

Mangoola Coal Continued Operations Project

Observations from Glencore Coal Assets Australia regarding the Rocky Hill and Wallarah 2 Cases on Climate Change and Greenhouse Gas Emissions

May 2019

1. Executive Summary

This report summarises observations made by Glencore in a response to recent Land and Environment Court decisions concerning planning approvals for coal mines and climate change and Greenhouse Gas issues raised in those decisions

- (a) **Part 1** of the report can be summarised as:
- (i) the Court's decision in *Gloucester Resources Ltd v the Minister for Planning* [2019] NSWLEC 7 (*Rocky Hill* case) was the determination of a "merit appeal" whereby the Court "stands in the shoes" of the consent authority for a development application under the EP&A Act, the Court's decision is, therefore, not a legal "precedent";
 - (ii) the Court's decision in the *Australian Coal Alliance Incorporated v Wyong Coal Pty Ltd* [2019] NSWLEC 31 (*Wallarah 2*) case was the determination of judicial review proceedings, with the consequence that this case is a legal "precedent" and is, in the Proponent's submission, both binding on and instructive to the consent authority as to how the issue of climate change and GHG emissions may be addressed by the consent authority in determining the development application for the Project;
 - (iii) climate change impacts and GHG emissions were not key reasons for the refusal of the Rocky Hill Coal Project, as the Court made clear in [556] of the judgment that the significant and unacceptable planning, visual and social impacts of the proposed project were sufficient reasons alone for refusing the development application for the Rocky Hill Coal Project;
 - (iv) the *Rocky Hill* case was concerned with the specific facts and circumstances of that proposed mining project;
 - (v) the consent authority, in determining the development application for the Proponent's Project, is not obliged to adopt, consider or follow any particular aspect of the Court's decision in the *Rocky Hill* case, as the Court's decision in the *Wallarah 2* case (which is a binding legal precedent) confirms;
 - (vi) the consent authority is obliged to consider and determine the development application for the Proponent's Project on its own, individual merits, having regard to the environmental assessment material and information that is before it and under s4.15(1)(b) of the EP&A Act is required to assess 'the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality' of the development;
 - (vii) the discharge of such an obligation by the consent authority requires it to assess all of the impacts of the Project (both positive and negative), which involves an "intuitive synthesis of the relevant factors" (as stated by Preston CJ at [687] in the *Rocky Hill* case);
 - (viii) as is evident from the result in the *Wallarah 2* case, the fact that a Project generates GHG emissions does not mean that the starting position for consideration of a development application is that the Project should be refused, and that fact is also not singularly determinative for the purposes of considering a development application made under the EP&A Act for any type of development, coal mining being only one of many types of development which generate GHG emissions;

- (b) **Part 2** of the report can be summarised as:
- (i) there is no government policy or legal principle that dictates the extent to which GHG emissions generated by either the Project or the combustion of the Project's coal by other developments, are to be considered and weighted in determining a development application under the EP&A Act, and there is no prescribed quantitative criteria against which the Project's GHG emissions are to be assessed;
 - (ii) in the absence of any government policy or legal principle that dictates the extent to which GHG emissions generated by either the Project or the combustion of the Project's coal by other developments, must be considered and weighted in the determination of a development application under the EP&A Act, it is for the consent authority to determine how much weight it is to accord to the climate change impacts and GHG emissions generated by the Project or the combustion of the Project's coal by other developments, as the Court's decision in the *Wallarah 2* case confirms;

2. Introduction

This report is separated into two sections.

- The first section includes observations on the legal aspects of recent court proceedings, which are relevant to the MCCO Project.
- The second section includes observations that relate to greenhouse gas and climate change law/policy.

3. Glossary

Abbreviation/Acronym	Meaning
2006 IPCC Guidelines	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
ACA	Australian Coal Alliance
ACARP	Australian Coal Association Research Program
ACCUs	Australian carbon credit units
AGEIS	Australian Greenhouse Emissions Information System
A-USC	Advanced ultra-supercritical
BAU	Business-as-usual
Campbell Report	Expert report produced by Mr Campbell dated February 2019
CCUS	Carbon capture, use and storage
CER	Clean Energy Regulator
CFI Act	<i>Carbon Credits (Carbon Farming) Act 2011</i>
CIE	Centre for International Economics
CHPP	Coal handling and preparation plant
COP	Conference of the Parties
CO ₂ -e	Carbon dioxide equivalent
CTSCo	Carbon Transport Storage Company
EIS	Environmental Impact Statement

Abbreviation/Acronym	Meaning
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EOR	Enhanced oil recovery
ERF	Emissions Reduction Fund
ESD	Ecologically sustainable development
ETS	China's National Emissions Trading Scheme
Export Countries	The most likely countries to which the Project's coal will be exported, being: Japan, China, South Korea, Taiwan, India, Malaysia, the Philippines and Vietnam
FoE	Friends of the Earth
GHG	Greenhouse gas
HEL	Hunter Environment Lobby
HELE	High-efficiency, low-emissions
IEA	International Energy Agency
INDC	Intended Nationally Determined Contribution
LE	Life Extension
JCM	Japan's Joint Crediting Mechanism
LULUCF	Land Use, Land-Use Change and Forestry
MIIT	China's Ministry of Industry and Information Technology
Mt	Million tonnes
Mtce	Megatonnes of coal equivalent
MW	Mega watts
NAPCC	India's National Action Plan on Climate Change
NCCAP	Philippines' National Climate Change Action Plan
NCOS	National Carbon Offset Scheme
NDC	Nationally Determined Contribution
NEP	India's National Electricity Plan
NGER Act	<i>National Greenhouse and Energy Reporting Act 2007</i>
NSW	New South Wales
PAC	Planning Assessment Commission
R&M	Renovation and Modernisation
RAPs	Registered Aboriginal parties
Roadmap	South Korea's revised roadmap for achieving the 2030 National Greenhouse Gas Reduction Goal in July 2018
Rocky Hill case	<i>Gloucester Resources Limited v Minister for Planning</i> [2019] NSWLEC 7
ROM	Run-of-mine
SC	Supercritical

Abbreviation/Acronym	Meaning
SEARs	Secretary's Environmental Assessment Requirements
Steffen Report	Expert report produced by Professor Steffen dated 11 December 2018
t	Tonnes
Transparency Framework	Transparency Framework adopted under the Katowice Climate Package
UNFCCC	<i>United Nations Framework Convention on Climate Change</i>
USC	Ultra-supercritical
<i>Wallerah 2 case</i>	<i>Australian Coal Alliance Inc v Wyong Coal Pty Ltd</i> [2019] NSWLEC 31
WEO	World Energy Outlook
WEO 2018	World Energy Outlook 2018
<i>Xstrata case</i>	<i>Xstrata Coal Queensland Pty Ltd v Friends of the Earth, Brisbane Co-op Ltd & Ors</i> [2012] QLC 13

4. Part 1: Rocky Hill and Wallarah 2 cases on climate change and GHG emissions

- 1.1 The Proponent considers that it is important to make some preliminary observations in order to put both the Rocky Hill case and the Wallarah 2 case into their proper context.
- 1.2 As the consent authority would be aware, there has been much commentary in the media about the decision of the Court in the *Rocky Hill* case. A significant proportion of that commentary has been misleading in reporting the findings of the Court in the case, or exaggerating the implications of the findings made on climate change and GHG emissions in that case for future coal mining projects in NSW and, to a lesser extent, other jurisdictions in Australia.
- 1.3 Generally speaking, a significant proportion of the media commentary has reflected the following observations about the *Rocky Hill* case:
- (a) the decision sets a new precedent;
 - (b) the decision is the first time a court in Australia has considered the climate impacts of coal mining and is a landmark case that will set a very high hurdle for any future coal mine to obtain development consent;
 - (c) the decision will generally be applicable to any new coal mine in Australia; and
 - (d) a key reason given by the Court for refusing the Rocky Hill Coal Project was the climate change impacts and GHG emissions generated by the Project.
- 1.4 Each of these observations is misleading or overstated.
- 1.5 First, in relation to the suggestion that the decision sets a new precedent and is a landmark case, it should be recognised that the Court's decision in the *Rocky Hill* case was in respect of a merit appeal heard in Class 1 of the Court's jurisdiction.
- 1.6 When the Court determines merit appeals in Class 1, it is exercising an administrative decision-making power,¹ rather than judicial power.² The role of the Court in a merit appeal

¹ See, eg, Linda Pearson and Peter Williams, 'The New South Wales planning reforms: Undermining external merits review of land-use decision-making?' (2009) 26 EPLJ 19 at 27.

is to "stand in the shoes" of the consent authority for a development application under the EP&A Act, which may be, for example, the consent authority, and exercise the functions of the consent authority to reach a determination, on the merits, about whether a particular project should be granted development consent or not.

