2018 THOUGHT LEADERSHIP

CCS LEGAL AND REGULATORY INDICATOR (CCS-LRI)

GLOBAL CCS INSTITUTE

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PROJECT TEAM

The 2018 CCS Legal and Regulatory Indicator report was prepared by the Global CCS Institute. Mr. Ian Havercroft, Senior Consultant – Legal and Regulatory, was the project's coordinator.

Baker & McKenzie acted as consultants for the project and their regional offices assisted in the legal and regulatory review of the 55 countries covered by the Indicator. The Institute would like to acknowledge Paul Curnow and Ilona Millar of the firm's Australia-based Environmental Practice Group, for their work on the project.

2018 OUTLOOK

Law and regulation remains a critical element of a government's policy response to support the deployment of Carbon Capture and Storage (CCS). In response, national regulators and regional legislatures in several jurisdictions worldwide have, in recent years, amended legislation or enacted legal and regulatory frameworks to address the technology.

The Institute's CCS Legal and Regulatory Indicator (the CCS-LRI) offers a detailed examination and assessment of national legal and regulatory frameworks in 55 countries and examines a range of legal and regulatory factors likely to be critical for the regulation of the technology.

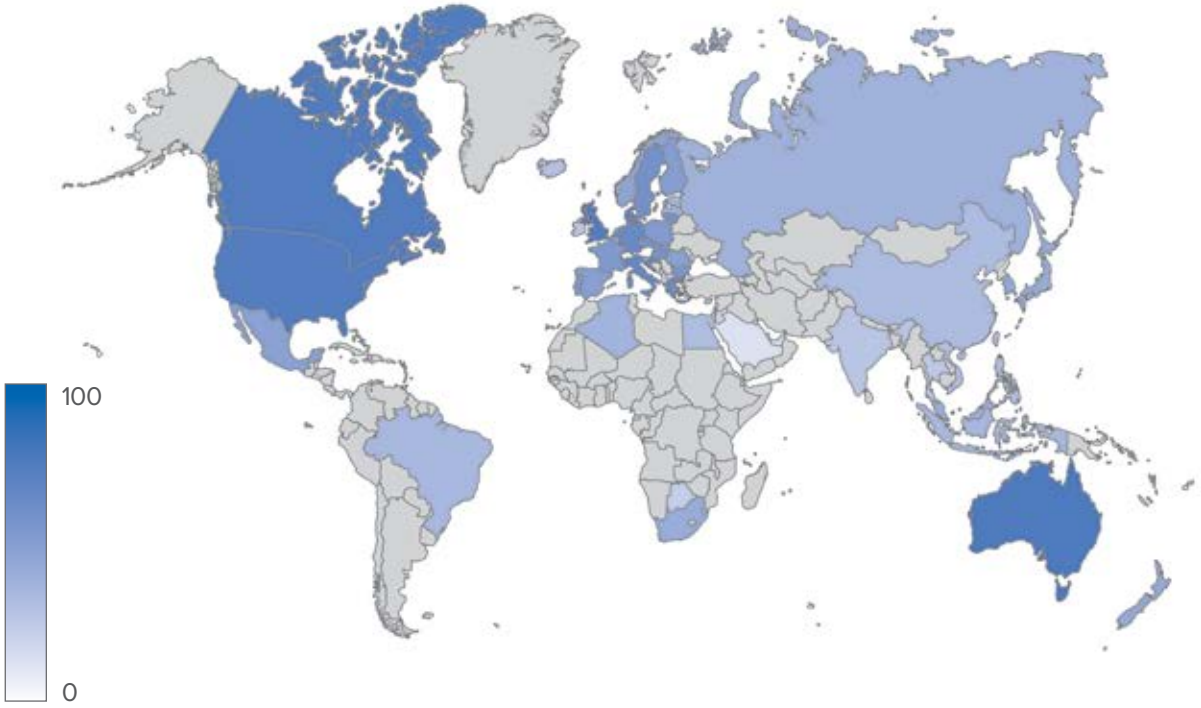
The CCS-LRI focuses upon a broad spectrum of administrative and permitting arrangements across the project lifecycle, including issues related to environmental assessments, public consultation and long-term liability.

The resulting Indicator offers a comprehensive model to track progress and opportunities to develop CCS-specific legal frameworks worldwide, as well as a perspective of the current status of CCS law and regulation.

Fewer developments and minor changes since 2015

The 2018 assessment exercise reveals few changes to the 55 countries' CCS-specific legal and regulatory regimes in the past two years. While 11 countries have introduced legislative amendments since the original 2015 assessment, these developments have only resulted in a change of score for seven countries.

Figure 1: CCS Rank Map – Legal and Regulatory Indicator – World



The following five countries have again scored highly within the 2018 CCS-LRI and are categorised as possessing CCS-specific laws or existing laws that are applicable across most parts of the CCS project cycle:

- Australia
- Canada
- Denmark
- United Kingdom
- United States of America

Legal and regulatory models in these jurisdictions are sophisticated and address the novel aspects of the CCS process, however, the CCS-LRI results reveal these nations have seen little or no change to their regimes in the past two years.

It is likely that uncertainty or change to the domestic policy environment for the technology, as well as the absence of commercial-scale projects in many jurisdictions, has resulted in governments delaying further legal and regulatory intervention.

The majority of countries are included in Bands B and C, a position unchanged from the original 2015 assessment and which demonstrates that many possess limited or very few CCS-specific or existing laws applicable across aspects of the CCS project lifecycle. These results highlight the absence of CCS policy drivers in many countries, which would likely encourage governments to develop their legal and regulatory models. This inertia is perhaps more concerning however, in those countries which have made explicit policy commitments to the technology, or which will host demonstration and commercial-scale CCS projects.

Regional analysis highlights activity and inertia

In Europe, the Middle East and Africa (EMEA) there is a clear distinction between the assessment scores of many of the European Member States (MSs) and other countries in the region. Efforts by regulators in several EU MSs to improve domestic implementation of the EU Storage Directive, have seen several countries receive improved assessment scores. These results offer a positive signal for operators and project proponents in Europe and suggest once again the emergence of a more coherent model of CCS-specific law and regulation in the region. Elsewhere in the region the picture is less positive, with no improvement to the scores of the countries in the Middle East and Africa.

