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USDA's 94th Annual Agricultural Outlook Forum

Brazil's Soy Infrastructure: Improvements and Perspectives

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Chief Economist

Arlington, VA

February 22, 2018

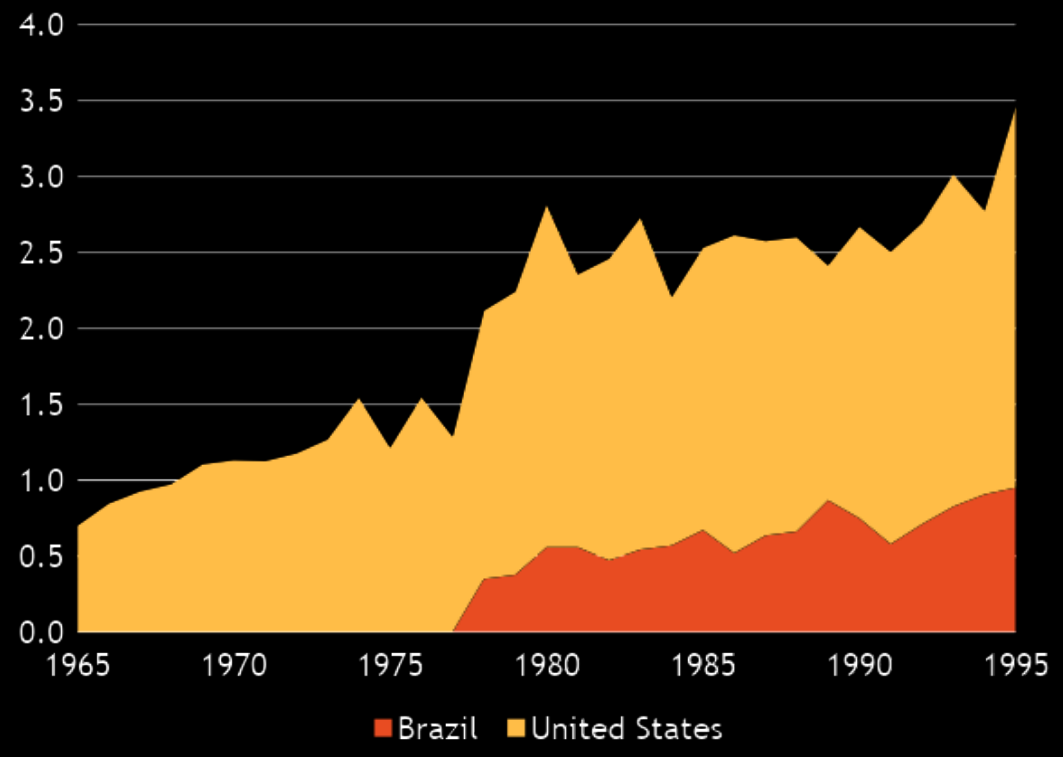
This is how soy started...

Credit image: Embrapa, Portifólio de Tecnologias Embrapa Soja 1975-2005, Documentos 262.

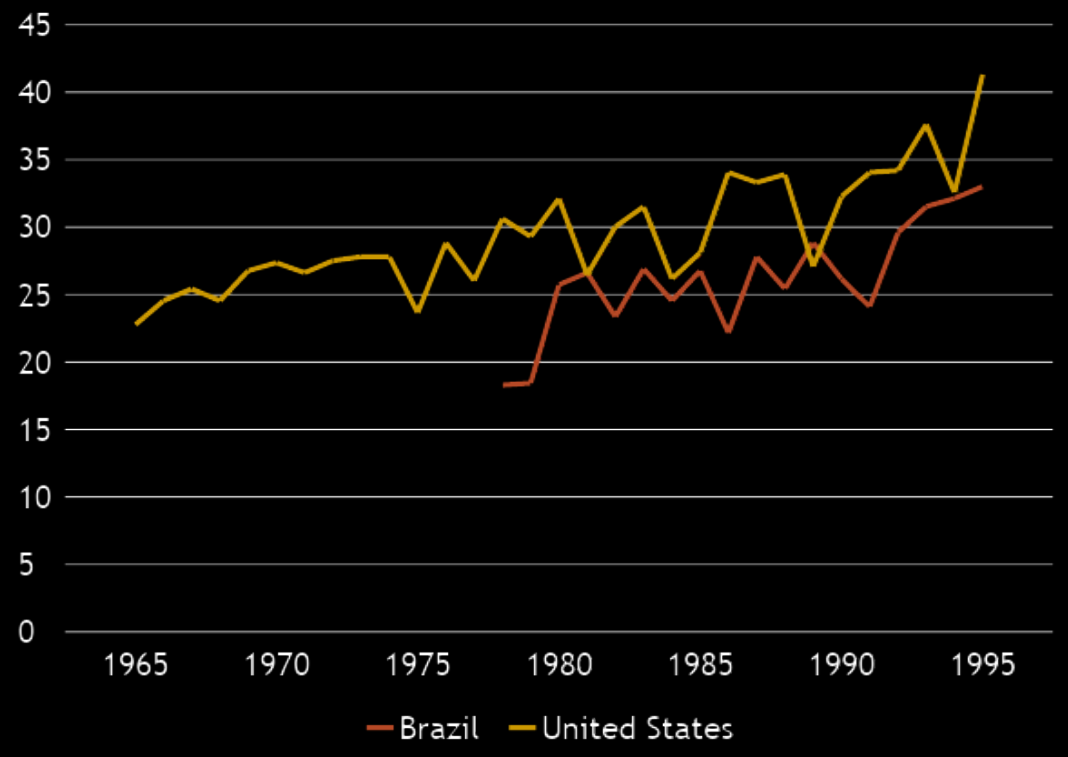
Credit image: Amaggi.

In the 1970's, soy began to grow, but its potential remained unexploited…

Production (billion bushels)



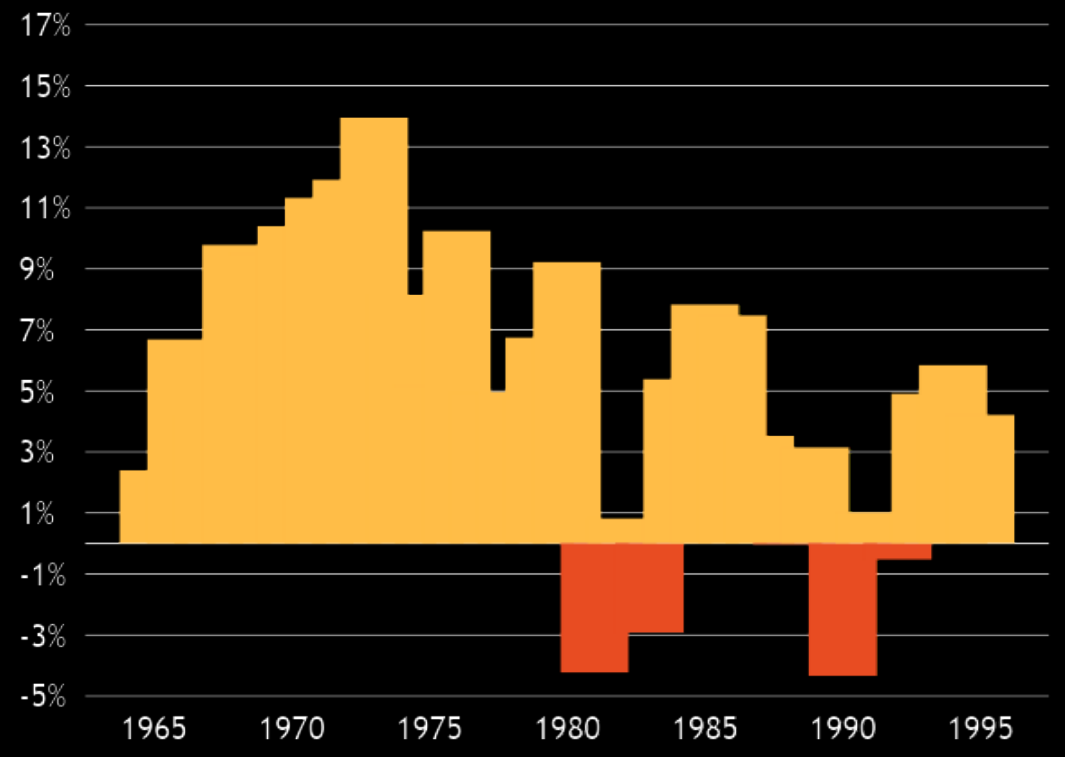
Yield (bushels/acre)