- 1.7 "Precedent", in law, means "[a] judgment that is authority for later cases with similar facts; a case that is authority for the legal principle contained in its decision".³ Because the decision-making task performed by the Court in the *Rocky Hill* case involved the exercise of administrative rather than judicial power, the *Rocky Hill* case does not set any "new precedent". As far back as 1960, the courts in NSW have recognised that, in the context of applications made for development consent or planning permission, "each application must be considered on its individual merits and ... there is no such thing as binding precedent in these matters".⁴
- 1.8 In short, the *Rocky Hill* case is not a "new precedent" because, at law, it is not a "precedent" at all.
- 1.9 As a matter of law, the consent authority is not obliged to follow any finding made by the Court in the *Rocky Hill* case on the matter of climate change and GHG emissions in determining the development application that is before it for the Project. The consent authority is entitled to take a different approach and view to the issues of climate change and GHG emissions than the Court did in the *Rocky Hill* case, as the decision in the *Wallarrah 2* case confirms.
- 1.10 The consent authority is, in accordance with law, obliged to consider the development application for the Project on its own individual merits.
- 1.11 The status of the *Rocky Hill* case can be contrasted with the *Wallarrah 2* case. In that case, Justice Moore was hearing and determining a judicial review challenge brought in Class 4 of the Court's jurisdiction. Justice Moore's role in the case was to review the PAC's decision to approve the Wallarah 2 Coal Project for the purpose of determining whether any legal error was made by the PAC in approving that project. In this respect, unlike the *Rocky Hill* case, Justice Moore was exercising judicial power in determining the judicial review proceedings before him and, as a result, the *Wallarrah 2* case is, at law, a "precedent".
- 1.12 Therefore, the *Wallarrah 2* case constitutes binding judicial precedent (established after the judgment in the *Rocky Hill* case was handed down) in which the Court found that there was no legal error in a consent authority approving a coal mining project that has Scope 3 emissions, even where:
 - (i) the combustion of its coal was predicted to generate Scope 3 emissions are significantly greater (by a factor of 7) than those of the Rocky Hill Coal Project; and
 - (ii) there was no proposal to offset those emissions by way of afforestation of land or otherwise.

² *Ku-ring-gai Council v Bunnings Properties Pty Ltd* [2019] NSWCA 28 at [182] per Preston CJ of LEC (Beazley P agreeing).

³ *LexisNexis Concise Australian Legal Dictionary* (LexisNexis Butterworths, 5th ed, 2015) p 485.

⁴ *Shellcove Gardens Pty Ltd v North Sydney Municipal Council* (1960) 6 LGRA 93 at 104 per Sugerman J.

- 1.13 Further, the consent authority, in determining the development application for the Wallarah 2 Coal Project, considered and applied the concept of market substitution in arriving at its decision to grant development consent, and acknowledged that Scope 3 emissions from the combustion of coal (including any potential to abate those emissions) should be dealt with at the location where those emissions are generated or at higher policy levels.
- 1.14 For completeness, even if it was accepted that the *Rocky Hill* case can be treated as a legal "precedent" (which the Proponent does not accept), the findings made by the Court in that case on climate change and GHG emissions cannot be considered, on any fair reading of the judgment, to form the essential reason for refusing development consent.
- 1.15 The Court's judgment makes very clear (at [556]) that the "significant and unacceptable planning, visual and social impacts" were the essential reasons why the Court reached the decision it did. The remarks on climate change and GHG emissions were observations that did not form part of the essential reasons for decision. Because of this, even if the *Rocky Hill* case had "precedent" value (which it did not), this would only be true of the parts of the judgment which constituted the essential reasons for decision.
- 1.16 Secondly, in relation to the claim that the decision is the first time a court in Australia has considered the climate impacts of coal mining and is a landmark case that will set a very high hurdle for any future coal mine to obtain development consent, this overstates the position.
- 1.17 The *Rocky Hill* case is not the first case to consider climate change issues associated with a new coal mine. Objections to new coal mines on climate change grounds have been relatively common over the past 10 years, and a number of courts throughout Australia have considered these issues previously, including both in the context of merit appeals (like the *Rocky Hill* case) and judicial review proceedings.
- 1.18 A non-exhaustive list of examples of Australian cases where climate change impacts have been considered in the context of coal mining projects is produced below:
- (a) *Wildlife Preservation Society of Queensland Proserpine/Whitsunday Branch Inc v Minister for the Environment & Heritage* [2006] FCA 736;
 - (b) *Gray v Minister for Planning and Ors* [2006] NSWLEC 720;
 - (c) *Anvil Hill Project Watch Association Inc v Minister for the Environment and Water Resources* [2007] FCA 1480;
 - (d) *Hunter Environment Lobby Inc v Minister for Planning* [2011] NSWLEC 221;
 - (e) *Hunter Environment Lobby Inc v Minister for Planning (No 2)* [2012] NSWLEC 40;
 - (f) *Xstrata Coal Queensland Pty Ltd v Friends of the Earth, Brisbane Co-op Ltd & Ors* [2012] QLC 13 (**Xstrata case**);
 - (g) *Hancock Coal Pty Ltd v Kelly & Ors and Department of Environment and Heritage Protection (No 4)* [2014] QLC 12;
 - (h) *Adani Mining Pty Ltd v Land Services of Coast and Country Inc & Ors* [2015] QLC 48;
 - (i) *Coast and Country Association of Queensland Inc v Smith* [2016] QCA 242;
 - (j) *Australian Conservation Foundation Incorporated v Minister for the Environment* [2016] FCA 1042;
 - (k) *Australian Conservation Foundation Incorporated v Minister for the Environment and Energy* [2017] FCAFC 134;

- (l) *New Acland Coal Pty Ltd v Ashman & Ors and Chief Executive, Department of Environment and Heritage Protection (No 4)* [2017] QLC 24;
 - (m) *Wollar Progress Association Incorporated v Wilpinjong Coal Pty Ltd* [2018] NSWLEC 92; and
 - (n) *Australian Coal Alliance Incorporated v Wyong Coal Pty Ltd* [2019] NSWLEC 31.
- 1.19 Some of these cases were referred to by the Court in the *Rocky Hill* case, and others were not. On the whole, the climate change objections raised by persons in respect of new greenfield coal mines, or expansion of existing coal mines, were unsuccessful, generally because either:
- (a) the Court, exercising administrative power in a merit appeal type context, was satisfied, on the evidence before it, that the mine should be approved on the merits and did not consider the climate change impacts or GHG emissions generated by the mine, or the combustion of the mine's coal by other developments, to outweigh the benefits of allowing the mine to proceed; or
 - (b) the Court, exercising judicial power in a judicial review context, was not satisfied that contentions that an approval authority committed an error of law by failing to consider the climate change impacts or GHG emissions generated by the mine, or the combustion of the mine's coal by other developments, when determining to grant approval to the mine, were made out. In this regard, the *Wallarrah 2* case is a recent example where a court has rejected a challenge to a decision to grant planning approval to a coal mining project on grounds which, in part, related to an alleged failure of the decision-maker to consider the climate change impacts or GHG emissions generated by a proposed coal mining project, or the combustion of the coal produced by the proposed coal mining project.
- 1.20 Thirdly, for the reasons already given in relation to the issue of "precedent", it is incorrect to assert that the decision and reasoning in *Rocky Hill* case will be applicable to any new coal mine in Australia. The *Rocky Hill* case has no legal "precedent" value in NSW, much less so in the context of other Australian jurisdictions.
- 1.21 For example, the decision in the *Rocky Hill* case sits uncomfortably with a series of decisions of the Queensland Land Court (as to which, see paragraph 4.18 above) where climate change impacts and GHG emissions were considered but ultimately not found to outweigh the benefits associated with the particular mining project before the Queensland Land Court.
- 1.22 Even in NSW, it must be acknowledged that the most recent legal precedent on the requirement to consider climate change impacts and GHG emissions is the *Wallarrah 2* case. That case is instructive to the consent authority as to how the issue of climate change and GHG emissions may be addressed by the consent authority in determining the development application for the Project.
- 1.23 In the *Wallarrah* case, the ACA raised 10 grounds of challenge in the proceedings. Three of these 10 grounds were related to climate change and GHG emissions (i.e. Grounds 1 to 3). Those grounds of challenge, in short, were:
- (a) **Ground 1:** the PAC failed to consider the downstream GHG emissions (including Scope 3 emissions) generated by the combustion of the project's coal by other developments when determining to grant development consent for the project or determining whether or not to impose conditions on the development consent for the project to regulate GHG emissions;
 - (b) **Ground 2:** the PAC failed to consider clause 14(2) of the Mining SEPP (in effect or substance, this was the same allegation that formed Ground 1). Clause 14 of the Mining SEPP relevantly states:

14 Natural resource management and environmental management

(1) Before granting consent for development for the purposes of mining ... the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following:

(a) that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable,

(b) that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable,

(c) that greenhouse gas emissions are minimised to the greatest extent practicable.