The United States and Canada have again been included in Band A of the CCS-LRI, commensurate with their higher assessment scores. The rankings reflect their comprehensive, largely sophisticated models of law and regulation. Despite their higher scores, the deficiencies and issues identified in the previous assessment exercise have not been addressed and there are further opportunities for improvement. In other countries across the Americas region, lower assessment scores have been awarded and highlight again, the absence of CCS-specific legislation and other applicable laws and regulations.

The position in Asia Pacific region is similar to the Americas and EMEA, with very little change to legal and regulatory models in many nations over the past two years. Australia has once again been included in Band A of the CCS-LRI and receives the highest score of all the countries reviewed in the 2018 assessment.

The nation's state and federal models remain some of the most advanced and detailed examples of CCS-specific legislation. There have however, been few changes or improvements to these regimes since 2015. Elsewhere in the region, countries received lower assessment scores and have again been placed in Bands B and C. Despite the continued development of demonstration and commercial-scale projects, there has been limited legislative activity and policy development for the technology in many countries.

Significant opportunity for improvement

The 2018 assessment again reveals the considerable opportunity for countries to improve their legal and regulatory regimes for the technology. While it is positive that projects continue to be proposed globally, more holistic and consistent legislation will be necessary to support the long-term, commercial deployment of the technology.

Governments and regulators of those nations presently in Bands B and C, which view CCS as a critical aspect of their future mitigation strategies, or which will host projects in the future, will need to assess the suitability of their national regimes to effectively regulate the technology. The scale of this task may be particularly acute for some countries, particularly when considering their activity to-date and the significant development necessary to improve their legal and regulatory models. Notwithstanding these challenges, the CCS-LRI reconfirms that even for those jurisdictions which have received lower assessment scores, there are aspects of their existing legal and regulatory regimes that may offer a strong foundation for further development.

For those countries that have scored highly in the assessment and have placed in Band A of the CCS-LRI, there are also opportunities to improve domestic legal and regulatory regimes. Despite comprehensive CCS-specific frameworks, further opportunities for strengthening and improving models were identified in the 2015 assessment. The 2018 assessment reveals that there has been little material change to the legal and regulatory frameworks of these countries and many of these issues remain unaddressed.

1.0 INTRODUCTION

The development of law and regulation for CCS, is a critical element of many governments' response to supporting the technology's deployment.

In the past ten years, many national and sub-national governments have developed framework legislation for the technology. Several other governments are now also taking preliminary steps to review and assess the capacity of their national regimes to support the deployment of both demonstration and large-scale integrated projects.

The Global CCS Institute (the Institute) has continued to track the development of these legal and regulatory frameworks as part of its ongoing commentary and analysis. In 2015 the Institute developed an indicator to assess and compare national legal and regulatory regimes in 55 jurisdictions worldwide. The first edition of the CCS-LRI was published by the Institute in September 2015.

The 2018 edition of the CCS-LRI builds upon the original assessment model developed and seeks to:

- Highlight to a global audience of policymakers, regulators and project proponents, informative examples of law and regulation for the technology
- Determine the 'comprehensiveness' of an individual jurisdiction's legal and regulatory framework for the deployment of CCS projects
- Generate a clearly-defined methodology for undertaking a regular assessment and comparison of national legal and regulatory developments
- Enable the Institute to track the progress of legal and regulatory developments, as well as identify gaps and opportunities, across many jurisdictions worldwide
- Offer a further Institute-authored contribution to the global debate on the development of policy, law and regulation for CCS.

The 2018 CCS-LRI is strongly complemented by two further assessment tools, aimed at assessing global geological resources available for storage and policy support for the technology. Updated versions of the Global Storage Readiness Assessment (CCS-SI) and CCS Policy Indicator (CCS-PI) have also recently been published by the Institute.

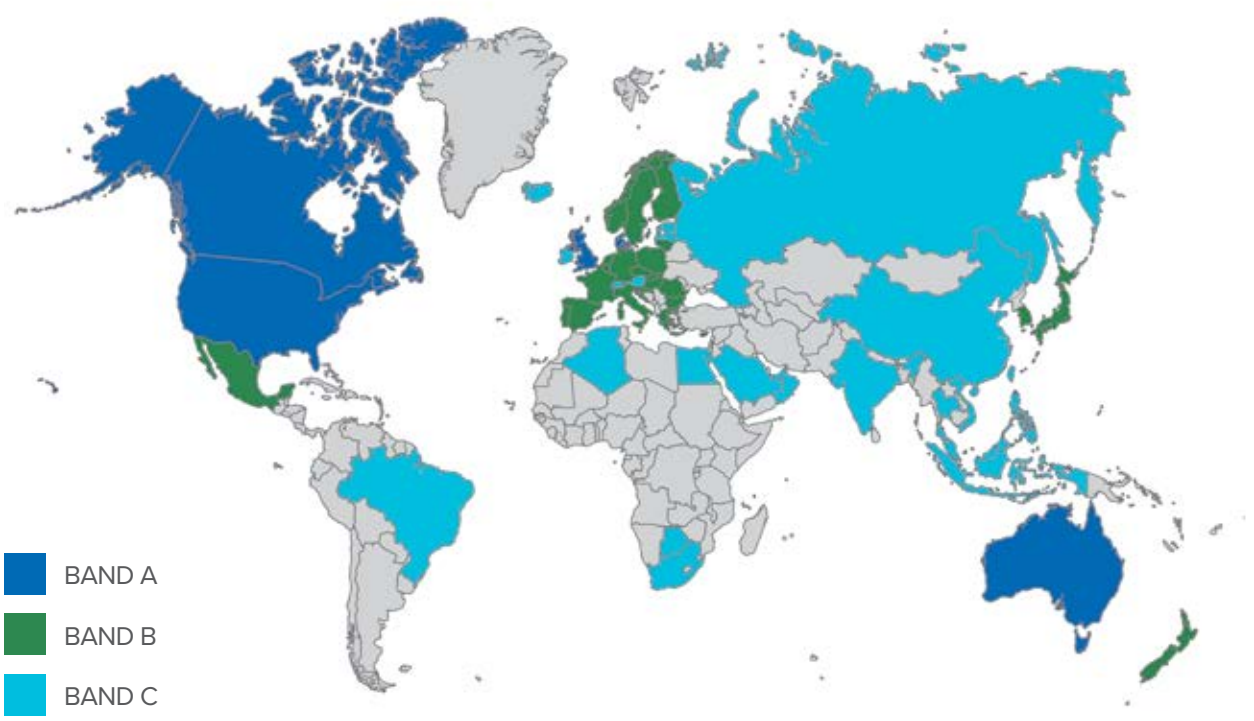
The three indicators collectively form a further, criteria-based assessment known as the CCS Readiness Index (CCS-RI). The CCS-RI assesses a country's CCS activity and was developed to consolidate a range of specific datasets. The CCS-RI is designed to be periodically updated and uses a clearly-defined, easily replicated method, to understand how conditions for CCS deployment are evolving, both in individual jurisdictions and globally.