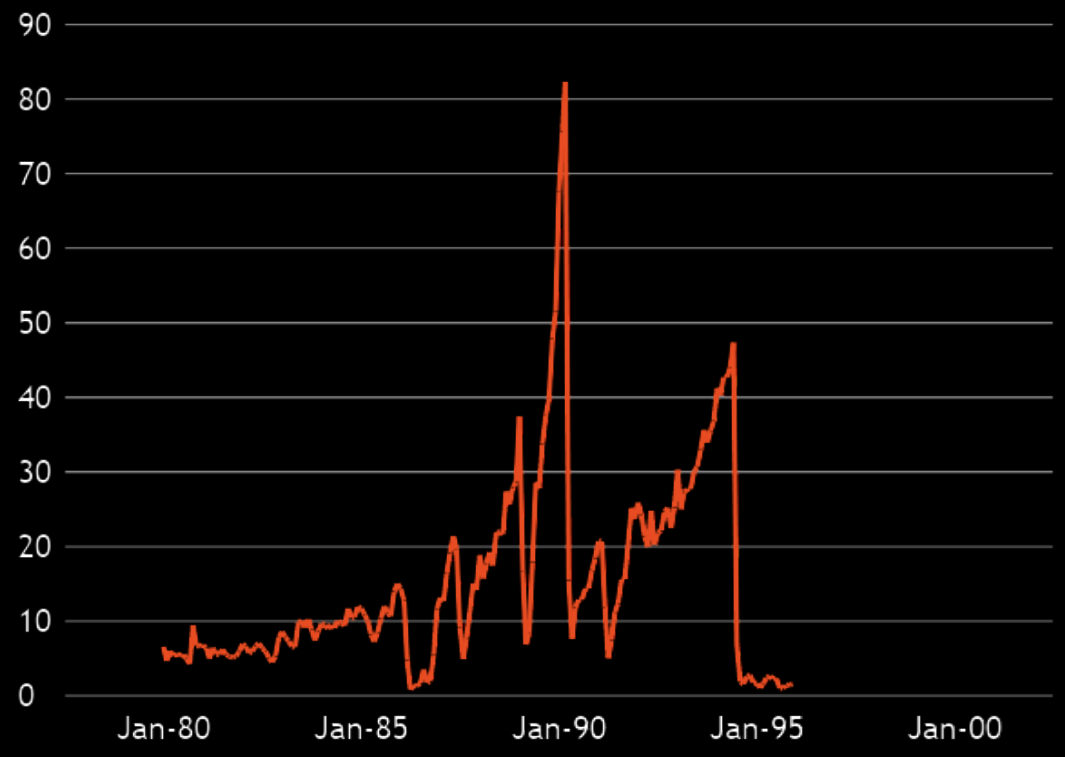
Source: USDA

…the economy faced difficulties…

GDP growth (% y/y)

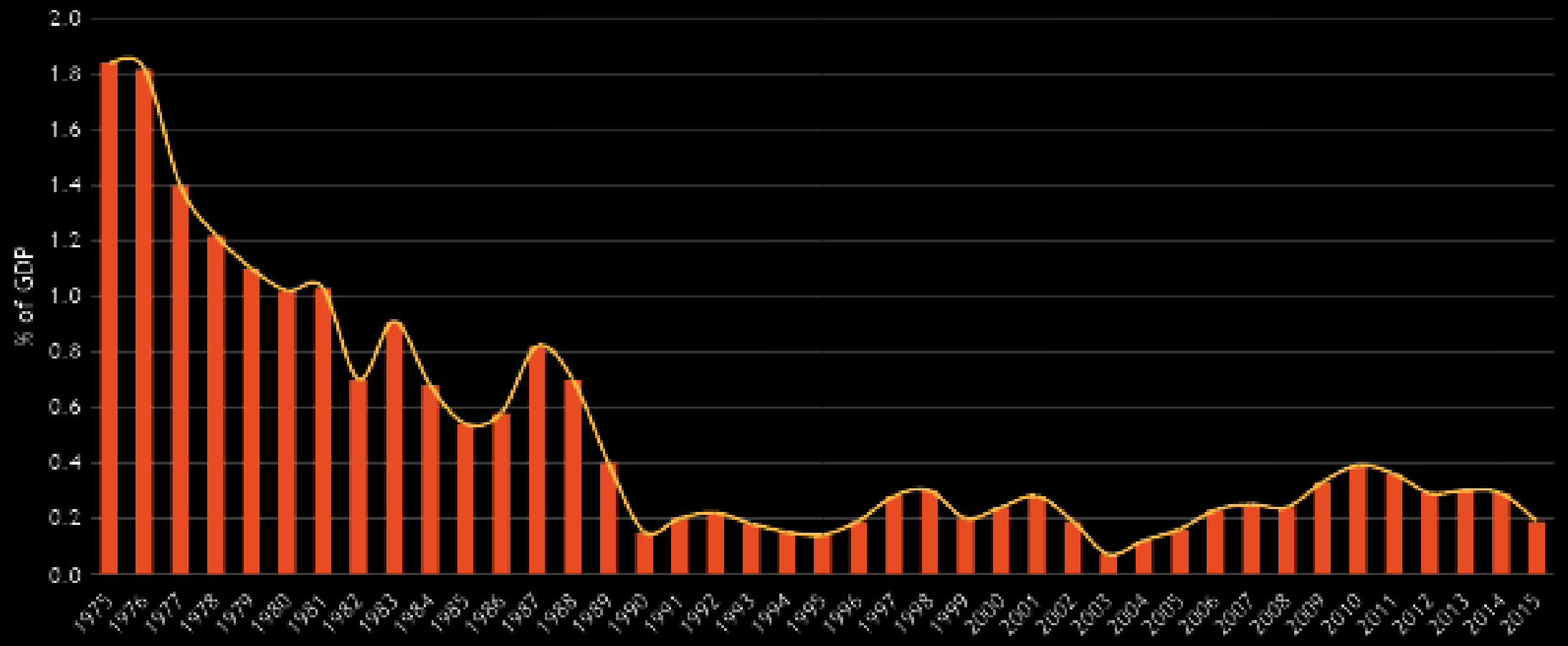


Inflation rate (%)



Source: Central Bank of Brazil with information from IBGE (GDP at constant last year prices and IPCA).

…and State investments in transportation infrastructure plummeted



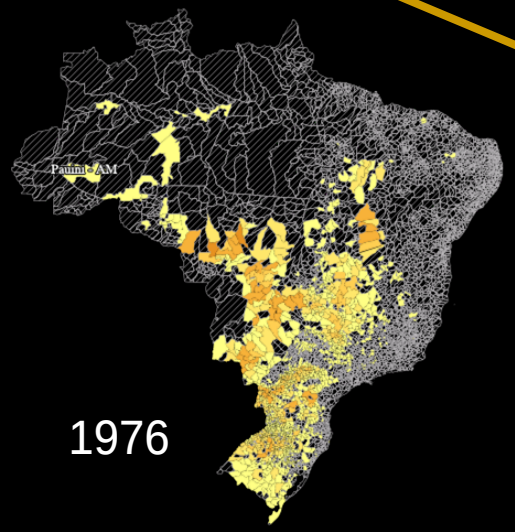
Source: Pesquisa CNT de Rodovias 2016 (CNT Highway Research).

