Brazil

Emissions targets and implications for business

Reduce emissions by 37% by 2025, with an indicative extension to 43% by 2030, both against 2005 levels

What is Brazil's contribution...

1. **Deforestation levels should be 80% below the 1996-2005 average in the Amazon and 40% below 1999-2008 average in the Savannah by 2020**. 12 million hectares of forests should also be restored or reforested by 2030. Details on implementation are in the Forest Code, the Action Plan for Deforestation Prevention and Control in the Legal Amazon (PPCDAm) and the Cerrado (PPCerrado).

2. **Biofuels, ethanol and biodiesel is estimated to form 18% of the energy mix by 2030.**

3. **45% of energy mix should be from renewables**, up from 40% today.

4. In the electricity sector, the **non-hydro renewables share should double** to just under a quarter and an improvement of a tenth in the efficiency of electricity generation is expected.

5. International support is welcomed but not required, other than for REDD+ activities[1].

[1] The creation of financial value, or credits, for Reducing Emissions from Deforestation and Forest Degradation (REDD+)

...and what are the implications for business

- **$150m will be invested by government to avoid deforestation and burning in Cerrado by 2020**, after $460m was spent between 2011 and 2014.
- ABC or 'Low Carbon Agriculture' programme **loans for agroforestry reached $1.3bn in 2013**, investing in low carbon technologies and practices, soil uptake of nitrogen and rehabilitating degraded pastureland.
- **Clean energy sources are likely to benefit from $46bn targeted government investment** in generation and transmission lines by 2018.
- Hydro potential may be limited by dwindling untapped resource and droughts and investment incentives for other renewable energy sources are discussed.
- The Northeast and South regions offer high potential for **$10bn of planned investment in wind energy by 2020**, up from $6bn invested between 2004 and 2011.
- **Banks' interest in solar may return,** with 400 solar projects adding up to 10GW of potential solar capacity registered in 2014 and auction ceiling prices 25% higher in 2015 than the previous year (Brazil uses auctions to find willing suppliers at or below set consumer ceiling prices).
- **Industry has shown little sign of a focus on energy efficiency** for reducing emissions, particularly as Brazil hits recession.
- The $50bn per year Brazilian sugar-ethanol market will continue to be significant for the transport sector.
- Petrol and diesel price increases aid incentives for lower carbon fuels but increased energy costs for households by around **50%**.

GDP, energy and related emissions

GDP forecast: 3.1% per year
Emissions forecast: -2.3% per year
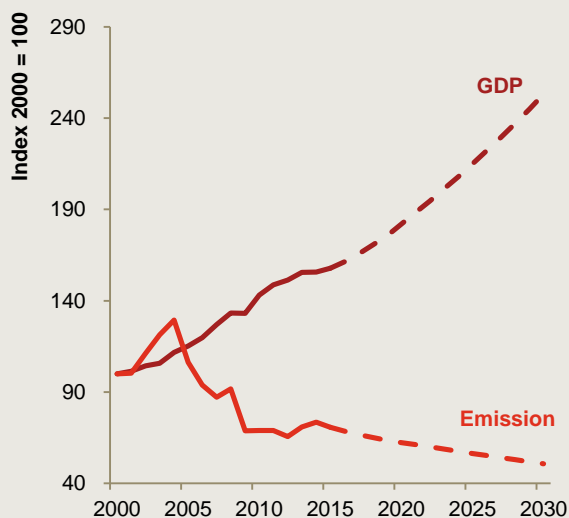
Our absolute emissions trend is based on combining the GDP forecast above with the average decarbonisation rate so far this century

GDP: Since 2000, GDP has grown 56% to US$3,264bn in 2014 and at an average of 3.2% per year. It was strongest in the five years leading up to the global recession where it achieved above 3% each year and a high of 6% in 2007, but shrank just once before the current recession by 0.2% in 2009. The last three years have all been under 3%, the lowest of which 0.1% last year. But things are set to return to normal – PwC's World in 2050 forecasts a return to over 2% growth in the next five years and a 3.1% per year average up to 2030.

Renewable energy: Renewables make up 38% of the total energy consumption in Brazil, helped by hydro's 28% share and biofuel's 5%. However, despite increasing hydro power generation, recent droughts has affected output. Geothermal increased from 1% to 4% and wind now contributes 1%, but solar remains on zero despite government incentives.