2.0 DETAILED REGIONAL REVIEW

The 2018 assessment process highlighted several conclusions regarding the status of national legal and regulatory regimes. The following sections examine these results in greater detail and provide broader qualitative analysis as to the current status of CCS law and regulation.

2.1. Global review

Figure 2: CCS Rank Map – Legal and Regulatory Indicator – World



The 2018 results reveal that over the past two years, there has been little, or no material change in the status of CCS legal and regulatory models in many jurisdictions worldwide. While the scale and complexity of the early, higher-scoring regulatory frameworks remain unchanged, there has similarly been little or no observed improvement to the scores of many of those nations found in Bands B and C.

The small number of countries included in Band A of the CCS-LRI, those with CCS-specific or existing laws that are applicable across most parts of the CCS project lifecycle, remains unchanged from the 2015 edition. Significant also is the fact that the assessment scores recorded for these five countries are similarly unchanged. Clear from these results, is that the pace of legal and regulatory development among these nations has stalled in recent years.

While these five countries all possess sophisticated legal and regulatory regimes, which address many aspects of the CCS process, there has been a conspicuous absence of further improvement to these models in the past two years. Notwithstanding regulatory changes in two of these Band A jurisdictions, overall scores have not increased since 2015. Uncertainty or substantive change to the domestic policy environment, as well as the absence of commercial projects, has perhaps meant that there is a reduced urgency for governments to finalise their CCS-specific legal and regulatory models.

Despite this apparent slow-down, the countries listed in Band A of the CCS-LRI remain leaders in their field. Aspects of their regulatory frameworks may be considered as model examples for addressing the novel challenges posed in regulating the CCS process. In addition, some of these countries continue to play an important role in promoting the development of effective legal frameworks for the technology.

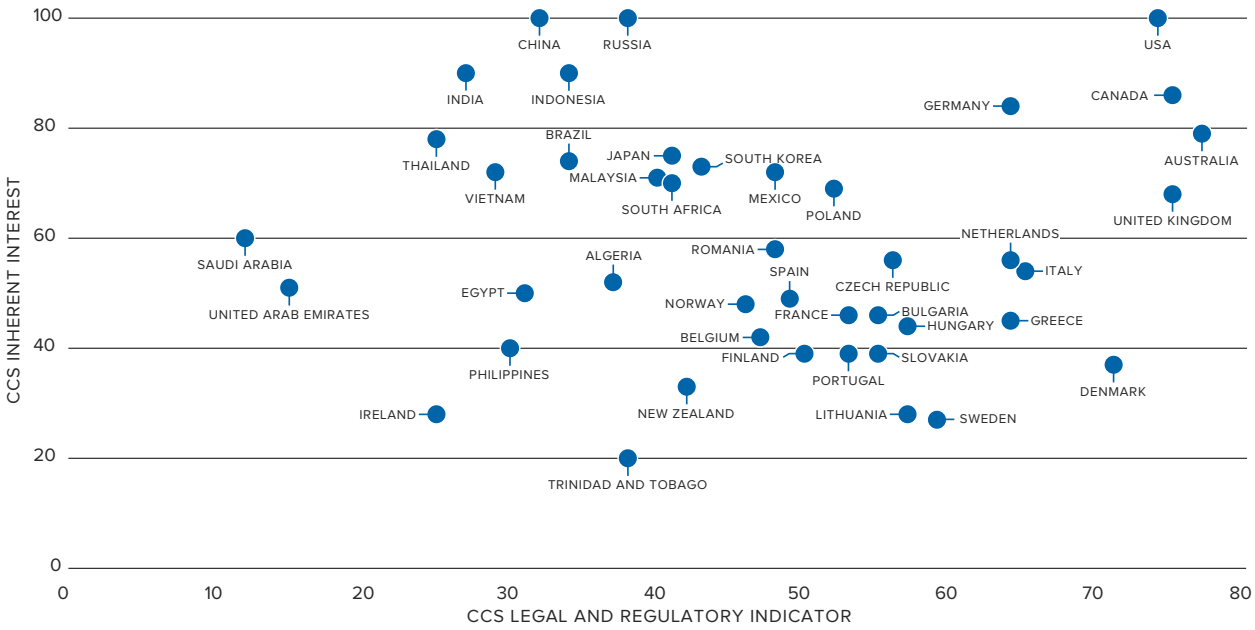
The CCS-LRI's primary and sub-assessment criteria address a range of legal and regulatory issues, beyond simply the availability of a permitting model for CCS activities, to consider a wider range of elements likely to be important across a project's lifetime. Significant to note here, is that none of the five Band A jurisdictions have fully addressed all the core elements of a legal and regulatory model for the technology in their domestic regimes and have developed a model able to satisfy all of the assessment criteria in an unequivocal manner.