(2) Without limiting subclause (1), in determining a development application for development for the purposes of mining ... the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions.

- (c) **Ground 3:** the PAC failed to consider principles of ecologically sustainable development, including the precautionary principle and principle of intergenerational equity, by failing to consider the downstream GHG emissions (including Scope 3 emissions) generated by the combustion of the project's coal by other developments.

1.24 Justice Moore rejected all of Grounds 1 to 3.

1.25 In short, the key observations made by Moore J in addressing, and ultimately rejecting, Grounds 1 to 3 are as follows:

- (a) it was common ground that the PAC was required to discharge, as the consent authority, the obligations imposed on it by clause 14(2) of the Mining SEPP (at [31]);
- (b) that obligation required the PAC to consider an assessment of GHG emissions including Scope 3 emissions (at [32]);
- (c) the proceedings before Chief Judge Preston in the Rocky Hill case were "entirely different in nature" from the proceedings brought before the Court concerning the Wallarah 2 Coal Project (at [36]);
- (d) there was much material before the PAC that addressed climate change and GHG emissions, including Scope 3 emissions (see generally [49]-[66]). In particular, the Court identified and discussed the following material of relevance:

[52] Critical to my consideration of Grounds 1 to 3 pressed by the Applicant, this portion of the PAC's Determination Report then continued saying:

The Commission also acknowledges the greenhouse gas emissions that would be produced from any future burning of the coal extracted, whether it is consumed locally or internationally. It is noted that presently there are alternative coal sources available to the market in the event that this mine does not proceed. Consequently, the downstream use of the coal (and any emissions abatement or capture technologies deployed) will need to be considered at that location.

[61] The next relevant document was the Department's Preliminary Assessment Report. The relevant section is reproduced below (Evidence Book, folios 1701 and 1702):

5.7.3 Greenhouse Gas Emissions

The EIS includes an assessment of greenhouse gas (GHG) emissions and potential impacts, undertaken by PAEHolmes.

The Department acknowledges the potential climate change impacts caused by the burning of coal and other fossil fuels to provide the energy needs of various human societies, but does not consider that these in themselves should necessarily preclude the approval of the project. Rather, consideration of potential GHG impacts needs to be balanced, with due consideration given to:

- the project's particular contribution to global warming/climate change

- whether refusing the development application would reduce global GHG emissions;
- the benefits of the project, including job creation and its contribution to the NSW economy;
- the objects of the EP&A Act, including the encouragement of ESD; and
- available GHG impact mitigation measures.

The GHG assessment calculates direct and indirect GHG emissions associated with the project, including 'Scope 1' emissions (ie direct GHG emissions from sources controlled by WACJV), 'Scope 2' emissions (ie indirect emissions associated with the import of electricity for use in the project) and 'Scope 3' emissions (ie other indirect emissions, such as those associated with the downstream combustion of the product coal). The calculated GHG emissions associated with the project are shown in Table 9.

The assessment indicates that the vast majority (97.76%) of the total GHG emissions generated as a consequence of the project are those associated with the downstream burning of the product coal for energy production purposes - ie Scope 3 indirect emissions. The Department is satisfied that the project's contribution to annual global GHG emissions, even when assessed on a full life-cycle basis (ie including downstream GHG emissions) would be very small.

[62] The Preliminary Assessment Report then reproduced a table which was, in effect, a summary of what had been set out in the greenhouse gas scope calculations in the EIS. It then continued:

It must be noted that if the project was not allowed to proceed, the resultant gap in the thermal coal supply would be almost certainly filled by another coal resource, sourced either from elsewhere in NSW, Australia or overseas. In other words, preventing GHG emissions from the project would not result in any decrease in global CO₂ emissions. This point illustrates the reality that the key response to the issue of climate change needs to be made at a national and international policy or strategic planning level, outside and above the project assessment process in NSW.

- (e) the ACA was seeking to employ an impermissible "fine-tooth comb" approach to contending that the PAC's reasons for decision (as reflected, non-exhaustively, in its Determination Report) revealed legal error on the basis of a failure to consider climate change and GHG emissions as required by clause 14(2) of the Mining SEPP (at [79]);
- (f) there was material before the PAC that addressed Scope 3 emissions either expressly or by necessary implication and, in particular, there were passages from the PAC's Determination Report which were "sufficient to establish that the PAC has had regard [to], as it was obliged to by cl 14(1) and (2) of the Mining SEPP, the question of downstream emissions that will arise from the burning of the coal proposed to be produced from this mine, and that it has considered what conditions were appropriate to consider imposing and then actually impose concerning greenhouse gas emissions" (at [84]);
- (g) the existence of this material was considered to be "a complete answer to Grounds 1 and 2" (at [85]);
- (h) it did not matter whether or not the text of clause 14(2) of the Mining SEPP was referred to frequently or infrequently. The absence of (repeated) references to clause 14(2) of the Mining SEPP would not invalidate the development consent granted by the PAC if the PAC's Determination Report "has adequately addressed the substance of what would be required to satisfy the terms of the provision despite the fact that it was not expressly referenced. I am satisfied that that is here the case" (at [86]-[87]);
- (i) in relation to the ACA's contention that the downstream emissions should have been dealt with in the context of the coal mining development before the PAC, rather than being deferred for consideration in the context of GHG emissions at the location of the burning of the coal proposed to be extracted from the mining development, the Court observed that the material before the PAC supported the finding that the PAC:

... did consider the issue of whether or not it was appropriate or possible to apply conditions to this consent dealing with Scope 3 emissions but that the PAC concluded that the appropriate place to deal with such emissions was at the location where they were caused to be emitted by the burning of the coal proposed to be produced by this mine or at the higher policy levels discussed in the earlier extract at [62].

- (j) there was, again, material before the PAC (and statements in its reports) which supported the conclusion being reached that principles of ecologically sustainable development (**ESD**) were considered as required by law (at [99]-[105]). In particular, the Court noted the following relevant observations made in the PAC's Determination Report under the heading "intergenerational equity" (extracted at [99] in the judgment):

The Department acknowledges that coal and other fossil fuel combustion is a known contributor to climate change, which has the potential to impact future generations. However, it also recognises that there remains for the foreseeable future a clear need to continue to mine coal deposits to meet society's basic energy needs. The Department also notes that climate change is a global phenomenon, the project's contribution to climate change would be very small and that WACJV has considered greenhouse gas mitigation measures. The Department also acknowledges that the downstream energy and other socio-economic benefits generated by the amended project would benefit future generations, particularly through the provision of international energy needs.

- 1.26 Fourthly, commentators' statements that the key reason given by the Court for refusing the Rocky Hill Coal Project was the climate change impacts and GHG emissions associated with the Project, is wrong. As already noted, the Court (at [556]) indicated that the "significant and unacceptable planning, visual and social impacts" of the Rocky Hill Coal Project warranted refusal of that project in and of themselves. It was these impacts that were the key reasons for refusing the Rocky Hill Coal Project. Climate change impacts and GHG emissions were cited as a "further reason for refusal", but were certainly not the key reasons why the Rocky Hill Coal Project was refused.

Part 1 Conclusion

- 1.27 In concluding Part 1, the Proponent considers it would be useful for it to outline its position on the relevance of the *Rocky Hill* case and the *Wallarah 2* case to the consent authority's assessment and determination of the development application for the Project. To this end, the key points the Proponent would make are as follows:
- (a) the Court's decision in the *Rocky Hill* case was the determination of a Class 1 "merit appeal" whereby the Court "stands in the shoes" of the consent authority for a development application under the EP&A Act, the Court's decision is, therefore, not a legal "precedent";
 - (b) the Court's decision in the *Wallarah 2* case was the determination of judicial review proceedings, with the consequence that this case is a legal "precedent" and is, both binding on and instructive to the consent authority as to how the issue of climate change and GHG emissions may be addressed by the consent authority in determining the development application for the Project;
 - (c) climate change impacts and GHG emissions were not key reasons for the refusal of the Rocky Hill Coal Project, as the Court made clear in [556] of the judgment that the significant and unacceptable planning, visual and social impacts of the proposed project were sufficient reasons alone for refusing the development application for the Rocky Hill Coal Project;
 - (d) the *Rocky Hill* case was concerned with the specific facts and circumstances of that proposed mining project, particularly its location;
 - (e) the consent authority, in determining the development application for the Proponent's Project, is not obliged to adopt, consider or follow any particular aspect of the Court's decision in the *Rocky Hill* case, as the Court's decision in the *Wallarah 2* case (which is a binding legal precedent) confirms;

- (f) the consent authority is obliged to consider and determine the development application for the Proponent's Project on its own, individual merits, having regard to the environmental assessment material and information that is before it and is obliged to consider *'the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality'*;
- (g) the discharge of such an obligation by the consent authority requires it to assess all of the impacts of the Project (both positive and negative), which involves an "intuitive synthesis of the relevant factors" (as recognised at [687] in the *Rocky Hill* case);
- (h) as is evident from the judgment in the *Wallarah 2* case, the fact that a Project generates GHG emissions does not mean that the starting position for consideration of a development application is that the Project should be refused, and that fact is also not singularly determinative for the purposes of considering a development application made under the EP&A Act for any type of development, coal mining being only one of many types of development which generate GHG emissions;
- (i) there is no government policy or legal principle that dictates the extent to which GHG emissions generated by the Project, or the combustion of the Project's coal by other developments, are to be considered and weighted in determining a development application under the EP&A Act, and there is no prescribed quantitative criteria against which the Project's GHG emissions are to be assessed; and
- (j) in the absence of any government policy or legal principle that dictates the extent to which GHG emissions generated by the Project, or the combustion of the Project's coal by other developments, must be considered and weighted in the determination of a development application under the EP&A Act, it is for the consent authority to determine how much weight it is to accord to the climate change impacts and GHG emissions generated by the Project or the combustion of the Project's coal by other developments, as the Court's decision in the *Wallarah 2* case confirms;

5. Part 2: Climate change law and policy frameworks

This section considers how climate change law and policy frameworks may interact with the development application assessment process under the EP&A Act.