The crop increased, but the number of producer municipalities fell

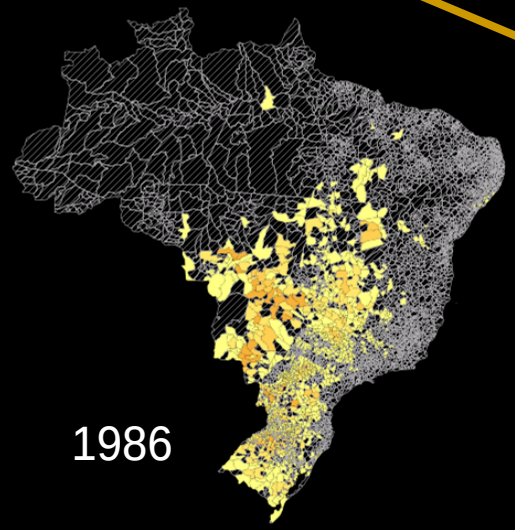
Outflow costs increase

Production becomes more concentrated

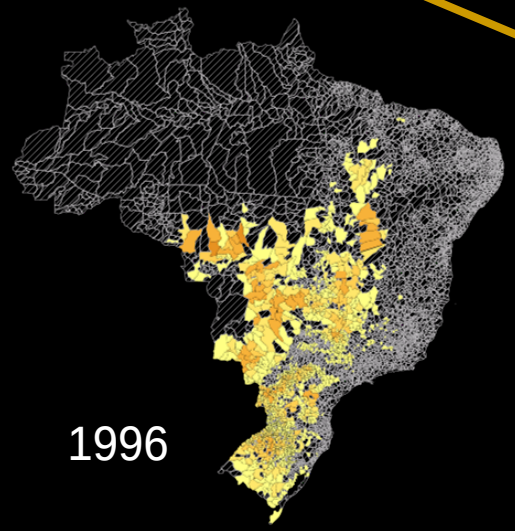
Scale and efficiencies are key



1976



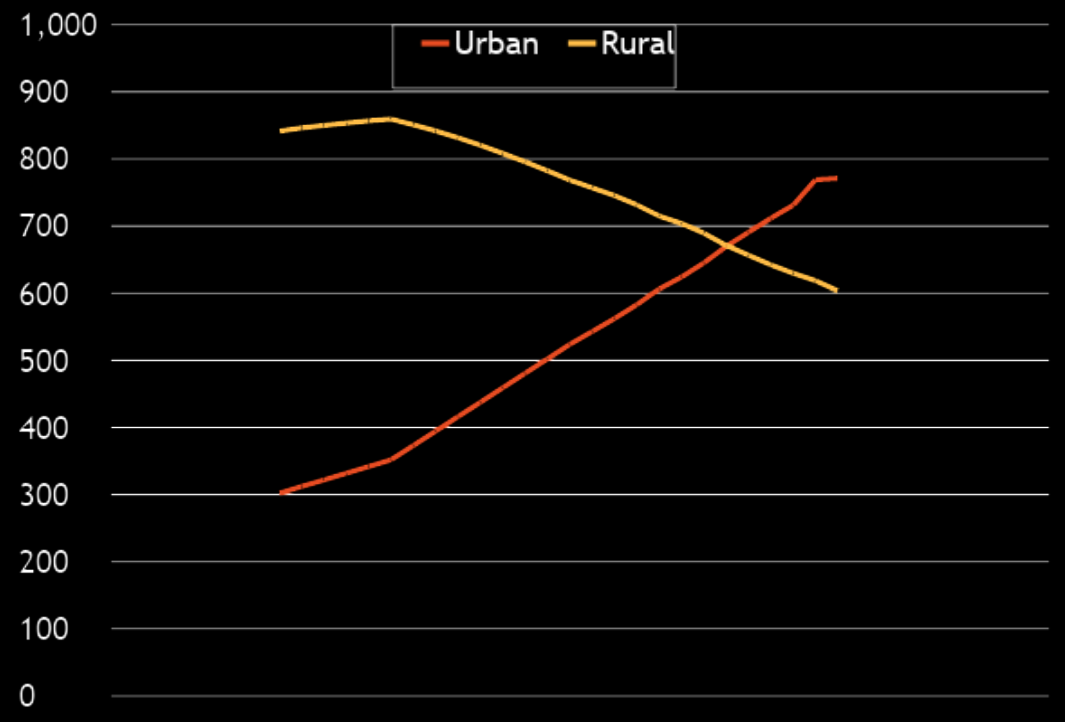
1986



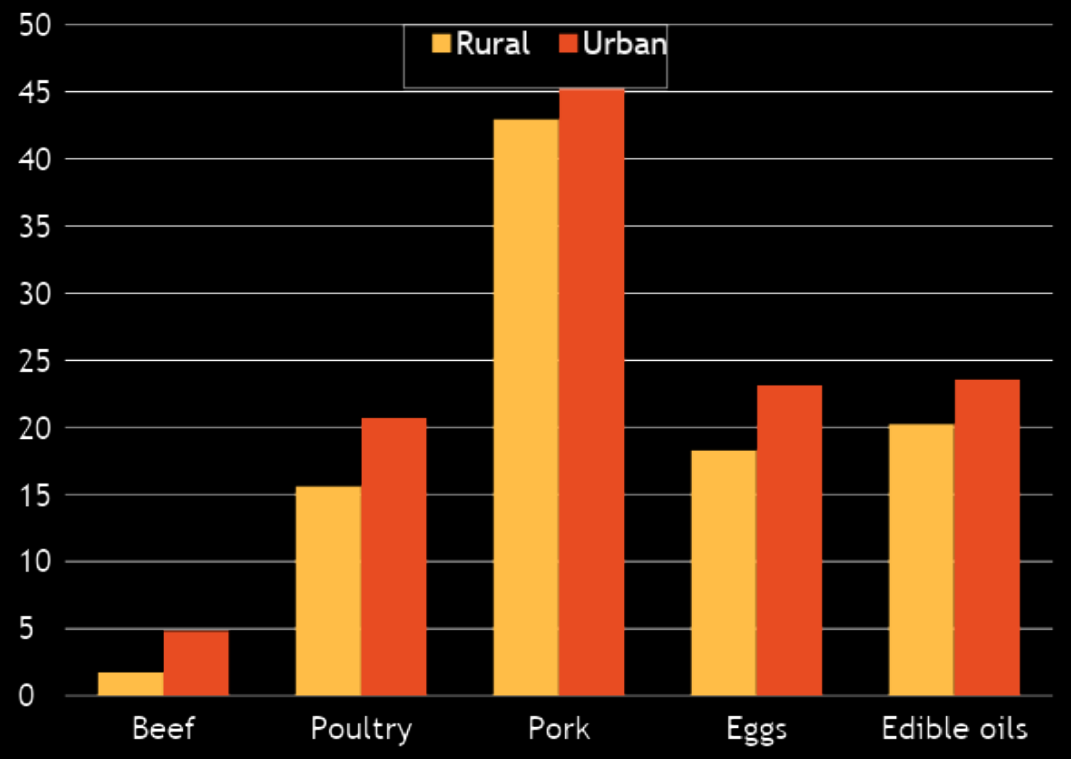
1996

Then, a new soy consumer turns up

China: urban and rural population (in million)



China: consumption per capita (pounds/year)



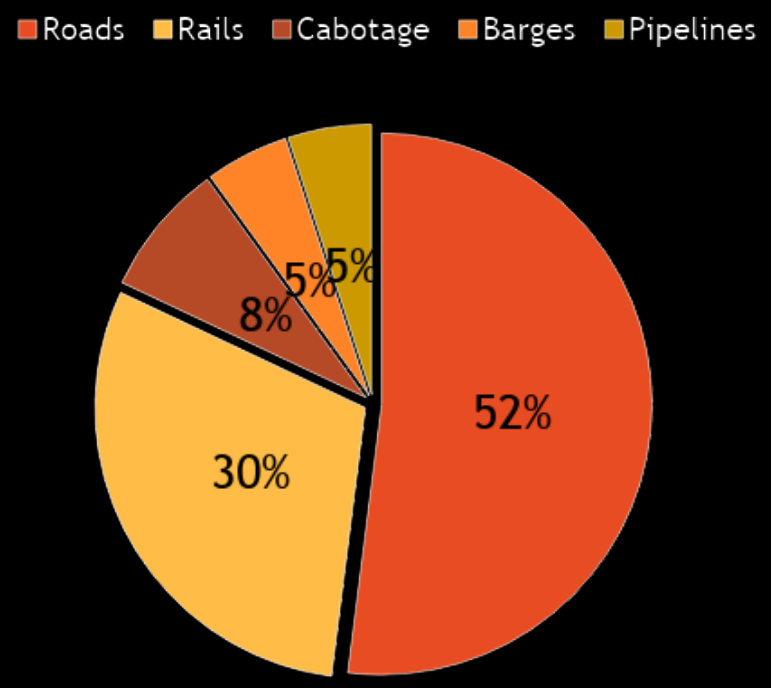
Source: China National Bureau of Statistics – China Statistical Yearbook 2016.

And Brazil becomes a big soy producer and exporter

Credit images: Amaggi.

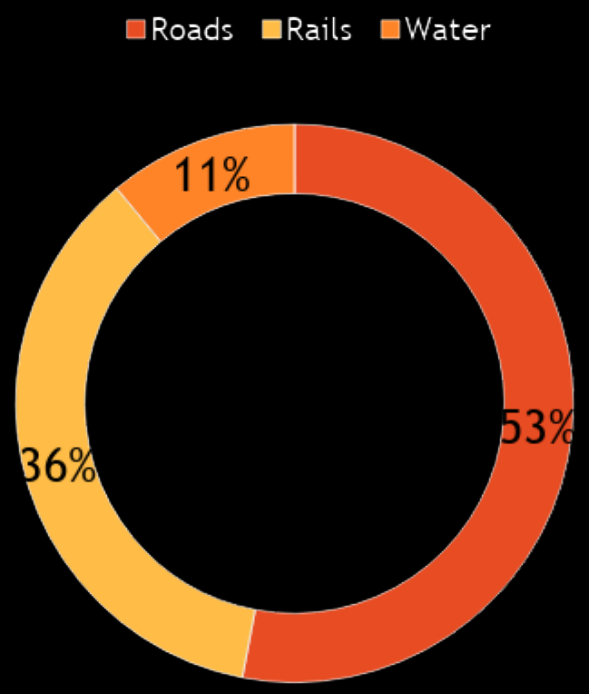
Brazil Cargo Transportation Matrix

General transportation



Source: Brazil, Ministry of Transportation – PNLT (2011).

Soybean transportation

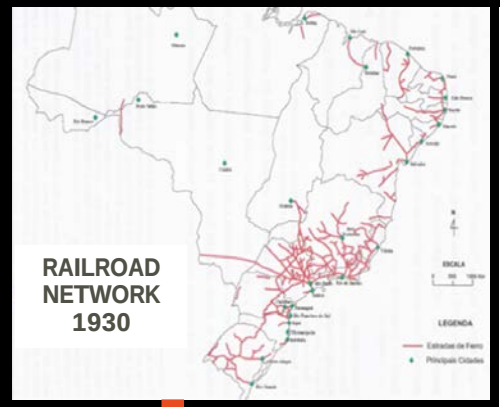


Source: Anec (2011).