Energy: Similar to GDP, energy consumption has increased 58% since 2000 to 296 Mtoe. Oil, at 42% of the energy mix, increased the most in absolute terms providing an extra 42Mtoe, supporting Brazil's biggest emitting sector after LULUCF, transport. Gas also increased in absolute terms (27 Mtoe) and more than doubled its share of the fuel mix from 5% to 12% this century. Coal absolute consumption remained stable and so its share of the growing total fell from 7% to 5%, while nuclear increased its absolute contribution to maintain its small 1% share.

Emissions: In 2005, total emissions were 1,637 MtCO2. LULUCF contributed 77%, energy contributed 18%, agriculture 1% and industry and waste made up 4% of emissions. Of the energy related emissions, transport contributed more than half and industry a quarter, the rest relates to power and buildings.

Carbon intensity
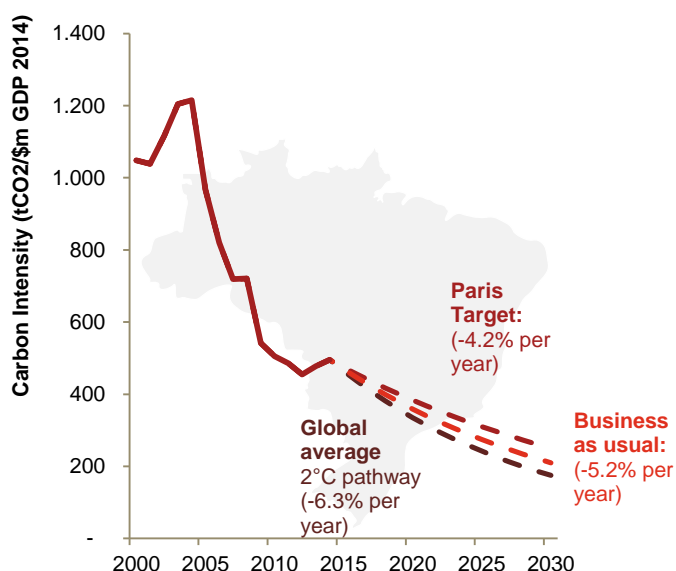
Carbon intensity forecast: -5.2% per year
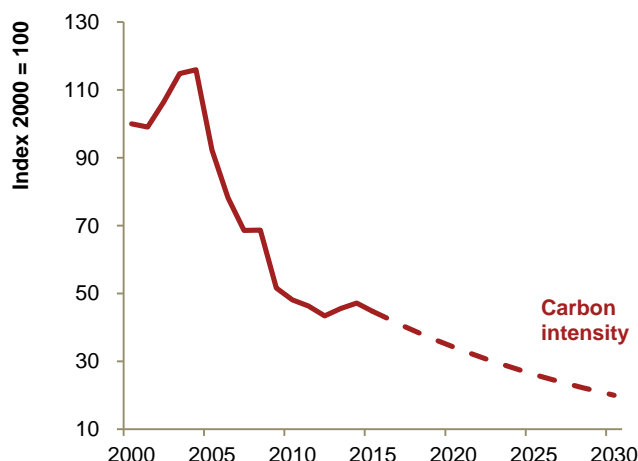
- Brazil's carbon intensity has seen the most dramatic trend this century, partly due to its sizeable LULUCF sector.
- It has averaged a decline of 5.2% per year, but has risen by 7.9% in 2003 and fallen by as much as 20% and 25% in 2005 and 2009. This change has been largely attributed to emissions reduction in deforestation.
- By contrast, when considering energy only Brazil's carbon intensity remained flat, although it did fall by 6% during the 2009 global recession.
- We use the average since the turn of the century, including LULUCF, 5.2%, for our business as usual forecast opposite and below.

How ambitious is Brazil's 43% target?

Brazil's BAU trajectory, decarbonising at 5.2% a year on average since 2000, is the closest country to the LCEI two degree trajectory. However by our measure of ambition it has become a victim of its own success because we look at the shift away from BAU, and its 43% implied an average decarbonisation rate of 4.2% per year.

While Brazil underperforms in our measure of ambition, its Paris Target should not be dismissed. Reducing deforestation has significantly contributed to carbon intensity reduction in the last decade, and continuing that trajectory, albeit slightly slower, will be essential in reducing land use emissions.

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Contacts

Eduardo Lemos
eduardo.lemos@br.pwc.com

Carlos Rossin
carlos.rossin@br.pwc.com

150910-141231-LA-OS