Greater cohesion between national and subnational frameworks, the further clarification of regulatory responsibilities and the resolution of discrete legal issues within national regimes, are just some examples of how these Band A nations could improve their CCS-specific legislation and assessment scores.

The scores awarded to those nations included in Bands B and C, reveals that many countries have limited or very few CCS-specific laws or existing laws, which are applicable across the CCS project lifecycle. Many of these nations will need to increase their focus upon developing CCS-specific legal and regulatory frameworks, as well as the administrative frameworks which support this legislation. In some instances, particularly where there has been little or no activity to-date, countries may undertake scoping studies to assess the capacity of their existing legal and regulatory frameworks to regulate the CCS process and make the necessary improvements.

For those countries with strong policy commitments to the technology and which currently (or are likely to host) CCS projects, a score at the lower end of the assessment spectrum will undoubtedly prove a concern. Clear from these results, is that there are several countries in this situation and their scores are unchanged from the 2015 assessment.

Figure 3: CCS Chart – Legal and Regulatory Indicator



While there are many important factors which will prove critical in the deployment of the technology nationally, a supportive legal and regulatory regime is one which likely prove critical. Legal and regulatory frameworks which fail, or only partially address critical aspects of the CCS process, may lead to project delays or weaker confidence in the technology.

Many of these observations are reinforced when contrasting the results of the 2018 assessment exercise, with those of the CCS inherent interest indicator (see the figure above). The latter provides an indication a country's reliance on the use of fossil fuels either in production or consumption within the country, or as an export product. The maturity of a country's oil, gas and coal resources and their development are also a part of this indicator.

A positive observation within these results is the cluster of high-scoring nations, which have acted to address their reliance on the use of fossil fuels by developing comprehensive CCS-specific legal and regulatory frameworks. Regulators and policymakers in these nations, which also host many of the world's most advanced LSIPs, have also proactively developed regulatory regimes that address many of the more critical aspects of the CCS process.

The results of this comparative analysis also emphasise the precarious situation of those nations with less-advanced models of law and regulation. Several nations awarded lower scores in the 2018 legal and regulatory exercise have also received high inherent interest scores, highlighting a significant weakness in their overarching policy environment for climate mitigation. Increasing pressure to mitigate these high emissions, particularly under carbon-constrained future scenarios, may require the deployment of CCS over a shorter time horizon. The absence of effective and detailed models of legislation may impact these ambitions, leading to project delays or reduced investor confidence in the technology.

2.2. Regional developments

EUROPE, MIDDLE EAST AND AFRICA

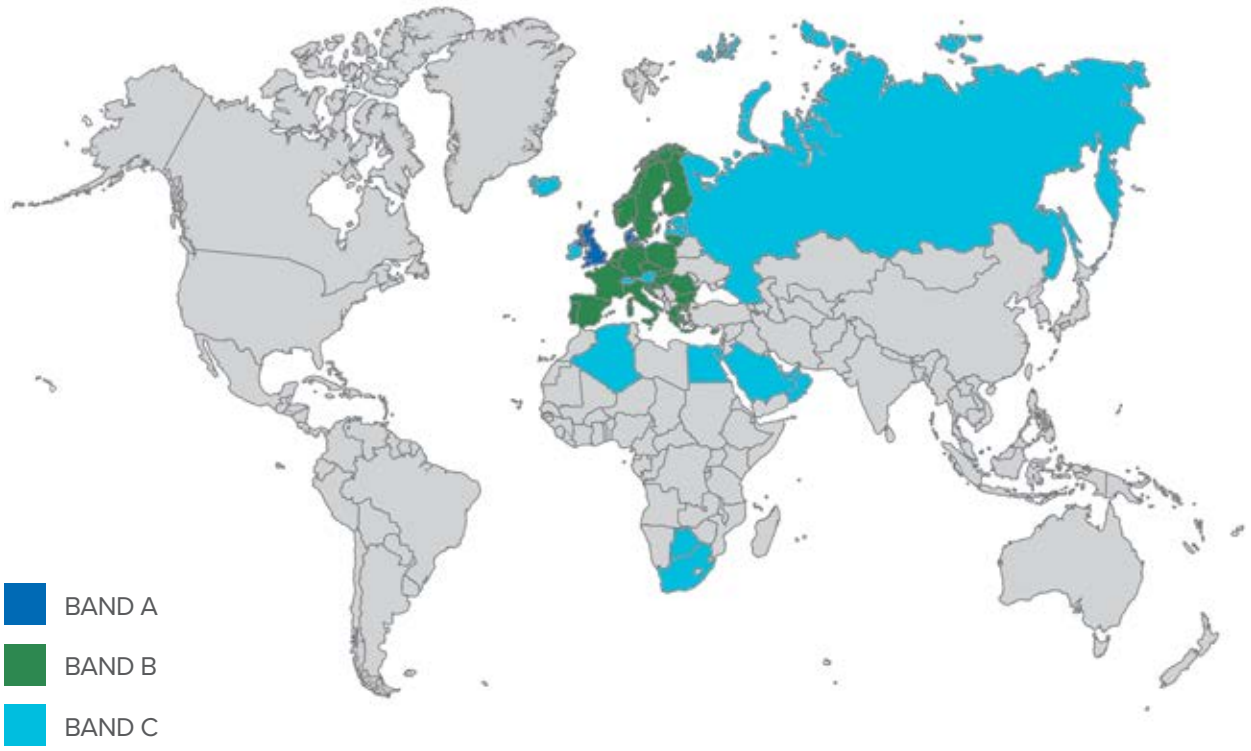
The 2018 assessment results reveal once again, the considerable disparity between many of the European Member States (MSs) and other countries across the region. Shared legal and regulatory objectives, subsequently enshrined in national models when transposing the 'EU Directive on the geological storage of carbon dioxide', have resulted in many of the EU MSs achieving total scores that are towards the higher end of the CCS-LRI's spectrum. The 2018 assessment once again highlights that the higher scores attained by several EU MSs are not reflected in those achieved by many countries across the Middle East and Africa.

