

## The Climate Institute/GE Low-Carbon Competitiveness Index

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Countries which seize the opportunity to improve carbon and energy productivity will enhance their future competitiveness and prosperity. Carbon and energy productivity are and will increasingly become drivers of economic prosperity in a world that limits emissions.

How each nation adapts to a carbon constrained world will, to a large extent, determine its future economic competitiveness and ability to create prosperity for its population. The Low Carbon Competitiveness Index provides an important picture of the competitiveness of the G20 countries.

In 2009, The Climate Institute commissioned leading London-based analysts Vivid Economics to measure and rank the low carbon competitiveness of G20 countries.<sup>1</sup>

GE joined with The Climate Institute in 2012 in commissioning an update of the analysis, which included back casting the data to 1995 to examine how those rankings change over time and updating to 2008 data.<sup>2</sup> The resulting Climate Institute/GE Low-Carbon Competitiveness Index has been updated this year to 2010 using publically available data for all 19 indicators across the G20 countries.<sup>3</sup>

The Index does not capture the impacts of more recent policy developments, such as Australia's Clean Energy Future package. Instead, it shows how previously implemented policies have influenced each country's absolute and relative readiness for a low-carbon world.

### Key Findings of the 2013 Index

The countries that come towards the top of the latest The Climate Institute/GE Low-Carbon Competitiveness Index are those that have both high levels of economic activity per capita and have acknowledged the need to orient their economies towards low-carbon growth or manage resource constraints. By contrast, countries towards the bottom of the index are those whose economies are heavily dependent upon carbon intensive production for income and are delaying or slower to take action. This includes Australia.

+ *France, Japan, China, South Korea and the United Kingdom are currently best positioned to prosper in the low carbon economy.* France retains the top ranking it received in the previous assessment. Japan, South Korea and the United Kingdom have also maintained similar scores and positions.

A range of factors influence France's strong performance including a low emission, mostly nuclear electricity sector, energy efficient passenger transport, high fuel prices and high technology exports (e.g. aerospace and pharmaceuticals). Although France, between 2008 and 2010, did not improve its absolute score by much, its growth in high technology exports and decrease in air freight more than made up for contractions in its capital formation and per capita income resulting from the global financial crisis.

### 2013 Low-Carbon Competitive Index Top Five



+ *China has leapt into the top five best placed nations.* China's dramatic rise up the Index to third place is the result not only of its major investment in clean energy, but also growth in its high technology exports.

+ *The United States has fallen behind.* One of six countries whose absolute score has worsened since 2008, the US has fallen behind by almost as much as China has leapt ahead, and is now in 11th place, down from ninth in 2008. This drop is due in large part to declining high-tech exports and a major surge in its reliance on air freight.

+ *Australia has slightly improved its score, but not its ranking.* Slight improvements across all three categories have not been enough to prevent Australia being overtaken by Indonesia and consequently falling from 16th to 17th place.

This fragile reversal has been driven by a number of factors along with relative good economic health:

1. Increased investment in infrastructure and to a lesser extent education;
2. A slight increase in efficiency within the transport sector; and
3. An unusual decrease in the depletion of natural resources, which may be short lived.

## Index Changes 2008 – 2010

In the aftermath of the 2009 UN Copenhagen climate talks, countries continue to implement policies that slow the growth in carbon emissions and encourage investment in clean energy.

Only three countries retained the same ranking between 2008 and 2010: France, Mexico and Saudi Arabia. Indonesia and China made great leaps, moving up four places. Germany dropped from second to sixth; Australia fell one rank to 17th. Many of the smaller changes in ranking can be explained by the exceptional performance of Indonesia and China, while others reflect extreme close scores. So it is important to consider changes in absolute score, as well as rank.

*Visit the interactive Index on The Climate Institute's website for more information on what's driving each country's score.*

[www.climateinstitute.org.au/global-climate-leadership-review-2013.html](http://www.climateinstitute.org.au/global-climate-leadership-review-2013.html)

## 2008 v 2010



## Framework for Analysis

A total of 19 variables are included in the Index. These were chosen for their robust statistical relationship to carbon productivity, and their weighting in the index is proportionate to the size of their impact. Some are included as proxies for broader measures. For example, the efficiency of oil refining is used as an indicator of broader energy efficiency in the industrial sector.

The indicators are assigned to one of three categories that were chosen to represent related but distinct elements of low-carbon competitiveness: sectoral composition, early preparation and future prosperity.

+ Sectoral composition: This category captures how the composition of the economy is currently structured towards less emissions intensive activities. Countries whose economies are more heavily weighted towards sectors which will experience lower demand due to climate action – e.g. the export of emission intensive products like coal or high levels of energy consumption in the transport sector - will be relatively worse off.

+ Early preparation: These indicators reflect the steps that countries have already taken to move towards a low-carbon economy. Early adopters of energy efficiency or low-carbon technologies will experience higher rates of learning, greater cost reductions and so will be better placed to generate material prosperity in the future. Also, the costs of shifting to a low-carbon economy will be higher if the transition is delayed and occurs more quickly or dramatically. For these reasons, countries which take early action on climate change will have higher standards of living in a low-carbon future.

+ Future prosperity: A country's ability to provide prosperity to its citizens in a low-carbon world is not just a function of technology and the sectoral composition of the economy. For example, beyond the general performance of the economy, prosperity will also be function of variables like investment in education which support innovation. Measures of natural capital will also be important to capture the change in a country's stocks of resources, such as agricultural land, minerals and forests. If countries deplete their stock of natural capital, their capacity to produce goods and services (such as timber or clean water) from the natural environment in the future is reduced.

## ENDNOTES

<sup>1</sup> Vivid Economics, *G20 low carbon competitiveness, report prepared for The Climate Institute and E3G*, London, 2009:

<http://www.climateinstitute.org.au/articles/publications/low-carbon-competitiveness-report.html>, accessed 14 February, 2013.

<sup>2</sup> Vivid Economics, *G20 low carbon competitiveness index: 2012 update, report prepared for The Climate Institute*, London, December 2011:

<http://www.climateinstitute.org.au/articles/media-releases/australia-alone-in-low-carbon-competitiveness-slide.html>, accessed 14 February, 2013.

<sup>3</sup> This is based on econometric analysis of the structure of the country's economy and variables that would indicate how it would perform in a low carbon future. Variables are included in the index if they are found to have a sufficiently strong positive statistical relationship to carbon productivity, and the weighting of the different categories in the index is proportionate to the size of their impact. For each variable that has been included, a score of 1 means the country has the highest score for that variable in the world, while a score of zero means it has the lowest score. A higher score on the index, therefore, means that a country is getting closer to global best carbon productivity practice.