- 1.28 There are a range of climate change laws and policies that may inform the consent authority's consideration of the specific factor of climate change and GHG emissions as one of the many factors of relevance to take into account when determining the development application for the Project under the EP&A Act.
- 1.29 Some of these laws and policies are mandatory relevant considerations (e.g. clause 14(2) of the Mining SEPP), whereas others are permissible relevant considerations (i.e. considerations that the consent authority may, but is not obliged to, take into account). Regardless of whether consideration of a specific climate change law and/or policy is mandatory or permissible for the consent authority to take into account in making a decision about the Project, it will be a matter for the consent authority to determine what amount of weight should be accorded to the climate change impacts and GHG emissions of the Project.
- 1.30 The Proponent considers that the climate change impacts and GHG emissions generated by the Project should not outweigh the significant social and economic benefits that the Project will deliver at a local, regional and State level.

- 1.31 This section includes the following matters:
- (a) the international climate change framework, focussing particularly on the Paris Agreement;
 - (b) classification of GHG emissions into Scope 1, 2 and 3 emissions;
 - (c) the issue of double counting of GHG emissions and how that is generally addressed in the international and Australian climate change frameworks;
 - (d) the carbon budget approach and its uptake in the international and Australian climate change frameworks;
 - (e) Australia's NDC under the framework of the Paris Agreement, and the laws and policies that Australia has adopted for the purposes of facilitating the achievement of its NDC;
 - (f) the domestic climate change laws, policies, NDCs and objectives of the countries that are most likely to be the export destinations for the Project's coal; and
 - (g) the climate change law and policy framework in NSW, including the NSW Climate Change Framework and the manner in which climate change and GHG emissions (particularly Scope 3 emissions) can be considered and addressed in the application of the EP&A Act and environmental planning instruments made under that Act, to determining a development application.

1.32 Each of these will be addressed in turn below.

The international climate change framework, focussing particularly on the Paris Agreement

- 1.33 The international framework that addresses GHG emissions, and more broadly the global response to climate change, is comprised of:
- (a) the *United Nations Framework Convention on Climate Change (UNFCCC)*;
 - (b) the *Kyoto Protocol*;
 - (c) the *Paris Agreement*; and
 - (d) associated decisions by the Conference of the Parties serving each of the above instruments.

1.34 The UNFCCC was adopted in 1992 and represented the first step by countries to address the issue of climate change. It set out a number of commitments, but these did not translate into quantifiable targets or outcomes. This led to the adoption of the *Kyoto Protocol*, which imposed firm targets and timeframes for GHG emission reductions by developed countries, both individually and collectively. The second commitment period runs from 1 January 2013 to 31 December 2020, but is not binding under international law.

1.35 For present purposes, the most important aspect of the international climate change framework is the *Paris Agreement*.

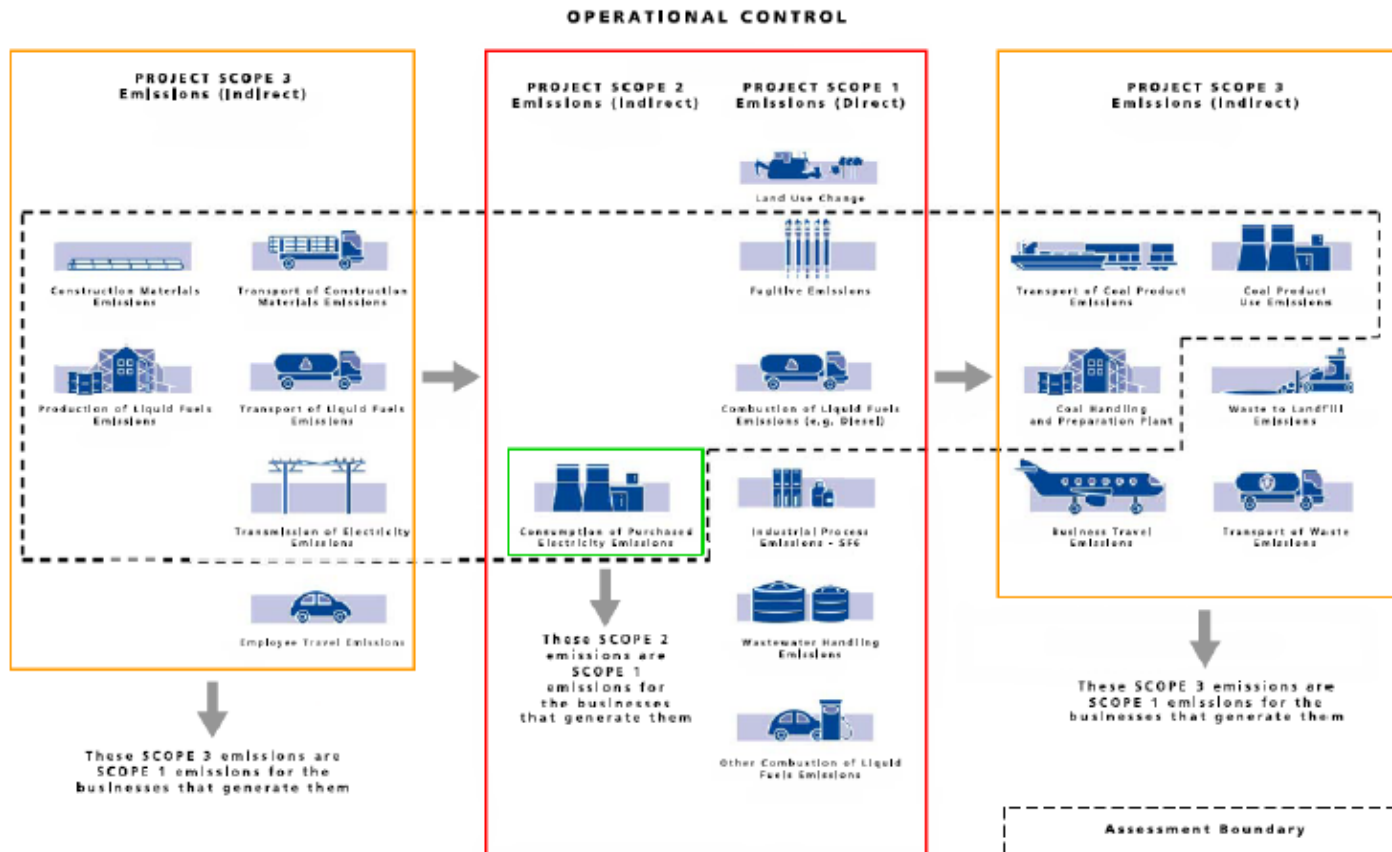
- 1.36 The *Paris Agreement* builds upon the UNFCCC and for the first time requires all nations to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so. The *Paris Agreement* includes a global goal to hold global warming to "well below 2°C" and to pursue efforts to limit the temperature increase to 1.5°C above preindustrial levels. Countries are to peak and then reduce emissions "as soon as possible" to "achieve a balance between anthropogenic emissions by sources and removals by sinks" in the second half of the century. Put differently, from as soon as possible after 2050, countries are to have net-zero emissions, using carbon sinks such as forests to offset any emissions they then produce.
- 1.37 One of the key features of the *Paris Agreement* is the use of NDCs, which are high-level policy plans setting out what approach each country will take to reduce emissions and contribute to the global "well below 2°C" goal. 182 parties to the *Paris Agreement* have submitted their first NDC, including Australia and the countries that are most likely to be the export destinations for the vast majority of the Project's coal, being Japan, China, South Korea, Taiwan, India, Malaysia, the Philippines and Vietnam (**Export Countries**).⁵ The NDCs of Australia and the Export Countries are addressed under separate sub-headings below in this Part C of the submission.
- 1.38 At the Conference of the Parties (**COP**) 24 in Katowice in December 2018, the Katowice Climate Change Package was adopted. That package contains, amongst other things, guidance on the features of NDCs, the information each country should provide to facilitate clarity, transparency and understanding of NDCs and accounting for NDCs. In general terms, they establish a common set of elements that each Party will apply, as appropriate, based on the type of its NDC. Importantly, the guidance ensures the avoidance of "double counting" of emissions. The issue of "double counting" is addressed under a separate sub-heading below in this Part C of the submission.