While only a small number of countries have made legislative changes to their regimes in the past two years, many of these changes have occurred among EU MSs. In some instances, these changes have not resulted in a change to an overall assessment score, however, other countries have seen their scores improve. Croatia, the Czech Republic, Hungary, Malta and Iceland (a European Economic Area State), have all seen their scores increased from the original 2015 assessment, largely by virtue of their effort to improve domestic implementation of the EU Directive on CCS.

One EU MS has also seen its overall assessment score decrease since the 2015 assessment exercise. Estonia's amendments to its domestic climate change regime has seen a softening of the liability regime for CCS operations. The lower assessment score recorded in this year's exercise reflects this less-comprehensive approach.

Countries in the Middle East and Africa have again received assessment scores at the lower end of the spectrum, highlighting once more that their legal regimes include only a few CCS-specific or existing laws that are applicable across parts of the CCS project lifecycle. The 2015 assessment concluded that these jurisdiction's lower scores were indicative of the nascent stage of policy deployment and/or interest in the development of CCS legislation. The results of the 2018 assessment exercise, suggests that this position remains unchanged among these nations.

Figure 4: CCS Rank Map – Legal and Regulatory Indicator – Europe, Middle East and Africa



THE AMERICAS

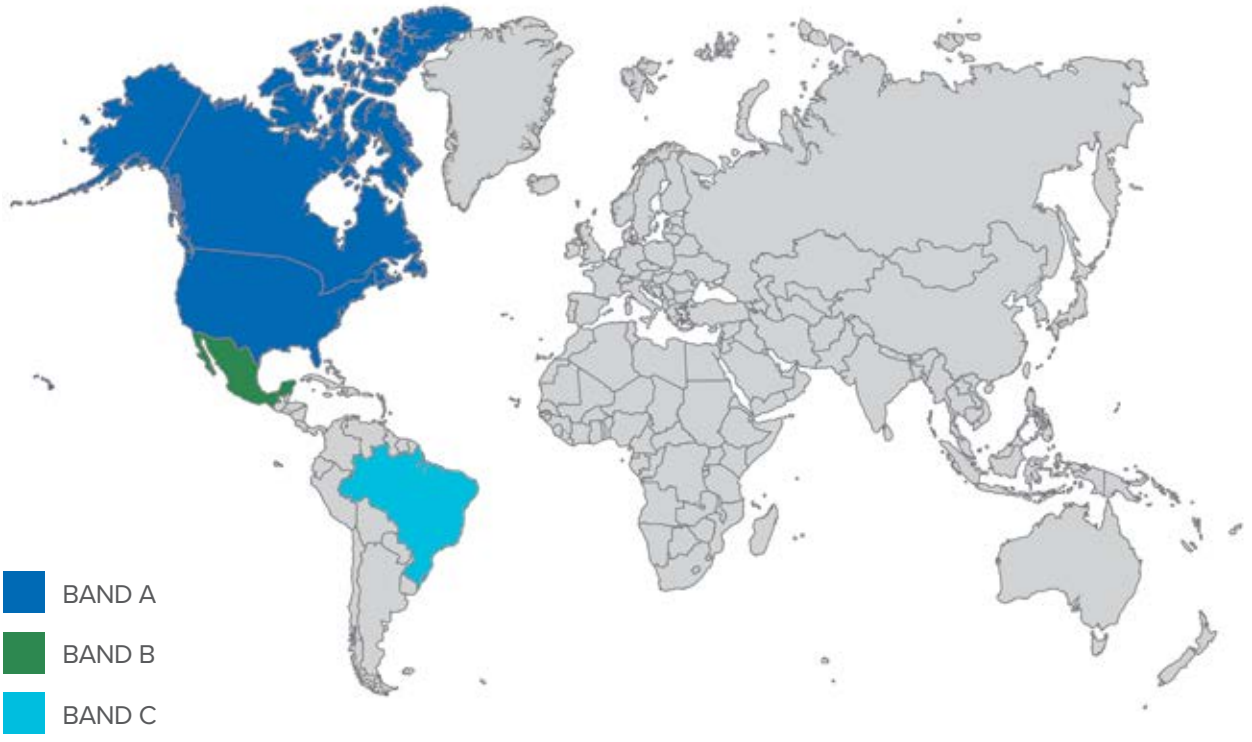
The United States and Canada have retained their position in Band A of the CCS-LRI, once again demonstrating the comprehensive nature of their domestic regimes. Both nations have well-characterised legal and regulatory frameworks, which address many of the critical aspects of the CCS process, developed by both Federal and State/Provincial governments. These models have been developed and refined over many years and build upon both nations' strong commitments to the technology's deployment.

In Canada, the provinces of Alberta, Saskatchewan and British Columbia have all undertaken policy and regulatory changes which may impact their provincial models. In Alberta, regulatory amendments seek to broaden the scope of operations to include CCS, while in Saskatchewan policy and legislative proposals may see increased support for the technology in the Province. While these developments are undoubtedly significant, they have not materially improved Canada's overall 2018 assessment score suggesting there are further opportunities for improving the legal and regulatory model. Notwithstanding the recent developments, further work will be required to improve the scope of legislation to deal with CCS specific issues.

The United States' assessment score remains unchanged from the 2015 assessment. Despite both federal and state governments in the US developing comprehensive and detailed models, the technology is still not addressed in a fully integrated manner in either jurisdiction. In many instances, further amendments and gaps will need to be addressed to improve the federal regime, where there is a mix of different existing authorities that represent an incomplete regulatory framework. Many of the remaining gaps will need to be addressed at the state level.

Other countries in the Americas region have once more received assessment scores at the lower end of the CCS-LRI's spectrum. The 2018 assessment reflects the absence of any development of these countries' CCS-specific regimes in the past two years. Despite the release of a World Bank legal and regulatory study for Mexico in 2016, there has been very little legal and regulatory activity within the region to date.

Figure 5: CCS Rank Map – Legal and Regulatory Indicator – Americas



ASIA PACIFIC

The position within the Asia Pacific region remains largely unchanged from the 2015 assessment, with the large majority of countries located within Bands B and C of the CCS-LRI. Australia remains an exception within the region and once again is included within Band A, with a sophisticated and largely consistent approach to CCS at both the Commonwealth and state levels.

