



CARBON CAPTURE AND STORAGE POLICY INDICATOR (CCS-PI) 2015 UPDATE

CCS is one of several vital technologies that is able to curb large volumes of anthropogenic CO₂ emissions and help stay within the 2 degree Celsius limit that has been agreed to by the international community. As is the case with other emission reduction technologies, significant policy support is required to deploy CCS at a scale that is commensurate with the level of emission reductions required.

The Institute compares and reports on levels of national policy support to drive domestic action on CCS through its CCS Policy Indicator (CCS-PI). The results of the Institute's Indicator for 2015 are that:

- The United Kingdom continues to provide the strongest policy leadership in encouraging CCS
- Canada and the USA also rank highly and have improved in standing since 2013
- China has a strong inherent interest in setting favourable policies towards CCS and has implemented a range of positive measures since 2013
- India, Russia and Indonesia also have a strong inherent interest in promoting CCS and would benefit from stronger policy support.

Several developed countries with a heavy reliance on fossil fuels have improved their policy rankings since 2013 through the development or introduction of emissions performance standards on power generation plant and in progressing carbon pricing.

Achieving emission reduction targets at least cost requires that all emission reduction technologies are deployed in reflection of their relative cost effectiveness. Such an outcome is best achieved through policy that is technology neutral. There are 51¹ large-scale integrated CCS projects in the world today in operation or in various stages of planning, with investment in CCS totaling around US\$13B since 2007.² While encouraging, this compares to investment in renewables power generation technologies (predominantly wind and solar PV) of around US\$1,800B over the same timeframe³, which in part reflects that CCS has not been

afforded comparable policy support and much more effort is required to encourage further deployment.

WHAT IS THE CCS-PI?

The composite indicator (CCS-PI) includes two indexes (Inherent CCS Interest Index and Constituent Policy Index), which are made up of lead indicators (fossil fuel production, fossil fuel consumption, adoption, demonstration, and deployment), sub indicators (oil, gas, coal, comprehensiveness, appropriateness and adequacy), and variables (policy instruments).

The Constituent Policy Index draws from an extensive Institute database of policy measures for a wide range of countries, including direct support for CCS as well as broader implicit support through measures such as carbon pricing. These measures are weighted and aggregated to derive relative levels of support for CCS demonstrations and deployment. Policies are captured in the Constituent Policy Index where they have been implemented but also under development (with the degree of development affects a policy's weighting).

Inherent CCS interest is a relative index based on global shares of fossil fuel production and consumption. It provides one indication only (among many possible methods) of the underlying potential interest countries may have in implementing policies that locally contribute to the global CCS development effort and hence in reducing emissions from fossil fuel sources. Generally we should observe that countries with a higher inherent interest in CCS would logically be working towards developing a supportive policy environment. This is reflected in the results. Similarly, there is a correlation between inherent interest, policy support and the number of large-scale projects for particular countries.

The results of the CCS-PI are presented as a matrix with the two leading indexes making up the X (Constituent Policy Index) and Y (Inherent CCS Interest) axes (see figure 1).

¹ as at August 2015

² Bloomberg New Energy Finance, H1 2015 Carbon Capture & Storage Market Outlook, January 2015.

³ Frankfurt School-UNEP Centre/ Bloomberg New Energy Finance, Global Trends in Renewable Energy Investment 2015, March 2015.

The composite indicator (CCS-PI) aims to provide one proxy for the relevance of national policy settings in regards to CCS activities in an apolitical manner.

The benefit of an indicator such as the CCS-PI is not the absolute results but the relative positioning of nations and gaining a better understanding of the extent to which positions change over time and for what reasons.

CCS-PI RESULTS FOR 2015

Figure 1 shows the results of the latest update of the CCS-PI, reflecting data as at the middle of 2015.

The strongest ranking countries are the United Kingdom, the United States and Canada. All three countries have a strong inherent interest with respect to CCS in their particular circumstances and have implemented or are about to implement various key policies that support large scale deployment, including emissions performance standards on power generation and public funding to support first-of-a-kind projects. The UK also has market-based mechanisms in the form of a carbon price floor and contracts for difference, as well as a relatively strong long-term commitment to CCS.

China also has a high degree of inherent interest and continues to demonstrate relatively strong policy support for CCS, including through research and development