Classification of GHG emissions into Scope 1, 2 and 3 emissions

- 1.39 Whilst the consent authority is no doubt aware of the difference between Scope 1, 2 and 3 GHG emissions, the Applicant considered that, for the purposes of the commentary which follows in this Part C of the submission, it would be useful to provide a high level overview of the three scopes of GHG emissions.
- 1.40 As noted in the Greenhouse Gas and Energy Assessment for the Project (May 2016), the three scopes of GHG emissions may be defined or described as follows:
- (a) **Scope 1:** direct emissions occurring from sources that are owned or controlled by the proponent of the Project (e.g. fuel use, fugitive emissions). These emissions are emissions over which the Project has a high level of control.
 - (b) **Scope 2:** emissions from the generation of purchased electricity consumed by the Project.
 - (c) **Scope 3:** indirect emissions that are a consequence of the activities of the Project, but occur at sources owned or controlled by other entities (e.g. outsourced services). Scope 3 emissions can include emissions generated upstream of the Project by providers of energy, materials and transport. Scope 3 emissions can also include emissions generated downstream of the Project by transport providers and product use (e.g. burning product coal).
- 1.41 A useful figure that highlights the degree of control the proponent of a mining project has over GHG emissions is produced below.

⁵ It should be noted, of course, that there may well be other countries to which the Project's coal is exported from time-to-time during the Project's life of mine.

FIGURE SHOWING OPERATIONAL CONTROL THE PROPONENT OF A COAL MINING PROJECT HAS OVER GHG EMISSIONS



Scope 2 and 3 emissions associated with the Project are part of the scope 1 emissions from another facility. For example, a power station burns coal to power its generator and in turn creates electricity. Burning the coal causes greenhouse emissions to be emitted. These gases are attributed to the power station as scope 1 emissions. When the electricity is then transmitted to a mine and used there, the gases emitted as a result of generating the electricity are then attributed to the mine as scope 2 emissions.

Greenhouse Gas Assessment Boundary

The issue of double counting of GHG emissions and how that is generally addressed in the international and Australian climate change frameworks

- 1.42 For present purposes, double counting of GHG emissions can generally be described as occurring where the Scope 3 emissions generated by the burning of a mine's coal by other developments are counted twice in the context of calculating a country's GHG emissions for the purpose of tracking progress towards achievement of its NDC. This can occur in two main circumstances:
- (a) the Scope 3 emissions of a particular development or activity carried out in Country A, are actually generated in Country B as Scope 1 emissions associated with development or activities conducted in Country B, and both Countries A and B count the same GHG emissions towards their NDC; or
 - (b) the Scope 3 emissions associated with a particular development or activity carried out in Country A, are actually generated by another development or activity in Country A as Scope 1 emissions generated by that other development or activity, and Country A counts the same GHG emissions towards its NDC.
- 1.43 The issue of double counting, as arising in the context of the first main circumstance described in paragraph 1.42(a) above, can be illustrated by use of the example of the MCCO Project that is currently before the consent authority.
- 1.44 Almost all of the MCCO Project's Scope 3 emissions are generated by the burning or combustion of coal by the end-user of the coal. As approximately 81% of the coal from the MCCO Project is planned to be exported, the generation of all the Scope 3 emissions from that coal will occur outside of Australia. In this regard, those Scope 3 emissions of the MCCO Project would count as Scope 1 emissions in each of the countries to which the coal is exported and, if Australia was to count the Scope 3 emissions from the MCCO Project in calculating its GHG emissions, this would result in an unacceptable double counting of GHG emissions.
- 1.45 In relation to the second main circumstance described in paragraph 1.42(b) above, as approximately 19% of the coal from the Project will likely supply a domestic power station which will combust coal from the Project, it will be the case that:
- (a) the Scope 1 emissions of the MCCO Project will need to be accounted for and reported; and
 - (b) the Scope 1 emissions of the power station will need to be accounted for and reported.
- 1.46 However, it would be double counting if the Scope 3 emissions of the MCCO Project were also accounted for and reported, on the basis that those emissions are the same as the Scope 1 emissions of the power station.
- 1.47 The importance of avoiding double counting of GHG emissions generally, including in the context of calculating a country's GHG emissions for the purpose of tracking progress towards achievement of its NDC, is well-recognised under international and Australian frameworks addressing climate change and GHG emissions.
- 1.48 On an international level:
- (a) in respect of overarching obligations, article 4(13) of the *Paris Agreement* requires parties to ensure the avoidance of double counting consistent with the guidance adopted by the COP;
 - (b) in respect of the use of internationally transferred mitigation outcomes towards nationally determined contributions:

- (i) article 6(2) of the *Paris Agreement* requires Parties to apply robust accounting to avoid double counting consistent with the guidance adopted by the Conference of the Parties;
 - (ii) the modalities, procedures and guidelines for the Transparency Framework adopted under the Katowice Climate Package (**Transparency Framework**), requires that each participating Party provide information on how their cooperative approach applies robust accounting to ensure the avoidance of double counting;
- (c) in respect of accounting for Parties' NDCs, the guidance adopted by the Parties under the Katowice Climate Package requires that Parties avoid double counting when accounting for anthropogenic emissions and removals corresponding to their NDCs; and
- (d) the guiding principles of the Transparency Framework also provides that double counting be avoided.
- 1.49 The Applicant would readily acknowledge that the measures contained in the Katowice Climate Package are generally focussed on the avoidance of double counting of GHG emission reductions. However, the clear intent of the *Paris Agreement* is to ensure a robust approach is taken to accounting of GHG emissions and it would undermine the integrity of that agreement for an approach to be taken to accounting of emissions which involved double counting.
- 1.50 For example, if the Scope 3 emissions generated by the Project were to be included in Australia's national inventory report as well as the respective national inventory report of the countries to which the coal from the Project is exported, this would represent an over allocation of the total GHG emissions from the Project. Furthermore, there are challenges in the accuracy of the way in which the Scope 3 emissions are accounted for based on forecasts rather than actual results, particularly when matters such as technology and end uses are taken into account. For example, if the coal was exported and used in a supercritical coal-fired power station or in conjunction with carbon capture and storage, then the actual GHG emissions would likely be quite different than if used in a less-efficient, unabated power station.
- 1.51 At the domestic level, the NGER Act in Australia also dissuades double counting by imposing reporting obligations upon companies only in respect of Scope 1 and Scope 2 emissions. There is no requirement or obligation imposed on companies under Australian law to report on Scope 3 emissions. The exclusion of Scope 3 emissions from the reporting requirements under Australian law effectively avoids double counting of Scope 3 emissions since the end-user who is responsible for a project's Scope 3 emissions will ultimately account for them as Scope 1 emissions.

The carbon budget approach and its uptake in international and domestic climate change frameworks

- 1.52 The "carbon budget" approach has been used by some members of the scientific community to describe the maximum amount of CO₂ (i.e. the budget of CO₂) that can be released from human sources globally into the atmosphere to limit global warming to a desired level above pre-industrialised levels. Once the CO₂ concentration in the atmosphere reaches the set maximum amount (i.e. the budget is spent), global emissions of CO₂ must be "net zero" (i.e. the magnitude of emissions to the atmosphere is matched by the magnitude of removals of emissions from the atmosphere).