Australia has received the highest score of all the countries evaluated in the 2018 assessment exercise, indicative of its comprehensive legal and regulatory framework which addresses all stages of the CCS project lifecycle. Despite this achievement, however, there have been no discernible changes to either the Commonwealth or state regimes in the past two years. While this is likely symptomatic of the challenging policy environment within which regulators are operating, there are a number of remining gaps and obstacles within the Australian regime that have yet to be addressed. The treatment of long-term liability and indemnification, which some states have treated differently in their legislative models, is just one example where further clarification and legislation may be necessary.

Elsewhere in the region, there have been very few developments, with most countries recording no observable change to their legal and regulatory models. While perhaps indicative of the policy uncertainty surrounding the technology in many jurisdictions, the lack of development belies the significant opportunity for CCS deployment and the development of projects that has occurred across the region to-date. Demonstration and large-scale facilities have been developed in China, Japan and Korea in recent years, however, this has not been accompanied by the deployment of CCS-specific legal and regulatory models in these jurisdictions.

Figure 6: CCS Rank Map – Legal and Regulatory Indicator – Asia Pacific

3.0 CONCLUSION

The 2018 assessment results reveal significant opportunities for further legal and regulatory development.

In line with the 2015 assessment results:

- These opportunities are not limited to those countries at the lower end of the CCS-LRI's spectrum. there is also considerable potential for improving the legal and regulatory regimes of many of the more advanced Band A nations.
- The further development of national and sub-national regimes, the strengthening of existing administrative processes and further clarification of liability provisions, remain further opportunities for development.

The development of effective legal and regulatory models will be imperative for those nations that view the technology as a critical aspect to their mitigation efforts, or which will host full-scale projects in the near term. The scale and urgency of this task is perhaps more acute, however, for those nations which have made little progress to-date with their legislative frameworks and where delay may impede project deployment. Although some countries have seen project developments, despite regulatory gaps or incomplete frameworks, commercial-scale deployment will likely require a more holistic approach to law and regulation.

While the scale of the challenge may be significant for some countries, particularly developing nations, it is positive to note that in many instances there are pre-existing features of national regimes which may act as a foundation for the development of CCS-specific regimes.

Despite the assessment's confirmation of the absence of a 'perfect' legal and regulatory model, many of the novel features of CCS have been addressed to some extent by some of the early and more-detailed legal and regulatory models. Aspects of these regimes may therefore serve as models for those nations seeking to develop their own stand-alone frameworks.

If CCS is to play a significant role and achieve the emission reductions envisaged by the international community, further policy intervention will undoubtedly be required. Absent these incentives, it is unlikely that policymakers and regulators in many jurisdictions will commit to developing further legal and regulatory frameworks. While the pace of legal and regulatory development appears to have waned in recent years, the realisation of ambitious mitigation efforts enshrined in domestic law, may see an enhanced role for the technology in many nations' future climate change responses worldwide. The development of domestic legal and regulatory frameworks will be an essential component of government-led responses in support of this deployment.

4.0 METHODOLOGY

The assessment methodology used in the preparation of the 2018 CCS-LRI remains unchanged from the 2015 assessment exercise. The CCS-LRI seeks to make a comparison between the various models and contrasting national circumstances, to determine the 'comprehensiveness' of an individual jurisdiction's legal and regulatory framework for the deployment of CCS projects.

The model addresses the broad range and disparate legislative approaches to the development of national and sub-national legal and regulatory frameworks for the technology, which have been developed over the past 10 years. In other jurisdictions, where there has been little or no CCS-specific legislation developed to-date, the model also enables an assessment of existing law and regulation which may support the deployment of the technology.

4.1. Assessment criteria

The challenges posed by an assessment of this nature were addressed by employing a methodology which allocates individual countries both quantitative and qualitative rankings, based upon the efficacy and extensiveness of a country's CCS regime. The legal and regulatory regimes for each of the 55 countries have therefore been assessed against several criteria.

Developed by the project team in 2015, these criteria are designed to reflect the core elements of a comprehensive legal and regulatory model for the technology. The criteria address issues which are likely critical to the regulation of a project throughout its lifecycle and include administrative arrangements and potential permitting pathways for CCS projects, as well as allied issues such as environmental impact assessment and public consultation provisions.

Five overarching primary criteria, set out in Table 1 below, provide the foundation of this assessment.

Table 1: Primary Assessment Criteria

1	The clarity and efficiency of the administrative process under the CCS legal framework to apply for, and obtain, regulatory approval for CCS projects
2	The comprehensiveness of the legal framework in providing for all aspects of a CCS project, including siting, design, capture, transport, storage, closure and monitoring for potential releases of stored CO_2
3	The extent to which the CCS legal and regulatory framework provides for the appropriate siting of projects and adequate environmental impact assessment processes
4	The extent to which the CCS legal and regulatory framework provides for and incorporates meaningful and effective stakeholder and public consultation
5	The way in which laws and regulations deal with long-term liability for closure, monitoring and accidental releases of CO_2

Further sub-criteria, developed in-tandem with the primary assessment criteria above, provide an additional filter for assessing national regimes. A full version of the assessment template, including both the primary and sub-criteria, is provided within Appendix I of this report.

4.2. Scoring of individual jurisdictions

Following an extensive review of the 55 jurisdictions, a database of each country's national and sub-national legal and regulatory regimes was compiled. The database, which focused upon national regimes as they would apply to CCS, was then used as a basis for the broader assessment process.

The scoring scale set out in Table 2 below was used to score each of the jurisdictions against the various sub-criteria, which sit below the five primary assessment criteria. Scores awarded across all the assessment criteria have resulted in a composite score which has provided the basis for each country's total score in the CCS-LRI.

