	18-Oct-18	Construction	27.04%	147 km
Autopista Conexión Norte: Remedios-Zaragoza-Caucasia	10-Dec-14	5-Jan-21	Construction	1.20%	145 km
Autopistas al Rio Magdalena 2	10-Dec-14	31-Mar-21	Construction	1.69%	144 km
Autopista Conexión Pacífico 2	11-Sep-14	10-Oct-20	Construction	16.42%	98 km
Transversal Rio De Oro-Aguaclara-Gamarra	10-Nov-14		Construction		
Autopista Mulaló-Loboguerrero	22-Jan-15		Preconstruction	Pre-construction extended	32 km
Perimetral de Oriente De Cundinamarca	8-Sep-14	31-Dec-18	Construction	10.30%	154 km
Autopista Conexión Pacífico 1	15-Sep-14		Preconstruction	Pre-construction extended	49 km
Autopista Girardot-Honda-Puerto Salgar	9-Sep-14	18-Oct-18	Construction	30.50%	190 km
Project – 4G Segunda Ola					
Autopista Santana-Mocoa-Neiva	18-Aug-15	6-Sep-19	Construction	0.60%	447 km
Autopista al Mar 2: Cañasgordas-Uramita-Dabeiba-Mutató	25-Nov-15	16-Dec-21	Construction	0.01%	254 km
Autopista Villavicencio-Yopal	23-Jul-15		Preconstruction	Pre-construction extended	262 km
Transversal Sisga-El Secreto	10-Jul-15	16-Oct-19	Construction	1.14%	137 km
Autopista Puerta De Hierro-Palmar de Varela y Carreto-Cruz del Viso	3-Jul-15		Preconstruction	Pre-construction extended	196 km
Autopistas al Mar 1: Túnel occidente - S.Jerónimo-Santafé de Antioquia	3-Sep-15	16-Oct-21	Construction	0.10%	176 km
Autopista Pasto-Rumichaca	11-Sep-15		Construction	Construction delay due: Archaeological finds, environmental	80 km
Autopista Popayán-Santander De Quilichao	11-Aug-15		Preconstruction	Pre-construction extended	76 km
Autopista Bucaramanga-Barrancabermeja-Yondó	21-Aug-15	7-Nov-20	Construction	0.30%	152 km
Project – 4G Tercera Ola					
Bucaramanga-Pamplona	7-Jun-16		Preconstruction	Start of construction phase on 22-Jul-17	133 km
Cúcuta y Pamplona	(concession granted in April 2017)				125 km

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Summary Table - List Of 4G Concessions And Status

	Concession date	Contractual construction end date	Status	Degree of advance as of March 31, 2017	Extension
Project – 4G Alianzas Público Privadas de Iniciativa Privada (APP-IP)					
IP Vías del Nus (Pradera-Cisneros-Jose Alto de Dolores)	25-Jan-16	14-Jul-21	Construction	0.2%	157 km
IP Cesar-Guajira	30-Jun-15		Construction	Construction delay: change in design due to environmental and communities issues	350 km
IP Cambao-Manizales	7-Jul-15		Preconstruction	Pre-construction extended	256 km
IP Neiva- Espinal-Girardot	30-Oct-15	31-07-20	Construction	1.5%	193 km
IP Antioquia-Bolivar (Ruta Al Mar)	14-Oct-15	26-Mar-21	Construction	1.0%	492 km
Ampliación a Tercer Carril doble calzada Bogotá-Girardot	18-Oct-16		Preconstruction	Start of construction phase on 27-Nov-17	145 km
APP Gica (Girardot-Ibagué-Cajamarca)	15-Feb-15	13-Apr-24	Construction	11.0%	35 km
IP Chirajara-fundadores (Chirajara-Villavicencio)	9-Jun-15	14-Sep-21	Construction	1.6%	86 km
IP Malla Vial Del Meta	5-May-15		Preconstruction	Pre-construction extended	354 km

Source: ANI, FDN.

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