- 1.53 Whilst the "carbon budget" approach is sometimes used by scientists, it is not an approach that is required to be followed under the *Paris Agreement*, or Australian domestic laws (i.e. federal and NSW legislation) in the context of implementing, or measuring progress towards, achievement of Australia's NDC. Australian and NSW climate change laws and policies are dealt with below in this Part C of the report.
- 1.54 In the absence of a requirement in these laws to apply the "carbon budget" approach, the Proponent would submit that it would be inappropriate for the consent authority to either have regard to or apply the "carbon budget" approach in determining the development application for the Project. The Proponent makes this submission for the following reasons:
- (a) the "carbon budget" approach does not provide the consent authority with any practical assistance in discharging the function it has been asked to perform (i.e. to determine the development application for the Project), and is a matter that is best left to higher policy circles and the international community;
 - (b) the approach is inconsistent with the approach that has been adopted by the *Paris Agreement* for achieving the goal set under that agreement, in that:
 - (i) each country has made a commitment (in the form of a NDC) as to how it will contribute to achieving the goal set by the *Paris Agreement*;
 - (ii) the *Paris Agreement* does not prescribe the measures or mechanisms by which a particular country is to implement actions to facilitate the achievement of its NDC; and
 - (iii) the application of the carbon budget approach results in double counting of GHG emissions, which is an outcome that the *Paris Agreement* seeks to avoid.
 - (c) the approach suffers from numerous deficiencies, including:
 - (i) **Uncertainty:** the approach suffers from uncertainties, such as the desired probability of meeting the goal of the *Paris Agreement* (i.e. the higher one sets the probability for achieving the goal, the more stringent the budget needs to be), accounting for non-CO₂ gases (i.e. if non-CO₂ gases are not reduced or reduced more slowly than CO₂, the budget is reduced accordingly), and the failure to account for carbon cycle feedback (i.e. including estimates of these would reduce the carbon budget further).
 - (ii) **Technology:** the approach can be susceptible to ignoring the role that technological advancements can play in reducing CO₂ levels globally (e.g. low emission coal technologies including carbon capture and storage, and HELE projects). Any failure of the carbon budget approach to account for such technological advancements would result in the CO₂ levels being recorded at levels higher than what they actually are.
 - (iii) **Allocation:** the approach has not been accepted by the international community as a means of sharing global mitigation efforts amongst countries. Rather, as explained above, the approach to allocation adopted under the *Paris Agreement* has been for each country to adopt a NDC and determine, for itself, the measures or mechanisms that will be implemented to achieve that NDC.

Australia's NDC and climate change laws and policies

- 1.55 Australia signed the *Paris Agreement* on 22 April 2016, and ratified it on 6 November 2016.
- 1.56 Australia is not bound under international law to achieve the emission reduction target in its NDC, although it is to be observed that countries are likely to face international pressure if they fail to meet NDC targets.
- 1.57 Australia has obligations under the *Paris Agreement* to:
- (a) prepare, communicate and maintain an NDC that it intends to achieve (Article 4(2));
 - (b) pursue domestic mitigation measures, with the aim of achieving the objectives of its NDC (Article 4(2));
 - (c) communicate an NDC every 5 years (Article 4(3), (9)); and
 - (d) account for its NDC and, in the process, ensure the avoidance of double counting in accordance with the methodologies and common metrics assessed by the IPCC and adopted by the Katowice Climate Package (Article 4(13)).
- 1.58 With respect to the specifics of Australia's NDC, it is to be noted that Australia's NDC communicates an unconditional economy-wide target to reduce GHG emissions by 26-28% below 2005 levels by 2030. Australia's emissions reduction target represents a 50-52% reduction in emissions per capita and a 64-65% reduction in the emissions intensity of the economy between 2005 and 2030.
- 1.59 Australia's NDC is summarised in the table below:

Emissions reduction target	Economy-wide target to reduce greenhouse gas emissions by 26 to 28 per cent below 2005 levels by 2030
Coverage	Economy-wide
Scope	<ul style="list-style-type: none"> - Energy - Industrial processes and product use - Agriculture - Land-use, land-use change and forestry - Waste
Gases	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃

Mechanisms by which Australia's NDC is to be achieved

- 1.60 The policy document supporting Australia's NDC communicates that Australia will achieve its 2030 target through the Direct Action policy suite. The key component of the Direct Action policy suite is the Emissions Reduction Fund (**ERF**), which is complemented by the Safeguard Mechanism, the Renewable Energy Target (which requires 33,000Gwh of electricity generation (or approximately 23.5% of total generation) to be produced from renewable resources by 2020), improvements in energy efficiency under the National Energy Productivity Plan, phasing out of synthetic GHGs and direct support for investment in low emissions technologies and practices.

- 1.61 Importantly, the Australian Government or the NSW Government have not – in any climate change policy or law – indicated that the development of new coal mines, or expansions of existing coal mines, is to be prohibited or restricted in any way for the purpose of achieving Australia's NDC. As a corollary, it must follow that the Australian Government considers that Australia's NDC can still be achieved in circumstances where new coal mines, or expansions of existing coal mines, are approved. Consideration should also be given to the fact that the burning of the coal from the MCCO Project represent a foreign countries Scope 1 emissions and that the direct Scope 1 emissions of the MCCO Project are relatively insignificant.
- 1.62 It is also to be noted that the Federal ALP climate change policy does not contain any measures that could constitute a prohibition on new coal mines or coal mining.
- 1.63 For present purposes, the most relevant mechanisms in the suite of policy measures are:
- (a) the ERF; and
 - (b) the Safeguard Mechanism.
- 1.64 First, the ERF is a \$2.55bn fund which purchases least cost emission reductions and abatement through a Commonwealth government procurement process, which includes reverse auctions. It is underpinned by the *Carbon Credits (Carbon Farming) Act 2011 (CFI Act)* which creates a legislative framework for the development of offset projects and the creation of Australian carbon credit units (**ACCUs**). The CFI Act was initially enacted to support activities in the land sector but has been amended to now support a wider range of projects related to energy, transport and industry.
- 1.65 Separate from, but related to the ERF, it should be acknowledged that the Australian Government recently announced the Climate Solutions Package, which is a \$3.5 billion plan to deliver Australia's 2030 emissions reduction target. As part of the package, a Climate Solutions Fund has been established to continue the work of the ERF with an additional \$2 billion investment over 10 years. Approximately \$200 million per year over ten years is expected to be allocated to abatement purchases through the ERF. The Climate Solutions Fund is also designed to be a fund that will partner with businesses, local communities and farmers in emissions reduction programs. How this will affect the current auction approach preferred by the fund is unclear. The Package, and the fund specifically, has been promoted as a key policy to contribute to meeting the national 26% emissions reduction target by 2030.
- 1.66 Secondly, the Safeguard Mechanism, established under Part 3H of the *National Greenhouse and Energy Reporting Act 2007 (NGER Act)*, aims to ensure that emission reductions purchased by the Government under the ERF are not offset by increases in emissions in other areas of the economy.
- 1.67 The Safeguard Mechanism sets a baseline on emissions for facilities that emit over 100,000 tonnes CO₂-e per year. When the Safeguard Mechanism was implemented, baselines were set for existing facilities using data reported under the NGER Act. For most facilities, baselines were the highest level of report emissions for a facility over the historical period 2009-10 to 2013-4. These baselines can be adjusted to accommodate economic growth, natural resource variability and other circumstances where historical baselines will not represent future business-as-usual emissions. Up to 2020, baselines for new facilities will be based on an audited emissions forecast provided by the facility operator, with a reconciliation of the estimate against the actual performance of the facility at the end of the forecast period. For new facilities completed after 1 July 2020 (or existing facilities with new investments), baselines will be set to encourage facilities to achieve and maintain best practice.

- 1.68 If a facility exceeds its baseline, it is nominally required to surrender a number of ACCUs equivalent to the exceedance to the Clean Energy Regulator (**CER**). It is also noted that there are other mechanisms by which a facility can manage baseline exceedance, including applying for multi-year monitoring periods and exemption for exceptional circumstances (i.e. natural disasters or criminal activity unrelated to the liable entity).
- 1.69 For example, if a facility has a FY2016/17 baseline of 1,000,000 tonnes CO₂-e and reported emissions of 1,500,000, the company with operational control of that facility would have to surrender 500,000 ACCUs to comply with its baseline, or be liable to the penalty under section 22XF of the NGER Act.
- 1.70 In its first year of operation (FY2016/17), 203 facilities were covered by the Safeguard Mechanism with combined emissions of 131.3 million tonnes of CO₂-e. Sixteen facilities exceeded their emissions limits and purchased and retired a total of 448,097 ACCUs to clear their liabilities.
- 1.71 The Safeguard Mechanism was reviewed in 2017 and 2018. In March 2019, the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Amendment Rule (No 1) 2019* commenced. On its website, the Department of Environment and Energy has indicated that the amendments:⁶
- (a) bring baselines up-to-date by transitioning all facilities to calculated baselines over 2018-19 and 2019-20;
 - (b) simplify calculated baseline applications by giving businesses the option to use Government-determined prescribed production variables and default emissions intensity values for calculating baselines; and
 - (c) update baselines annually for actual production where facilities use eligible production variables, so they continually reflect facility circumstances.
- 1.72 The existing operating Mangoola Coal mine has been allocated a reported baseline which correspond to its highest level of emissions during the period 2009-10 to 2013-14. The Mangoola baseline is set at 274,856 tonnes of CO₂-e.

NGER Act

- 1.73 The NGER Act is a national system for reporting GHG emissions, energy production and consumption by corporations. The data gathered under the NGER Act assists with compiling Australia's national GHG inventory in order to meet Australia's reporting obligations under the UNFCCC.
- 1.74 Corporations that have operational control of facilities that emit more than a specified amount must report on the type of the source of their emissions, the methods used to estimate emissions and the amount of GHG emitted (in CO₂-e). The reporting requirements under the NGER Act apply to:
- (a) an individual facility that emits 25kt or more of CO₂-e or produces or consumes 100tJ or more of energy; or
 - (b) an individual facility and other facilities under the operational control of the same corporate group that together emit 50kt or more of CO₂-e or produce or consume 200tJ or more of energy.