Table 2: Scoring scale for assessment

3	Clearly and unequivocally capable of satisfying the criterion
2	Moderately capable of satisfying the criterion, subject to conditions or limitations
1	Capable of satisfying the criterion only in some minor respects
0	Largely incapable of satisfying the criterion

4.3. Further categorisation of individual regimes

Three broadly-defined bands have also been adopted to further categorise the legal and regulatory models of the individual countries. Upon concluding the scoring process and a closer qualitative assessment of the national legal and regulatory models, each of the countries has been assigned to one of the following three bands:

- BAND A: CCS-specific laws or existing laws that are applicable across most parts of the CCS project cycle.
- BAND B: CCS-specific laws or existing laws that are applicable across parts of the CCS project cycle.
- BAND C: Very few CCS-specific or existing laws that are applicable across parts of the CCS project cycle.

5.0 APPENDICES

5.1. Appendix I: Country Results

BAND A: CCS-specific laws or existing laws that are applicable across most parts of the CCS project cycle

COUNTRY In alphabetical order	**TOTAL SCORE** Out of a possible 87	**MOVEMENT** From 2015 assessment score
Australia	67	-
Canada	65.5	-
Denmark	62	-
United Kingdom	65	-
United States of America	64	-

BAND B: CCS-specific laws or existing laws that are applicable across parts of the CCS project cycle

COUNTRY In alphabetical order	**TOTAL SCORE** Out of a possible 87	**MOVEMENT** From 2015 assessment score
Belgium	40.5	-
Bulgaria	48	-
Croatia	60.5	▲
Cyprus	56.5	-
Czech Republic	48.5	▲
Finland	43.5	-
France	46.5	-
Germany	56	-
Greece	56	-
Hungary	49.5	▲
Italy	56.5	-
Japan	36	-
Korea	37.5	-
Lithuania	49.5	-
Luxembourg	53.5	-
Netherlands	56	-
Malta	55	▲
Mexico	41.5	-
New Zealand	36.5	-
Norway	40	-
Poland	45	-
Portugal	46	-
Romania	42	-
Slovakia	47.5	-
Slovenia	36	-
Spain	42.5	-
Sweden	51	-

BAND C: Very few CCS-specific or existing laws that are applicable across parts of the CCS project cycle

COUNTRY In alphabetical order	**TOTAL SCORE** Out of a possible 87	**MOVEMENT** From 2015 assessment score
Algeria	32	-
Austria	N/A[1]	-
Botswana	19.5	-
Brazil	30	-
China	28	-
Egypt	27	-
Estonia	30.5	▼
Iceland	25	▲
India	23.5	-
Indonesia	30	-
Ireland	21.5	-
Latvia	32	-
Malaysia	34.5	-
Oman	23	-
Philippines	26	-
Russia	33	-
Saudi Arabia	10.5	-
South Africa	35.5	-
Switzerland	N/A[2]	-
Thailand	21.5	-
Trinidad and Tobago	33	-
United Arab Emirates	13	-
Vietnam	25	▲

[1] Austria has passed legislation which does not allow CCS activity within its territory, save for some limited research purposes. The legislation does however fulfil Austria's transposition requirements under the EU CCS Directive (Directive 2009/31/EC)
[2] CCS is currently excluded from the scope of national legislation regarding CO2 reduction in Switzerland.

5.2. Appendix II: Assessment Methodology and Criteria

1. The Clarity and efficiency of the administrative process under the CCS legal framework to apply for, and obtain, regulatory approval for CCS projects

CRITERION	ASSESSMENT OUT OF 3	INDICATORS
		An assessment of 3 means that the CCS legal framework for applying for and obtaining regularly approval for CCS projects meets the following Indicators clearly and unequivocally, to a very high degree
Regulatory roles and responsibilities of government and agencies		Roles and responsibilities of the respective governments and government agencies are defined at all stages of the CCS project in the legislation and in any accompanying regulations
Approvals process for CCS projects		Approval processes are required for material / commercial[3] CCS projects, with timely reviews and approvals for CCS applicants
Project operator and regulator roles at each CCS project stage		Distinction between the roles of the project operator and the regulator in the regulatory framework at each stage of the CCS project cycle
National protocols and guidelines		Assessments and approvals processes consistent with agreed national protocols and guidelines for CCS-specific projects, and other national protocols and guidelines for similar infrastructure / energy projects
TOTAL	**/ 12**	

[3] We note that some CCS projects may be research-focused or small-scale and may be subject to exemptions from approval.

2. The Comprehensiveness of the legal framework in providing for all aspects of a CCS project, including siting, design, capture, transport, storage, closure and monitoring for potential releases of stored CO_2

CRITERION	ASSESSMENT OUT OF 3	INDICATORS
		An assessment of 3 means that the CCS legal framework clearly and unequivocally meets the CCS-LRI, in all aspects of a CCS project, to a very high degree
Integrated manner		CCS-specific legislation, or a number of amendments to existing regulations (e.g. planning or petroleum regulations) Legal and regulatory framework deals with all aspects of CCS in an integrated manner, including all elements of the CCS project cycle Supplements and refers to the development or implementation of existing laws, regulations and / or policies, including with agreed national protocols and guidelines for CCS-specific projects, and other national protocols and guidelines for similar infrastructure / energy projects Clarity of the legal responsibility for CO_2 at different stages of the project cycle Legislation deals with existing users including issues in respect of competing land uses, priorities, incompatibility with other activities, and fee provisions
Classification of CO_2		Classification of CO_2, including explicit definition of the "CO_2 stream" and instances where CO_2 is exempted or explicitly carved out
Ownership regime for sub-surface storage		Defines ownership of the sub-surface geological surface area, including through a legal regime (either legislative or common law) that provides explicit ownership, including by allocating property interests, tenements and / or rights over the sub-surface area, in respect of the stored CO_2, and the allocation / management of CO_2.
Design standards for CCS projects		Planning legislation, pollution control laws and occupational health and safety requirements dealing with new plants for CO_2 capture or retrofitting of existing plants Regulatory requirements in respect of design elements such as size and pressure which should be reviewed against latest scientific information and latest building codes Minimum standards for pipeline design through a CCS-specific review process, which includes design standards and requirements for CO_2 pipelines and additional assessments in respect of the composition of CO_2 streams for capture, transport and injection of CO_2
Trans-boundary movement of CO_2		Legislation deals with the national (and where applicable, sub-national) trans-boundary movement of CO_2, during the capture, transportation and storage of CO_2
Directives and Guidelines		The use of directives and guidelines for CCS-specific projects, and other national protocols and directives and guidelines for similar infrastructure / energy projects
Surface access and reclamation		Surface access and reclamation CCS activities regulated on substantially the same basis as other natural resources (such as oil, gas and mining) with monitoring, measurement and verification procedures in place

