

# Implementation of High Performance Freight Vehicles in Latin American countries



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The introduction of High Performance Freight Vehicles (HPFVs) has been on the agenda of various countries in Latin America in recent years. Mostly, it has been driven by private companies looking to improve their efficiency and sustainable performance. Reaching operational legislation has had diverse levels of success too, as different as their names and characteristics are. Implementation strategies used vary regionally from:

- Regulating vehicles that are already circulating (Brazil)
- Periods of experimentation before final legislation (province of San Luis in Argentina, Uruguay)
- Final legislation with detailed regulation and implementation procedures before allowing any HPFVs to travel (Argentina, Mexico, Colombia).

## Brazil

Brazil Introduced regulations in 1998 for vehicles called Cargo Vehicle Combinations (CVCs) which have a maximum gross of 74 tonnes and total length between 25 and 30 metres. They were defined as vehicles with more than two units, including the tractor unit, with a gross mass over 57 tonne or total length over 19.80 metres. No safety technologies were initially required, only ABS after 2013.

Users began to circulate with a new type of vehicle, intermediate to the ones regulated, which they called “bitrenzões”, which were vehicles as short as B-Doubles in length (19.8 metres long), but up to 74 tonne gross, with nine axles. Eventually these vehicles were included in the regulations, but the damage to the road infrastructure has been such that many states have banned their circulation. Currently, the prescriptive limits and specifications make a differentiation between the B-Double and another type of CVC known as the Rodotrain. The

Rodotrain has three sets of articulations; the two semi-trailers are linked together by a dolly. An 11-axle and 91-tonne model (Super Rodotrain) was approved by the National Traffic Council, however, its circulation was suspended in September 2018 after an action brought about by the Brazilian Association of Highway Concessionaires claiming there were negative impacts caused to the pavement.

## Argentina

Trials with HPFVs started in the province of San Luis in 2008. A 25 metre B-Double, gross mass 75 tonnes and nine axles with two triaxle trailers, was the vehicle chosen for the trials. The first experimental law allowing the circulation of B-Doubles was written and signed in 2009. Three years later with no accidents reported the permits were extended. The regulation specified compulsory safety and road friendly technology, not required on the other conventional vehicles at the time, for example ABS/EBS in all axles, a 6x4 workhorse with a minimum power/tonne ratio of 6CV/ton (50 per cent more than the other vehicles), retarder brake, pneumatic suspension and on-board-mass devices to name a few. A compatibility certificate between tractor and semi-trailers, plus a certificate indicating the vehicle was built to be a B-Double, were also requested. Other provinces sought to draft their own laws regarding HPFVs. However, in the name of standardization and operational straightforwardness, stakeholders were convinced of the need for a national legislation that provinces could adhere to later. In April 2014, a National Presidential Decree allowing circulation of B-doubles nationally was signed and published. The signature of the Decree was made in a large public event, and televised. Voices for and against were heard and read, the former technically correct, the latter emotionally louder. Regulations under the legislation came out at the end of 2015. The legislation of San Luis was updated in 2016 to concur

with the National Legislation, taking the total length to 30.25 metres and 6.75CV/tonne.

In 2017, San Luis created the first School of B-double Driving in South America, with over 100 graduates so far. While the drivers’ training course was initially compulsory, in October 2018 a new national regulation took that requirement away. In January 2019 the B-double went from the bad hag that was too big/too dangerous to “best thing that could ever happen in road transportation.” From newspapers to tweets, authorities and associations were praising the higher road safety, competitiveness and reduction in pollution of these vehicles. Diverse industries were strongly arguing in favour. It does take years to become an overnight success.

Currently, over 72 B-doubles and over 2000 “scalables” are running in Argentina. Scalables are trucks with trailers of higher weight than conventional vehicles, up to 55.5 tonnes GCM, however they do not require the safety technologies the B-doubles do, or the power in their workhorse. Many provinces have adhered to the national legislation, adapting their provincial laws in order to do so.

## Uruguay

In Uruguay, the president signed a Decree in October 2011 after six months of a pilot experiment with a seven axle, 57 tonne B-double in one specific corridor. Only a B type coupling was permitted. Road safety technology devices required were specified including ABS, EBS and stability control programs. In 2017, the Ministry of Transportation and Public Works (MTOP) received a request from the private forestry sector to study the possibility of authorizing the circulation of vehicle configurations larger than conventional ones, such as a B-triple of 30m and 74 tonnes. Foreseeing the potential benefits for the country’s economy of using HPFVs and with the collaboration of the Inter-American Development Bank, the MTOP hired the authors to study the feasibility of designing a sustainable regulation that would allow their circulation, taking account of the country’s road conditions



both in terms of safety and infrastructure. It was decided to call the new potential configurations VAD, which translates as High Performance Vehicles. The VAD project was divided into two phases. A first phase of two months at the end of 2017 included a reconnaissance trip to Uruguay through various Uruguayan routes and the delivery of a report with an initial diagnosis based on the experience of the consultants. The report confirmed the reasonableness of continuing with a second, more extensive phase of study. The second phase used Performance Based Standards (PBS) as in other countries and regions of diverse geographies and economies like Australia, Canada, New Zealand, South Africa, Sweden and the European Union.

The comparative studies – PBS for vehicles and bridge Tier 1 comparative assessment – measured the positive or negative impact the introduction of VAD configurations would have on safety and road infrastructure compared to the existing fleet and recommended the accessibility conditions under which they could be approved. The new VAD configurations include B-doubles and B-triples, and conditions comprise a combination of prescriptive requirements regarding high safety technologies and a report on 5 PBS standards from an internationally accredited assessor. Other legislation was written for tractor and triaxle semitrailer combinations up to 18.5 metres long and 48 tonnes GCM (3 tonnes more than the conventionals) which do not require a PBS report. However, travel in authorised corridors is required and similar safety and road friendly devices like the VADs

are requested. Uruguay implemented the VAD legislation in November 2020. In the first few months, over 500 applications for the 48-tonne tractor and semi-trailer were submitted.

## Mexico

A notice regulating maximum of weights, dimensions and circulation requirements for road transport was published in 2008. This legislation included for the first time HPFVs, locally called ‘fulles’. The current weight and dimension regulations were published in December 2017. There are 11 double trailer configurations allowed in Mexico. The most popular is the T3-S2-R4 (a 3-axle tractor, 2-axle semi-trailer and 4-axle trailer (two axles at the front and two axles at the rear)), 75.5 tonnes GCM. All vehicles doing transport service in double trailer configuration must comply with the safety, capacity and administration requirements. The requirements include GPS reporting, ABS, air suspension and electronic controlled engine.

## Colombia

With an ambitious CO2 reduction target of 51 per cent by 2030 and given that more than 90 per cent of its transport is by road, one of the proposals for CO2 reduction is High Performance Vehicles, or VCCs – combined cargo vehicles – as the authors recommended to call them in 2013, when we were invited for a workshop with transport users and national road authorities. Since that visit, many trials and draft legislations have not seen the light of day for different reasons. Maybe the decarbonisation agenda will give it a push this time.