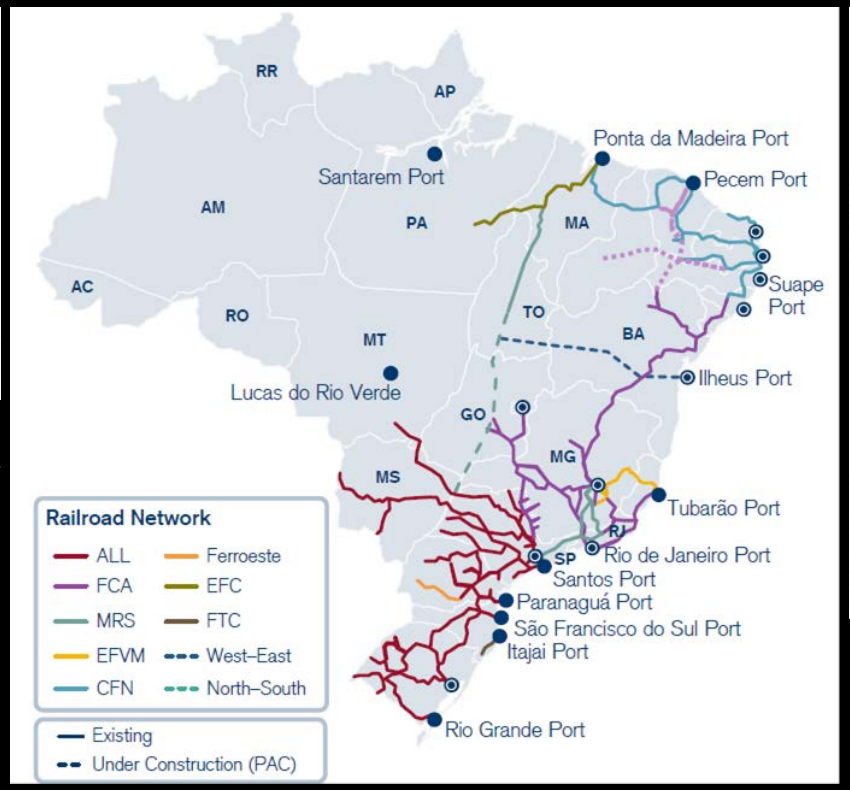
Railroad Network – Brazil vs USA

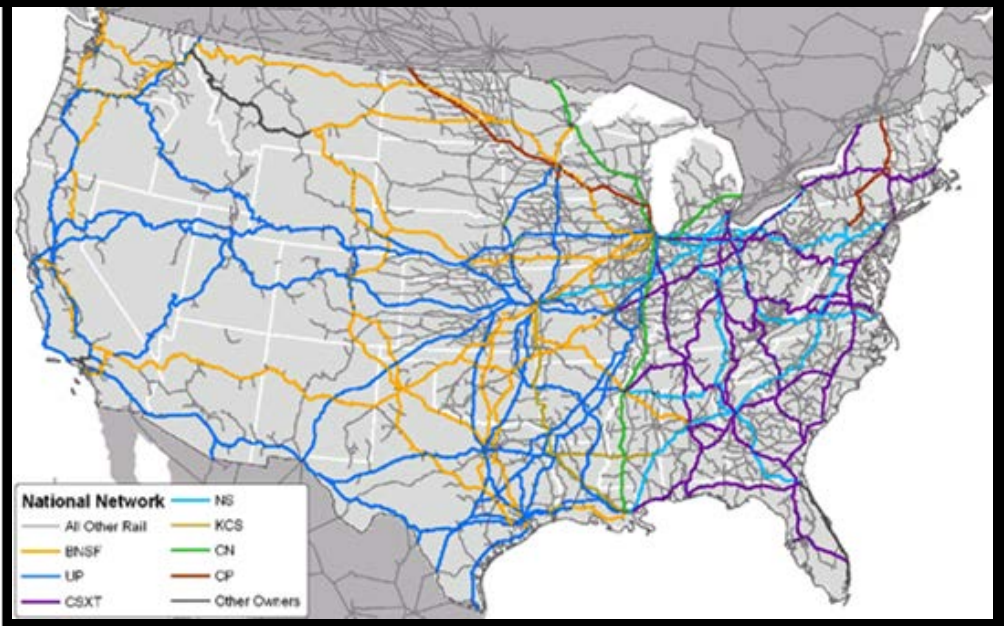
Brazil 18,000 miles

USA 140,000 miles



Railroad network has changed little since 1930





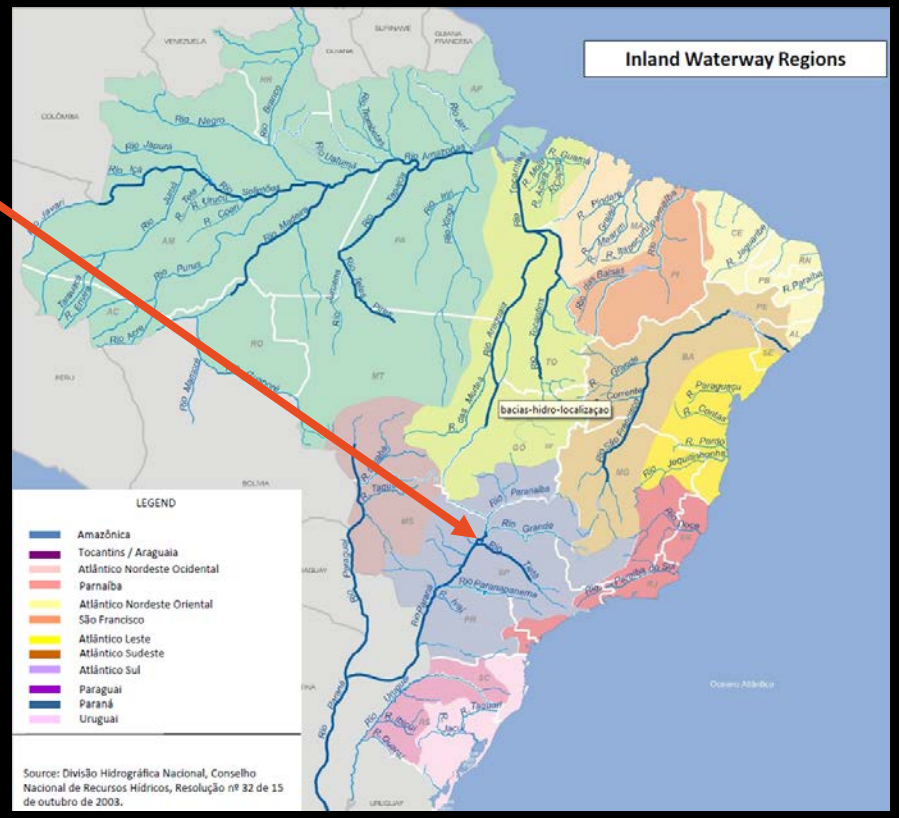
Source: Brazil, Ministry of Transportation, PNLT (2011) and ILOS (2014).

Waterway Network – Brazil vs USA

Brazil 8,700 miles

USA 25,500 miles

Only the Tietê-Paraná waterway is fully operational



Source: Brazil, Ministry of Transportation, PNLT (2011).

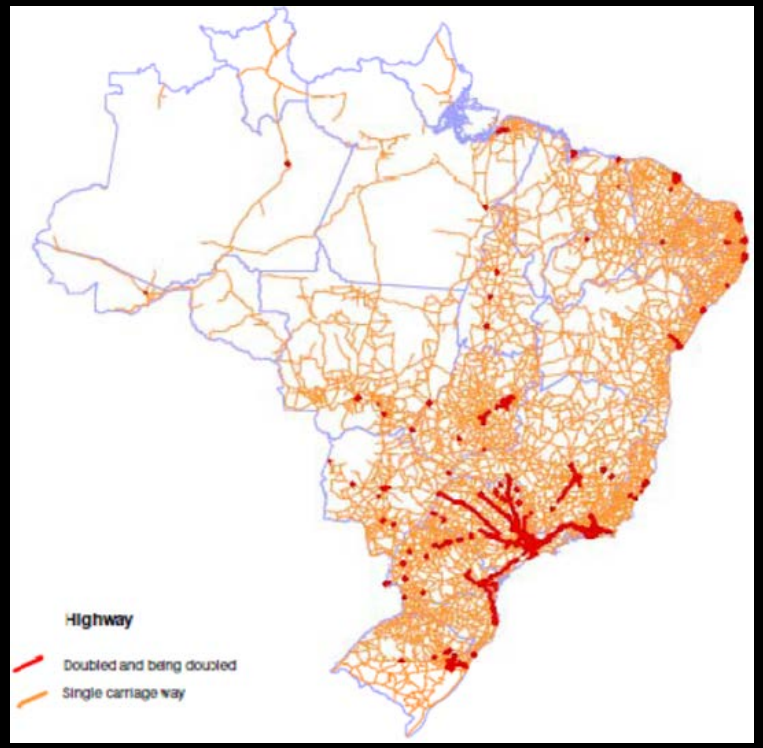
Source: US Global Change Research Program – 2009 report.