CRITERION	ASSESSMENT OUT OF 3	INDICATORS
Leakage provisions		Measures for the mitigation, identification and accounting of actual or potential leakages of CO_2, including sanctions or provisions relating to leakage, remediation and/or liability, to be borne by an operator or proponent throughout the operational phase of the project, under law
Transportation of CO_2		Transportation provisions in place for the safe transportation of CO_2, and which are consistent with agreed national protocols and guidelines for CCS specific projects, and agreed national protocols and guidelines for similar infrastructure / energy projects Risk management systems in place for transport of CO_2, subject to environmental assessments A regulated pipeline system in place to ensure capture operators have access to storage opportunities and minimise the environmental impact of the pipeline system, including through third party access
Monitoring and verification requirements		Monitoring and verification requirements and standards, producing publicly accessible information that can be used to manage the risks of CCS projects
Storage and siting		Provisions dealing with investigation, assessment and selection of suitable sites for storage, including storage formation and proponent space requirements Mechanisms for proponents to obtain approval to undertake CCS projects on suitable gas storage sites and for feasibility studies in respect of the injection of CO_2 A tenure regime between proponents and regulators in respect of the injection of CO_2 at specific sites, for CCS activities
Closure		A closure regime in place that provides for closure period obligations on the project proponent, and addresses liability during the post-closure period (including any possible transfer of responsibility provisions)
TOTAL	**/ 36**	

3. The extent to which the CCS legal and regulatory framework provides for the appropriate siting of projects and adequate Environmental Impact Assessment (EIA) processes

CRITERION	ASSESSMENT OUT OF 3	INDICATORS
		An assessment of 3 means that the CCS legal framework clearly and unequivocally deals with the siting of projects and provides for environmental impact assessment processes in each CCS-LRI, to a very high degree
EIA capture / transport laws		EIAs and approvals processes in place for the capture of CO_2, with mitigation requirements for identified environmental risks and effects EIAs and approvals processes in place for the transport of CO_2, with mitigation requirements for identified environmental risks and effects Legislation imposes an EIA regime that gathers information on the CCS project Terms of reference for EIA are developed with reference to existing legislation and based on established environmental and occupational health and safety requirements A regulated pipeline system in place to ensure capture operators have access to storage opportunities and minimise the environmental impact of the pipeline system, including through third party access
EIA siting and storage laws		Detailed and transparent assessment of the environmental impact of selecting particular storage sites Regulated storage and injection of CO_2 regime, with processes in place, including multiple schemes, dealing with CO_2 issues in respect of site selection Proper site selection legislation on a site-specific case by case process, with appropriate risk analysis requirements in place
Project proponent responsibilities		Responsibility and reporting requirements imposed on the project proponent for evaluating the project's environmental impacts, and providing necessary information to regulators
Government discretion		Government discretion to determine if the proposed CCS activity warrants further environmental assessment due to the potential environmental impacts (even if CCS activities are either on mandatory lists, or carved out by explicit exemptions)
Mitigation and risk management		Requirement to consider appropriate mitigation and remediation scenarios to address potential environmental impacts arising at all phases of the CCS project cycle Set out proposed regime for monitoring, measurement and verification activities, based on consultancy and other experts' reviews of the potential environmental, health and safety impacts Requirement for EIA plans to be submitted when applying for approval to undertake CCS projects
Technical information and technology development		Requirements for projects to demonstrate compliance with approved CCS technology standards Technical and scientific information requirements for all EIAs
TOTAL	**/ 18**	

4. Stakeholder and public consultation

CRITERION	ASSESSMENT OUT OF 3	INDICATORS
		An assessment of 3 means that the CCS legal framework clearly and unequivocally provides for stakeholder and public consultation for all stages of the CCS project in each Indictor, to a very high degree
Public engagement		Regulatory framework provides for early and long term public engagement and communication with stakeholders such as land owners, residents, occupants and municipalities
Notification requirements		Public engagement and stakeholder notification requirements, articulated through guidelines and / or directives for similar infrastructure / energy projects
Dispute resolution mechanisms		Dispute resolution mechanisms in place in the event of conflict and / or non-agreement between stakeholders, including recourse to judicial systems
TOTAL	/ 9	

5. Liability – closure, monitoring and accidental releases of stored CO_2

CRITERION	ASSESSMENT OUT OF 3	INDICATORS
		An assessment of 3 means that the CCS legal framework clearly and unequivocally deals with long-term liability to a very high degree, with specific provisions for closure, monitoring and accidental releases of stored CO_2, in each Indicator
Closure of CCS project		Regulatory processes in place for project for proponents of CCS sites to follow on completion of the CCS project A closure regime in place to deal with the closure of sites and for the transfer of long-term liability (only if project proponents have met the regulatory requirements such as monitoring of CO_2), including dealing with post-closure liabilities that might arise or have arisen during the operation of the CCS project Storage liability regimes in place including provisions for long-term liability
Risk assessment framework		Risk assessment framework in place specifically dealing with closure issues, including a monitoring, measurement and verification process for CCS projects arising on closure
Localised effect liability		In respect of the long-term localised effects and liability arising as a result of CCS projects (including leakages), liability provisions dealing with damage to the environment and human health risks. This includes the availability of corrective and / or remediation measures by the operator and by recourse to existing domestic laws.
Climate change-related liabilities		Measures in place to deal with the long-term climate change related liabilities which arise from CCS projects National climate-change legislation that establishes liability for the release of greenhouse gas into the atmosphere from activities that may include parts of the CCS project cycle, such as under an ETS
TOTAL	/ 12	

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