⁶ <http://www.environment.gov.au/climate-change/government/emissions-reduction-fund/consultation/safeguard-mechanism-legislative-amendments-2018>.

- 1.75 Failure to comply with these reporting obligations is a breach of the legislation and can result in the imposition of civil penalties on companies and executive officers.
- 1.76 The NGER Act covers each of the six classes of Kyoto Protocol gases:
- CO₂;
 - CH₄;
 - N₂O;
 - SF₆;
 - certain specified HFCs; and
 - certain specified PFCs.
- 1.77 Reporting requirements cover both Scope 1 and Scope 2 emissions. The NGER Act does not cover Scope 3 emissions.
- 1.78 The parent company of the MCCO Project, Glencore, submits annual NGERs reports for the facilities over which they or a member of their corporate group has operational control. These facilities include the Mangoola Coal mine. Typically these reports will include Scope 1 emissions related to fugitive emissions of CO₂ and CH₄, emissions from the combustion of diesel, LPG and other gaseous fuels for stationary and transport uses, and Scope 2 emissions related to electricity consumption.

Consideration of Scope 3 emissions under climate change laws and policies at the Commonwealth level in Australia

- 1.79 Australia's GHG Inventory is prepared centrally by the Department of the Environment using the Australian Greenhouse Emissions Information System (**AGEIS**). Australia's National Greenhouse Accounts conform to the UNFCCC Reporting Guidelines on Annual Inventories and the supplementary reporting requirements under the Kyoto Protocol to prepare its national inventories. These guidelines establish standardised reporting formats and require detailed information on all aspects of each party's national inventory system, including measurement systems, data collection systems, estimation methodologies, reporting and data management.
- 1.80 Currently, emission estimates are compiled in accordance with the IPCC 2006 Guidelines for National Greenhouse Gas Inventories (**2006 IPCC Guidelines**) and the 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol. Parties may also use country-specific methodologies where these are consistent with the IPCC guidelines and improve the accuracy of emissions estimates. Australia predominantly uses country-specific methodologies and emissions factors, described in detail in its National Inventory Report.
- 1.81 The National Greenhouse Gas Inventory is reviewed annually by a team of international experts through the UNFCCC review process.
- 1.82 Notably, neither the 2006 IPCC Guidelines nor the Revised Supplementary Methods require emissions data to be collected and reported or estimates to be made for Scope 3 emissions.
- 1.83 The NGER Act also does not provide any methodology for accounting for and reporting on Scope 3 emissions.
- 1.84 The only guidance provided by the Commonwealth Government in relation to accounting for Scope 3 emissions arises in the context of the National Carbon Offset Scheme (**NCOS**) which operates as a voluntary standard for making claims related to the carbon neutrality of

organisations, products and services, buildings and precincts. The guidance that is provided in this context is relatively limited and linked to items such as international air travel, water and waste rather than supply chain emissions.

The NDCs and climate change laws and policies of the Export Countries

- 1.85 The main climate change policy the NSW Government has implemented is the NSW Climate Change Policy Framework.
- 1.86 The NSW Climate Change Policy Framework seeks to provide aspirational goals and broad policy directions to achieve NSW's objective of achieving net-zero emissions by 2050 and ensuring that NSW is more resilient and responsive to climate change. Its other aspirational objectives include the implementation of policies consistent with the Commonwealth's plan for long-term emissions savings, to reduce emissions in government operations, and to advocate for Commonwealth, COAG and international action consistent with the *Paris Agreement*.
- 1.87 Under the NSW Climate Change Policy Framework, NSW has committed to both follow the *Paris Agreement* and to work to complement national action. The key policy directions under the NSW Climate Change Policy Framework and their rationales are summarised in the table below:

Policy Direction	Rationale/Goals
Creating an investment environment that manages the emissions reduction transition	Energy will be transformed and investment/job opportunities will be created in emerging industries of advanced energy, transport and carbon farming and environmental services
Boost energy productivity and put downward pressure on energy bills	Boosting energy and resource productivity will help reduce prices and the cost of transitions to net-zero emissions
Grow new industries and capitalise on competitive advantages	Capitalising on the competitive advantage and growth of industries in professional services, advanced energy technology, property management and financial services
Reduce risks and damage to public and private assets arising from climate change	Embed climate change considerations into asset and risk management as well as support the private sector by providing information and supportive regulatory frameworks for adaptation
Reduce climate change impacts on health and wellbeing	Recognise the increased demand for health and emergency services due to climate change and identify ways to better support more vulnerable communities to health impacts
Manage impacts on natural resources and communities	Coordinate efforts to increase resilience of primary industries and rural communities as climate change impacts water availability, water quality, habitats, weeds and air pollution

- 1.88 The policy framework is being delivered through:
- (a) the Climate Change Fund;
 - (b) the development of a value for emissions savings that will be applied consistently in government economic appraisals;
 - (c) embedding climate change mitigation and adaptation across government operations including service delivery, infrastructure, purchasing decisions and regulatory frameworks;
 - (d) building on NSW's expansion of renewable energy; and

- (e) developing action plans and strategies, including on advanced energy, energy efficiency, climate change adaptation, energy productivity, fugitive emissions, primary industry emissions and adaptation and health and wellbeing.
- 1.89 The Proponent considers that the NSW Climate Change Policy Framework provides little, if any, assistance to the consent authority in determining the development application for the Project. The Proponent's view in this regard is consistent with the decision of the Land and Environment Court in the matter of *Wollar Progress Association Inc v Wilpinjong Coal Pty Ltd* [2018] NSWLEC 92. (Wollar)
- 1.90 In Wollar, the Wollar Progress Association contended that the Minister's delegate, in approving the Wilpinjong Extension Project, had, among other things, failed to take into account, as relevant policies for the purposes of clause 14(2) of the Mining SEPP:
- (a) the Paris Agreement, in respect of which Australia adopted 2005 emissions as a baseline and a target reduction of 26-28% by 2030; and
 - (b) the NSW Climate Change Policy Framework, particularly its "long term aspirational objective of net zero emissions by 2050".
- 1.91 Wilpinjong Coal Pty Ltd, in response, submitted that there was no such failure to comply with the requirements of clause 14(2) of the Mining SEPP for two main reasons:
- (a) the Paris Agreement and the NSW Climate Change Policy Framework were not applicable policies within the meaning of that clause, in that those policies could not meaningfully guide the task of the consent authority to determine the development application before it; and
 - (b) even if the Paris Agreement and the NSW Climate Change Policy Framework were applicable policies for the purposes of clause 14(2) of the Mining SEPP, there was ample evidence that the consent authority had regard to each of those policies.
- 1.92 The Court accepted Wilpinjong's submissions in this regard and generally found in its favour on this ground of challenge for the two main reasons advanced by Wilpinjong Coal: see, in particular, [180]-[183].
- 1.93 However, the Proponent notes that whilst it is not required to do so as a result of the *Wilpinjong* case, it would be permissible for the consent authority to have regard to the NSW Climate Change Policy Framework, and it is for this reason that the Proponent has referred to the framework above.
- 1.94 Leaving the NSW Climate Change Policy Framework to one side, it is apparent that the consideration of climate change impacts and GHG emissions (including Scope 3 emissions) may be required, or is permitted, in determining a development application as a result of the following sources:
- (a) the Secretary's Environmental Assessment Requirements (**SEARs**) for the Project;
 - (b) consideration of the relevant matters set out in s 4.15 of the EP&A Act, including the "public interest" and principles of ESD;
 - (c) the NSW case law, which had already recognised the relevance of considering Scope 3 emissions prior to the *Rocky Hill* case being decided (and noting that, as observed in Part A of this report, the *Rocky Hill* case does not have "precedent" value); and
 - (d) the provisions of any relevant environmental planning instrument, such as clause 14(2) of the Mining SEPP.
- 1.95 Each of these four sources is considered below.

1.96 First, in relation to the SEARs for the Project, the Proponent was, in relation to GHG emissions, required to carry out:

an assessment of the likely greenhouse gas emissions of the development

1.97 Secondly, in relation to s 4.15 of the EP&A Act, the Proponent would acknowledge that the "public interest" is a relevant consideration that must be taken into account in determining the development application for the Project and that the NSW courts have held that principles of ecologically sustainable development are a part of the "public interest" and thus must also be considered.