Highway Network – Brazil vs USA

Brazil

132,000 miles (14% paved)

980,000 miles



USA

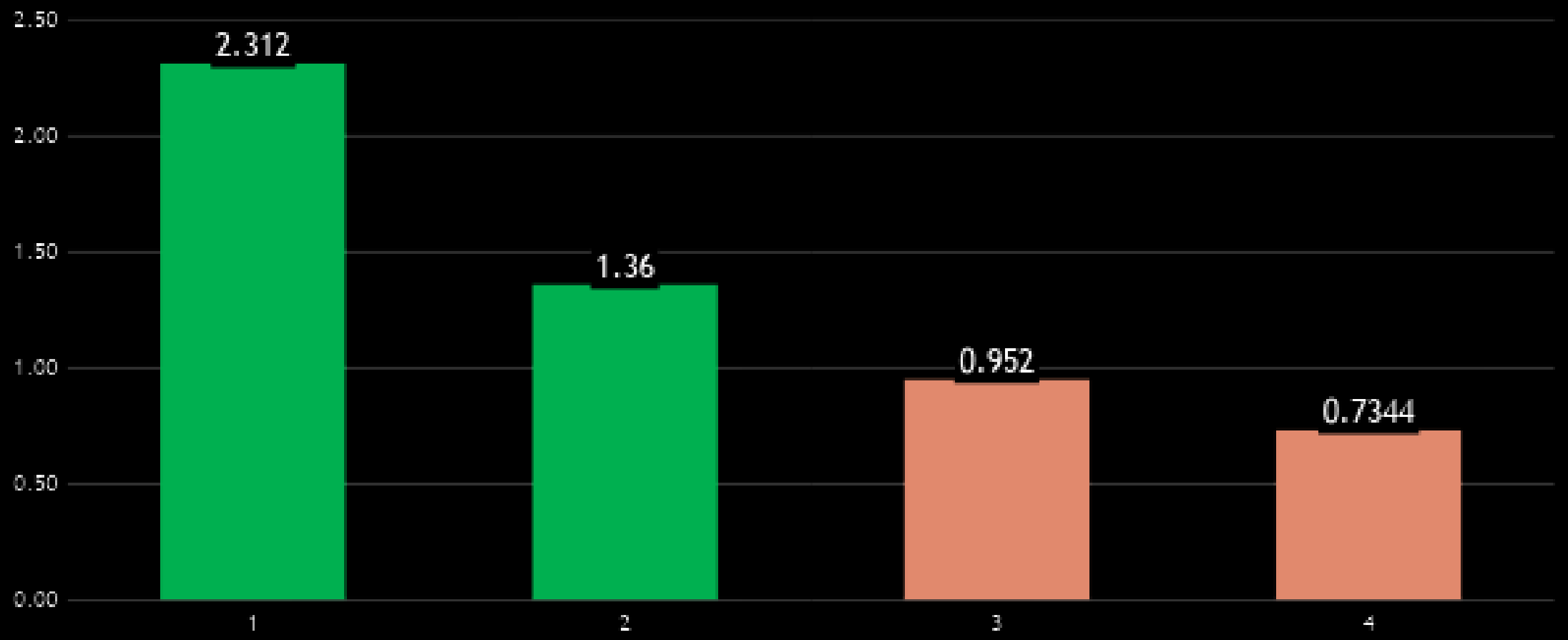
2,720,000 miles (69% paved)

3,935,000 miles

Source: Brazil, Ministry of Transportation, PNLT (2011).

Source: ILOS (2014).

Soy Transportation Costs (US$/bushel)



Source: USDA/AMS (2017), Sifreca and ABIOVE (2018).

Queues on access routes to the ports of Santos and Paranaguá

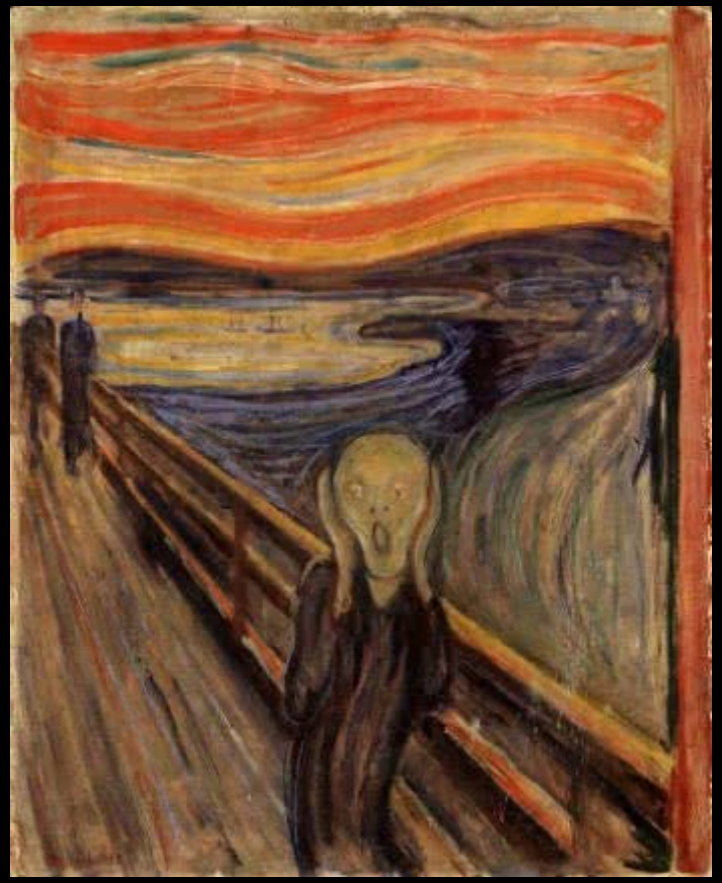
Credit image: Caminhões e Carretas (accessed on Feb 3, 2018).

Credit image: Gazeta do Povo (accessed on Feb 3, 2018).

The BR-163 road (Pará State) interrupted due to excessive rain

Credit images:

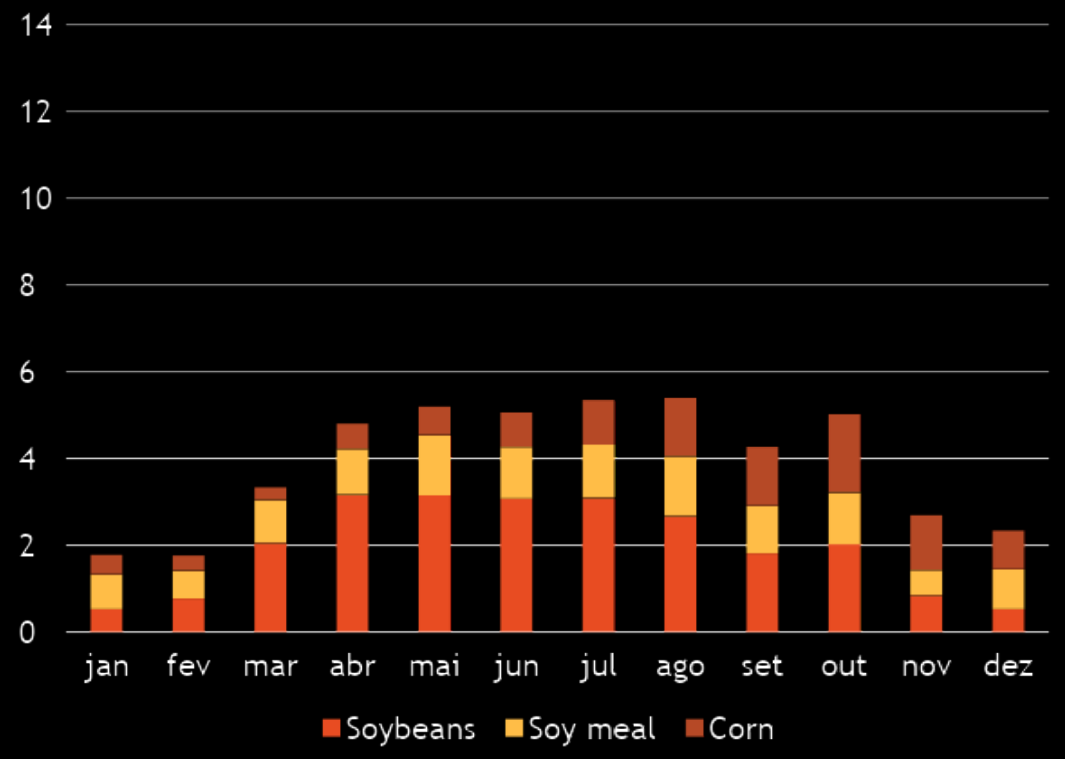
And now?



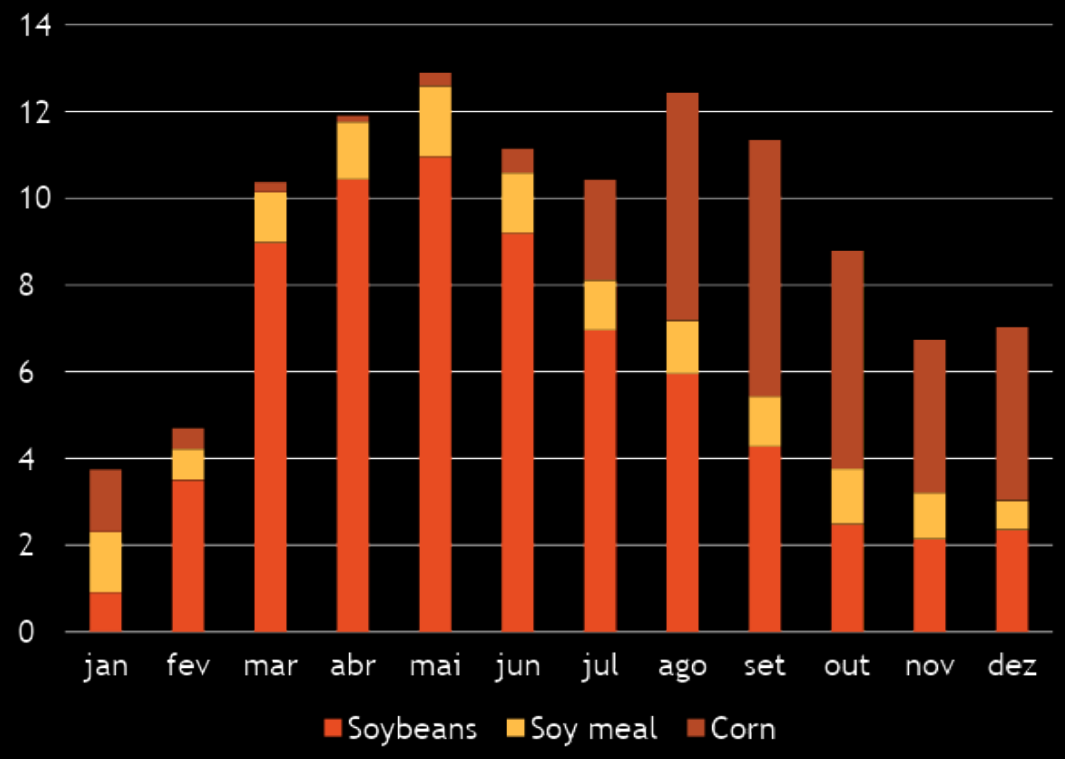
Credit image: site Cultura Genial on Feb 3, 2018.