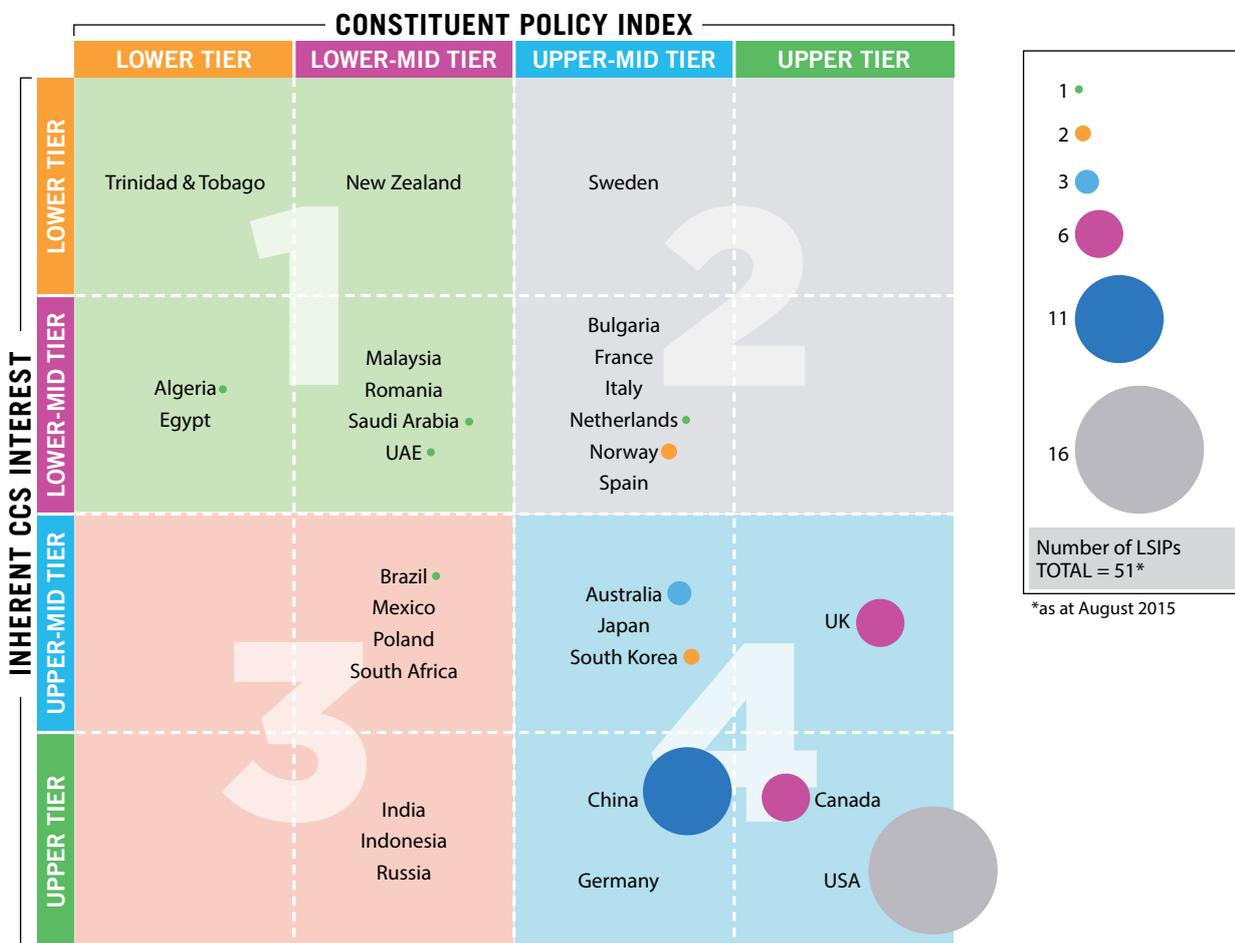
and partnerships with various countries around the world on CCS technology development. China has also been progressing plans to implement a national emissions trading scheme from 2016, which is an important technology neutral policy.

Countries in the European Union (EU) demonstrate varying degrees of inherent interest reflecting a diversity in their consumption and production of fossil fuels. EU policy on CCS covers a broad range of supporting categories including market pricing, legislative frameworks and direct funding. Reviews of the EU's carbon pricing arrangements and possible funding of CCS projects under the recent extension of the New Entrants Reserve are expected to result in improved rankings in the medium term for countries in this region.

More generally, the countries in quadrant 1 have CCS policy environments that reflect an early stage of technology demonstration, aligned with a relatively low level of inherent CCS interest.

In addition, some countries in this quadrant such as Algeria and Saudi Arabia with large-scale projects have identified the capacity to provide limited support for CCS in their particular circumstances without the need to implement prominent or broad policy instruments.

Figure 1: CCS Policy Indicator 2015 Results



Countries located in quadrant 3 with a relatively high level of inherent interest include those with discrete but relatively limited policies that are supportive of CCS including Mexico and Indonesia, as well as Russia and India where the CCS is not high on the domestic political agenda in spite of a high dependence on fossil fuel consumption and export. Some countries in quadrant 3, as well as in quadrant 1, may not have sufficient institutional or technical capacity to implement supportive policy for CCS (as well as climate change policy more broadly) and would therefore benefit from assistance.

The countries located in quadrants 2 and 4 have policy environments that demonstrate a higher-order potential to support CCS activities. Countries in these two quadrants include various EU member states as well as larger emitters in the Asia Pacific region. These countries show a range of supportive measures in proportion to their capacity to responsibly manage current fossil fuel use and seek out lower cost pathways to lower overall emissions. In comparison to the 2013 CCS-PI results, the composition of countries located in quadrant 4 has not materially changed, reflecting their commitment to CCS deployment over the medium term. The countries located in quadrant 2 do not necessarily have the same policy settings as those located in quadrant 4, and as such, they may well consider targeting the institutional and market barriers that tend to most inhibit domestic CCS demonstration projects from proceeding.

In the lead up to the climate change negotiations in Paris later this year, governments around the world are

contemplating domestic priorities regarding the speed and cost of meeting climate change targets while also striving to set such targets at a high level of ambition.

Implementing stronger policies to support CCS deployment in this environment may seem difficult. However, analysis by the Intergovernmental Panel on Climate Change (IPCC), the International Energy Agency (IEA) and other leading bodies around the world reflects the realisation that CCS must play a role in addressing climate change at least cost. The IPCC's recent Fifth Assessment Report indicated that excluding CCS as an emission reduction technology could result in the costs of achieving climate change targets being 138 per cent higher on average, due to the need to rely on other more expensive technologies.⁴

Similarly, the IEA calculated that excluding CCS from the power sector could increase costs of meeting emissions targets by US\$2 trillion by 2050.⁵ All governments around the world should continue to examine the prospects offered by CCS as an emissions reduction technology in their particular circumstance. The Institute welcomes further discussion with governments on how best to implement technology neutral policies such that all solutions are deployed at a scale and in a combination such that emissions reduction goals are achieved at least cost.

⁴ IPCC, 2014, Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, IPCC, Geneva, Switzerland, p. 25.

⁵ IEA, 2012. Energy Technology Perspectives 2012: Pathways to a Clean Energy System, OECD/IEA, France, p. 11.

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