Higher productivity: total port exports (MMT)

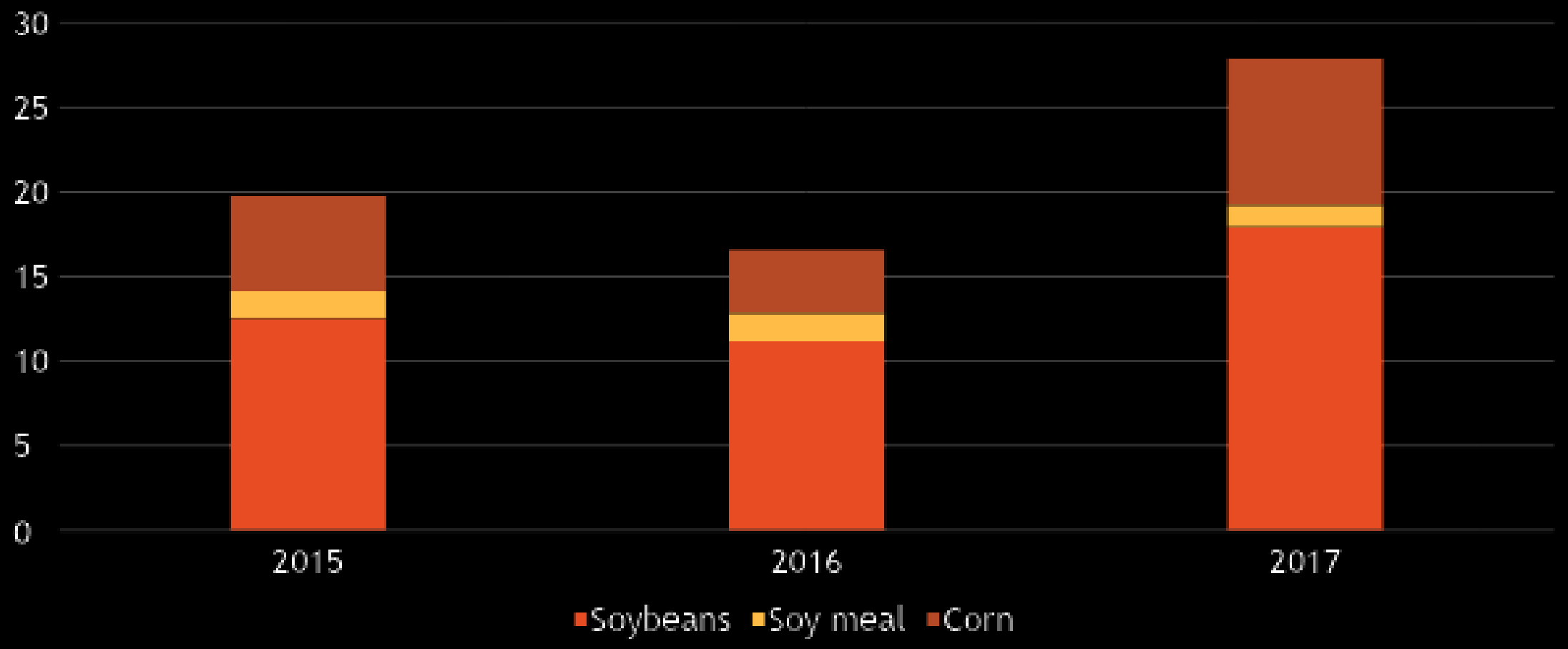
2007



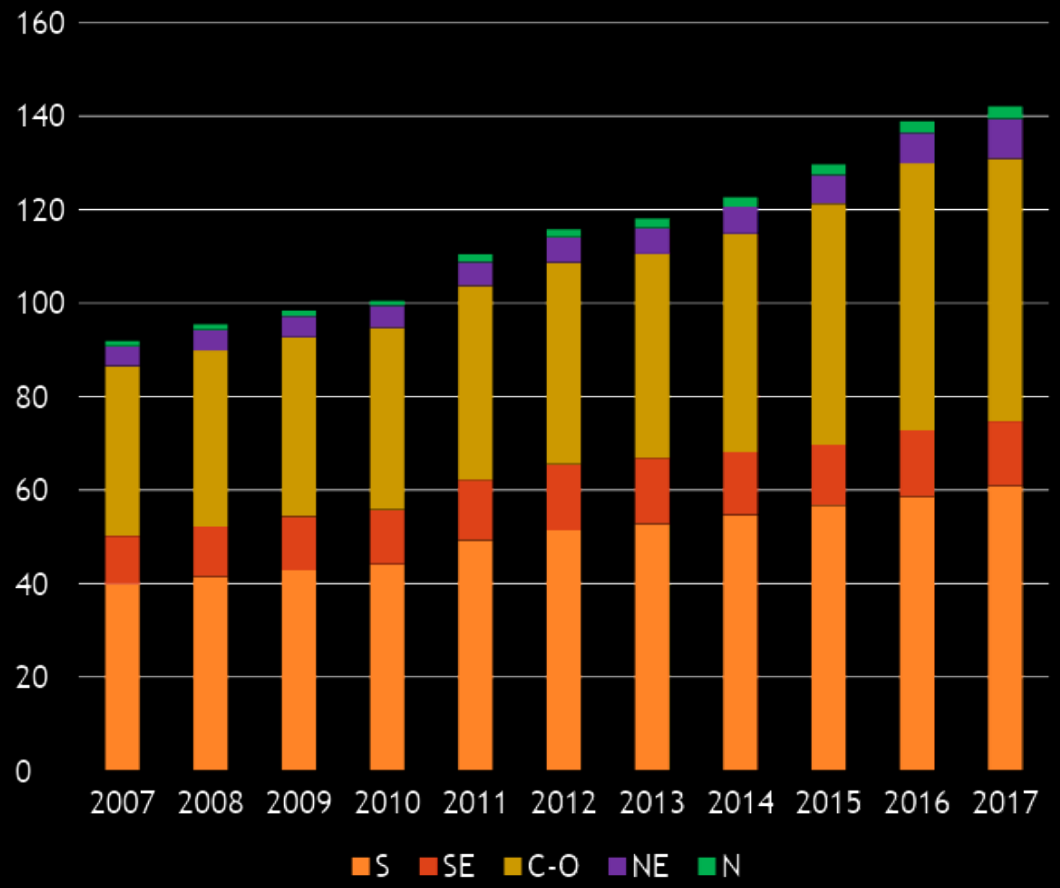
2017



Soybeans, soy meal and corn exports through the Northern Arc (MMT)



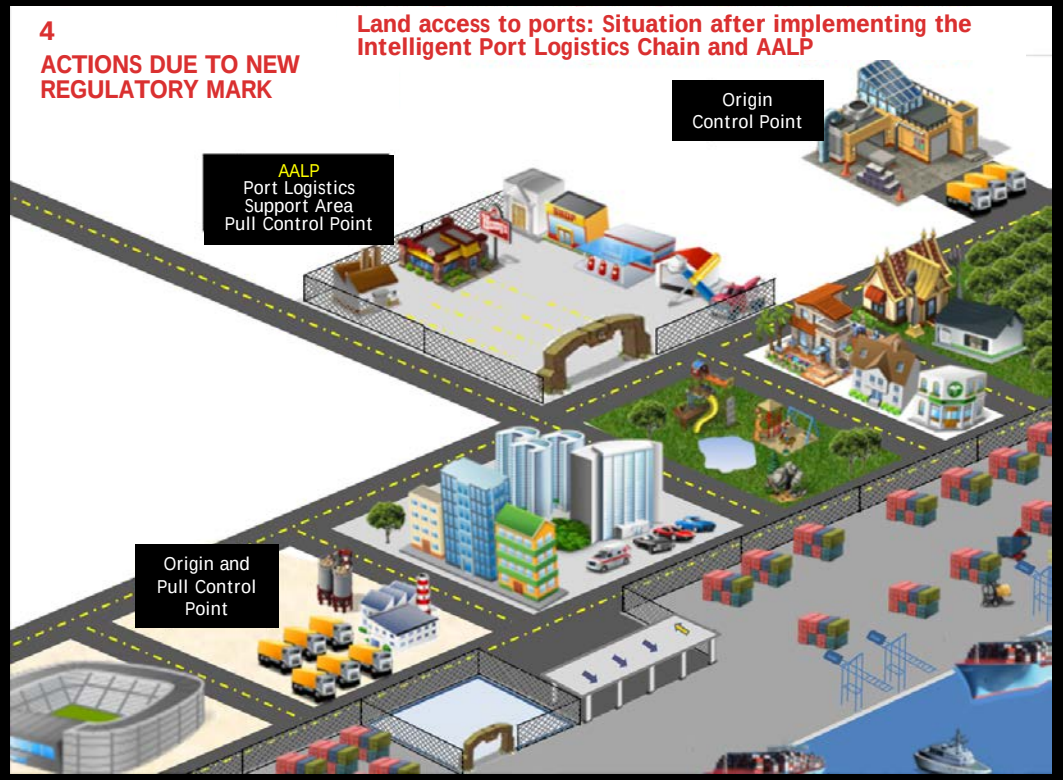
Warehousing capacity growth (MMT)



Brazil's main regions

Credit images: AGI Growth/Daniel Goulart and SuaPesquisa.com. Obs.: units with big commercial capacity higher.

Mandatory truck scheduling at ports



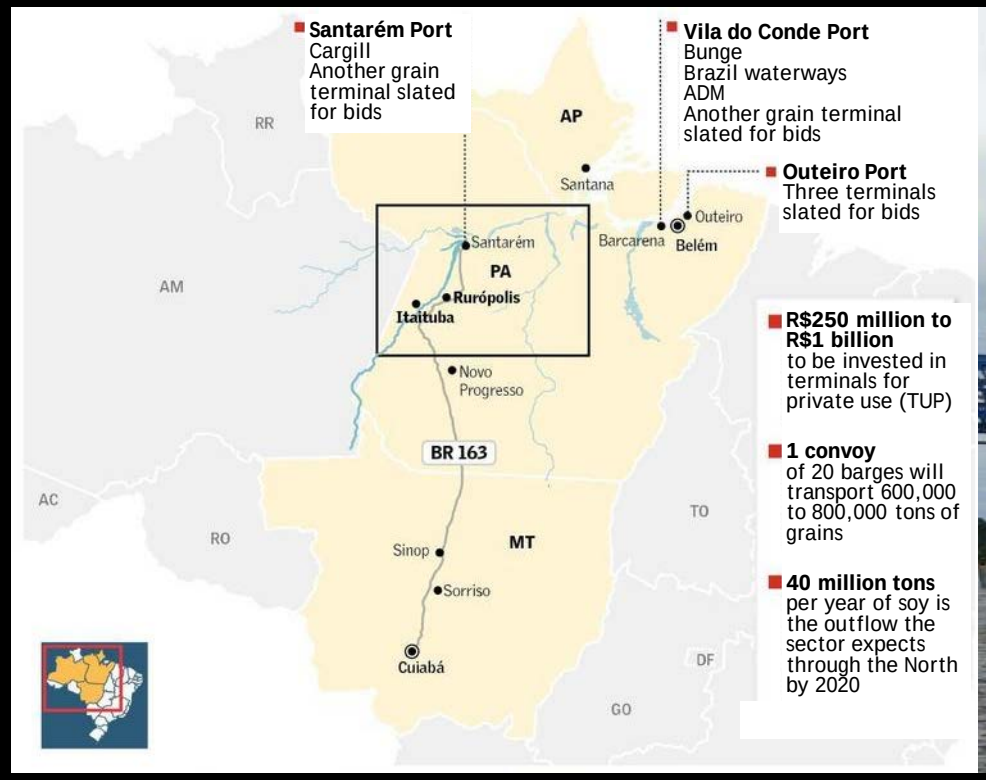
Source: SEP, 2013.

Credit image: Caminhões e Carretas (accessed on Feb 3, 2018).

BR-163 Highway: roadworks and traffic

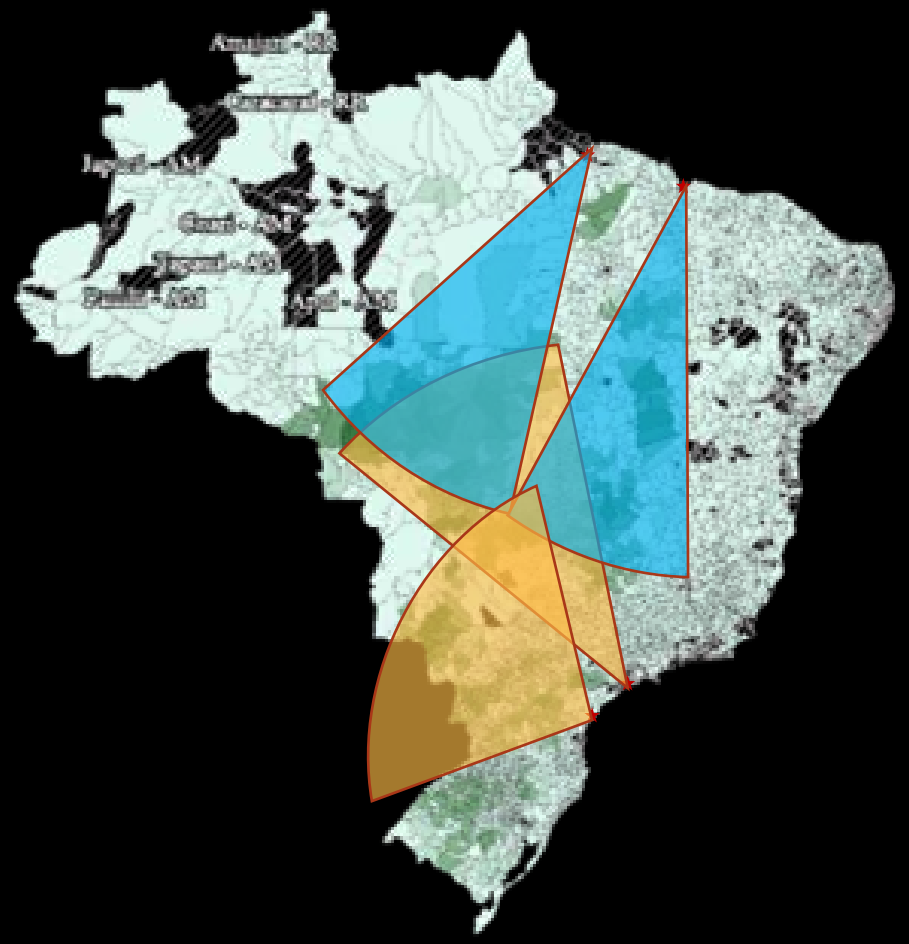
Credit images:

Grain terminals in the Tapajós River corridor



Source: Valor Econômico newspaper on Feb 25, 2014. Credit image: ABIOVE.

Greater competitivity for cargo between outflow modals and routes



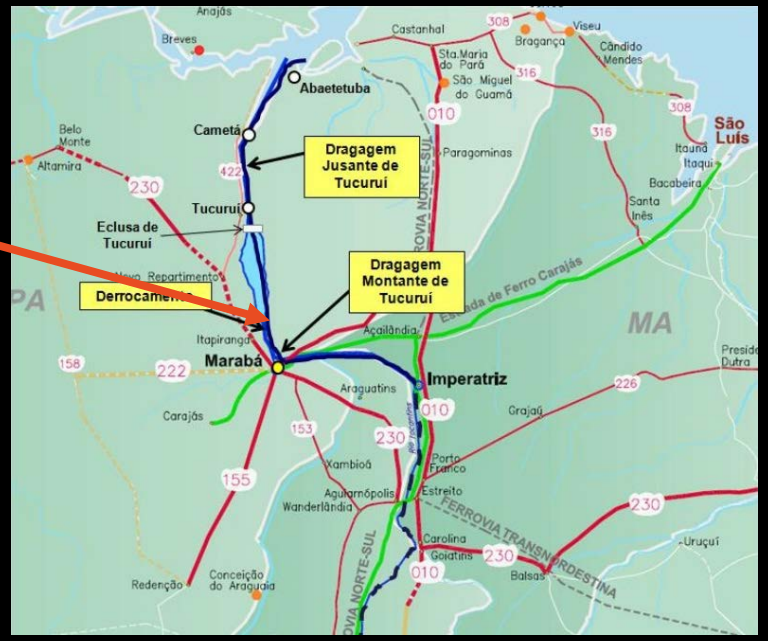
- Ports in the South and Southeast will continue to be important: soy, corn and other products will continue to be influenced
- Ports in the Northern Arc:
  - Will increase competition
  - Will create new opportunities
  - Will benefit the Center-West and Northeast regions

Tocantins River waterway: demolition of Pedral will allow unrestricted navigation

Tocantins river – removal of Lourenço rocks

Credit image:
DNIT.

Waterway must be efficient: only 500 km by truck

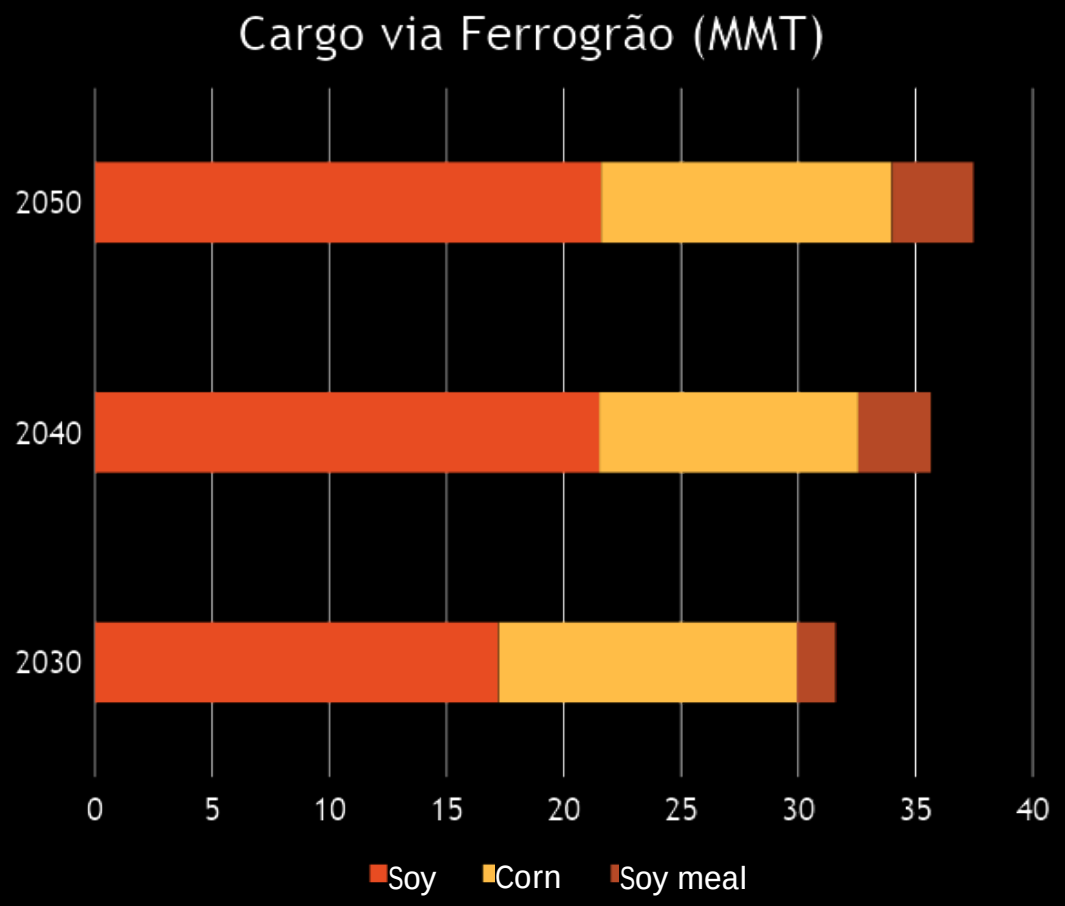


Credit image:
DNIT.

Tucuruí hydroelectric power plant

Credit image:
DNIT.

EF-170: MT-PA railroad (“Ferrogrão”)

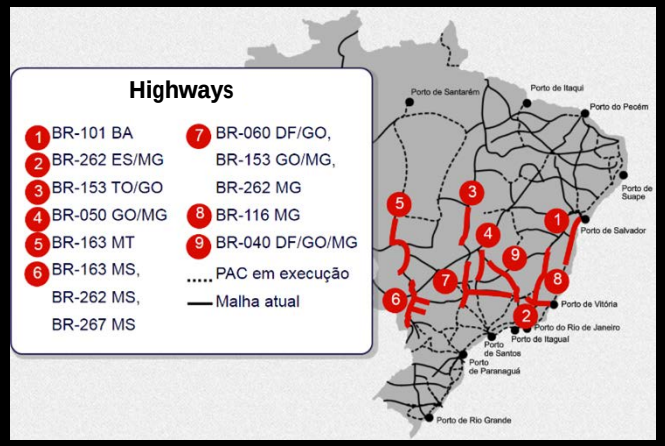


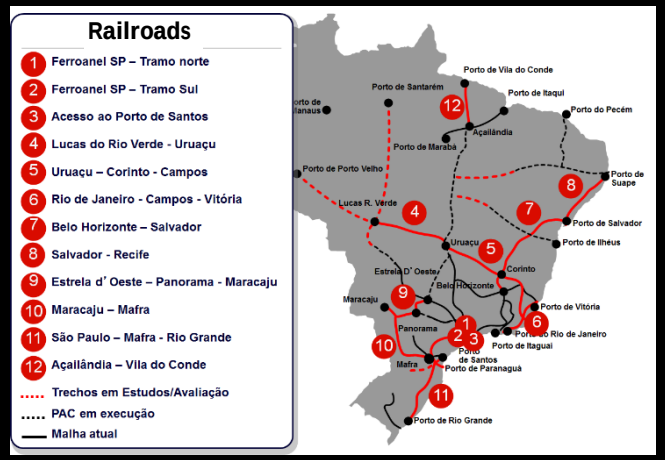
Source: ANTT (2017).

MT = Mato Grosso State; PA = Pará State

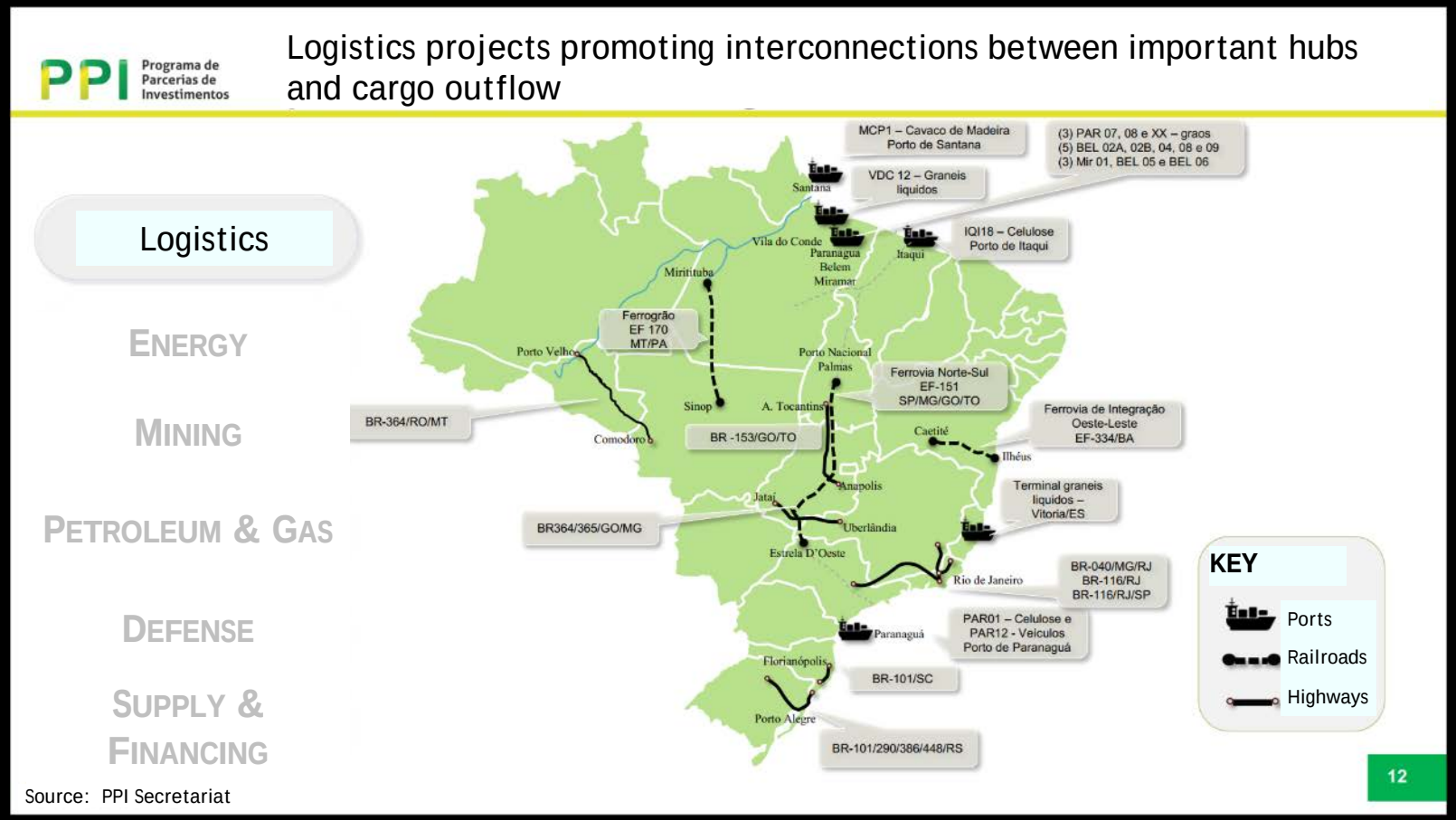
Consensus on the new infrastructure that is needed…

2014





2018



Source: PPI Secretariat

Source: Brazilian

…and advanced discussions on investments in current concessions

- 5 railroads: moving 457 MMT/year
- 30-year extension conditional on investments estimated at US$ 8 billion to expand capacity
- Access to Brazil's main ports

Source: Brazilian

Final Comments

- Brazil has become a **big soy producer** after mastering **technology** and expanding the **consumer market**
- The last two decades have revealed the shortfall in infrastructure
- New projects are ongoing, and the deficit should be fully resolved in 10 to 20 years
- Full services rendered at competitive prices will increase Brazil's productive capacity
- Long-term offer of products from the soy and corn complexes should increase especially in underutilized pastures

Associated Companies

ADM

Algar Agro

AMAGGI

Baldo

BINATURAL BIODIESEL

BUNGE

Cargill

COFCO AGRI

FIAGRIL

IMCOPA

JBS

LDC. Louis Dreyfus Company

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