1.98 However, the following things should be noted about s 4.15 of the EP&A Act:

- (a) the consent authority is required to consider the likely social, economic and environmental impacts of the Project (both positive and negative), "in the locality";⁷
- (b) this means that Scope 3 emissions and their impacts cannot and should not feature heavily in the consent authority's consideration and determination of the development application for the Project;
- (c) the expression "public interest", when used in a statute like the EP&A Act, imports a discretionary value judgment to be made by reference to undefined factual matters and is unconfined except by the scope and subject matter of the EP&A Act;⁸
- (d) the "public interest" is, as a result, broad and captures not only environmental considerations associated with the Project, but also the social and economic benefits associated with the Project for the wider community and locality;
- (e) whilst climate change and GHG emissions (including Scope 3 emissions) are permitted to be considered as part of the "public interest", these matters are not the only considerations that inform the "public interest" and, certainly, are not to be solely determinative of the Project;⁹
- (f) if Scope 3 emissions and their impacts are to be given a relatively high level of weight (which the Proponent says they should not), it should follow that the broader benefit to the public in having reliable and affordable energy supplies should also be considered and attributed a relatively high level of weight, even in circumstances where that benefit arises in countries to which the Project's coal is to be exported. As the DP&E noted in its Addendum Report in respect of the Wallarah 2 Coal Project:

The Department also acknowledges that the downstream energy and other socio-economic benefits generated by the amended project would benefit future generations, particularly through the provision of international energy needs.

- (g) the Proponent considers that, based on the information that is before the consent authority, the benefits of the Project outweigh the adverse impacts associated with the Project and that it is in the "public interest" for the Project to be approved.

⁷ In the *Guidelines for the economic assessment of mining and coal seam gas proposals* (dated December 2015), it appears to be suggested that the assessment of the economic aspects of a given project are to be considered at local, regional and State scale, but not at a higher scale.

⁸ *The Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal* [2012] HCA 36 at [42] per French CJ, Gummow, Hayne, Crennan, Kiefel and Bell JJ.

⁹ This proposition also gains support generally from Justice Moore's recent decision in *Australian Coal Alliance Incorporated v Wyong Coal Pty Ltd* [2019] NSWLEC 31 at [96] to [105].

- 1.99 Thirdly, as noted above, the NSW case law has recognised that Scope 3 emissions of a Project may be considered in the context of determining development applications: see, e.g., *Gray v Minister for Planning and Ors* [2006] NSWLEC 720. The *Rocky Hill* judgment also referred to case law from other jurisdictions, including the United States, in analysing the extent to which Scope 3 emissions of a project are to be considered in determining whether or not a project should be approved or refused.
- 1.100 The Proponent does not dispute the proposition that Scope 3 emissions may be considered by the consent authority in determining the development application for the Project but would submit that:
- (a) in light of the issue of double counting of GHG emissions as described earlier in this Part C, and the fact that both the *Paris Agreement* and domestic legislation (in the form of the NGER Act) clearly intend for such double counting to be avoided, the consent authority should accord little weight to the Scope 3 emissions of the Project;
 - (b) it is for the consent authority (and the consent authority alone) to determine how much weight is to be attributed to the relevant social, economic and environmental factors associated with the Project (including the climate change impacts and GHG emissions of the Project). The consent authority's approach to considering and weighting relevant factors is not prescribed, dictated or restricted by the *Rocky Hill* judgment or the case law that is cited by that judgment from other jurisdictions, such as the United States; and
 - (c) there are legal and policy reasons why the consent authority should not, as a result of its consideration of Scope 3 emissions, seek to impose conditions of development consent on the Project which require any offset of GHG emissions.
- 1.101 The latter point can be well illustrated by the decision of Justice Pain in the case of *Hunter Environment Lobby Inc v Minister for Planning* [2011] NSWLEC 221. Whilst that decision was also in a merit appeal like the *Rocky Hill* case (and thus, has no "precedent" value), the Proponent considers that certain aspects of that decision are worth bringing to the consent authority's attention.
- 1.102 That case was concerned with a merit appeal brought in respect of the consolidation and expansion of the Ulan coal mine. At [32] in the judgment, Justice Pain noted that "some of the conditions that Hunter Environment Lobby (HEL) sought to impose are novel, particularly in relation to measures to offset GHG emissions".
- 1.103 In particular, one of the contentions put by HEL in the case (as recorded in [33] in the judgment) was:
- Ulan has not addressed measures that would be implemented to avoid, minimise, mitigate and/or offset the Scope 3 impacts of the Project.
- 1.104 HEL later changed its position to seek conditions requiring an offset for Scope 1 and 2 emissions, but not for Scope 3 emissions.
- 1.105 Mr Kitto of the DP&E gave evidence in the proceedings. His evidence was that the imposition of conditions on a planning approval requiring offset of GHG emissions would be "inconsistent with the government's policy of not using the development assessment process in the EP&A Act to impose obligations on proponents to offset the GHG emissions of their projects and contrary to the DP&E's practice of at least 5 years of applying this policy to the assessment and regulation of all major projects in NSW" (at [59]).

- 1.106 Mr Kitto summarised the DP&E's position as being that development approval conditions are unsuitable for implementing a regulatory regime to require proponents to offset some or all of the GHG emissions of their projects. Key reasons given for this position were (at [60]):
- (a) such a regime would be inefficient, ineffective and inequitable because conditions could only be imposed on new projects, not existing ones;
 - (b) no existing mines in NSW are required to offset their GHG emissions (we believe that statement remains true today);
 - (c) imposing a regulatory regime through conditions would make the coal supply from a few mines more expensive and would not drive change across the industry;
 - (d) in the absence of a national or international scheme for offsetting GHG emissions, the regulatory regime imposed by the conditions would need to rely on a collection of largely voluntary schemes to achieve offsets;
 - (e) the regime would be inflexible as consents could only be modified at the request of the proponent; and
 - (f) the regime would be complex to administer as it would not be uniform for all proponents.
- 1.107 Justice Pain held that it was within power to impose a condition on a planning approval requiring the offset of Scope 1 emissions generated by a project, finding that the fact that "the impact is felt within and also beyond NSW does not suggest that legally a condition should not be imposed under state legislation which seeks to ameliorate one contributor to that impact" (at [93]).
- 1.108 At [94], her Honour declined to determine whether it would be lawful to impose conditions requiring the offset of Scope 2 emissions, but clearly expressed doubts on the validity of such a condition:
- Scope 2 emissions are different to scope 1 emissions. By contrast scope 2 emissions result from diesel and electricity use at the project and are not emissions which Ulan can control entirely ... [W]hile Ulan can minimise electricity and diesel use at the mine it cannot influence how an electricity generator and supplier chooses to generate the electricity Ulan uses ... A condition framed to require offsetting of scope 2 emissions would be open to criticism that to the extent that those emissions are under the control of others, the requirement would not fairly relate to the development [one of the three criteria to be satisfied under the *Newbury* test for a valid condition of development consent]. It was not clear from the evidence how identifiable those parts of the scope 2 emissions are which Ulan has the ability to minimise or of any other form of control. The incentive for the electricity generator to reduce the production of GHG will also be removed if Ulan has to offset these, a poor policy outcome as identified in the Respondent's submissions.
- 1.109 It stands to reason that, if Justice Pain's logic is accepted (which the Proponent considers it should be), it would be invalid to impose conditions of development consent on the SSD consent for the Project which requires offset of Scope 2 or Scope 3 GHG emissions.
- 1.110 Justice Pain resolved to impose a condition requiring offset of Scope 1 GHG emissions.
- 1.111 However, in a later judgment – *Hunter Environment Lobby Inc v Minister for Planning (No 2)* [2012] NSWLEC 40 – Justice Pain departed from the position of imposing a condition requiring offset of Scope 1 GHG emissions generated by the project following the passage of the *Clean Energy Act 2011* (Cth). It appears that the main reason why her Honour departed from her original position was that she was satisfied that the Commonwealth scheme as represented by the *Clean Energy Act 2011* (Cth) and related legislation, meant "at a practical level the purpose of imposing a condition requiring the offset of Scope 1 GHG emissions".

- 1.112 In light of Justice Pain's observations in these cases, as well as the information contained in this report, the Proponent submits that:
- (a) it would be unlawful for a condition of consent to be imposed on the SSD consent for the Project requiring offset of Scope 2 and Scope 3 GHG emissions, because it would breach the *Newbury* tests for a valid condition of development consent;
 - (b) even if it was lawful, there are strong policy reasons why it would be inappropriate for such a condition of development consent to be imposed; and
 - (c) there are also strong policy reasons why it would be inappropriate for a condition of development consent to be imposed requiring offset of Scope 1 emissions, in that there are existing Commonwealth laws regulating GHG emissions (as set out earlier in this Part C of the report).
- 1.113 In particular, it is observed that:
- (a) under the existing climate change law framework established at the federal level in Australia, in particular the safeguard mechanism provided under the NGER Act, if a facility exceeds its baseline levels set under the NGER Act for emission of Scope 1 GHG emissions, it is nominally required to surrender a number of ACCUs equivalent to the exceedance to the CER; and
 - (b) as the DP&E noted in its Preliminary Assessment Report in respect of the Wallarah 2 Coal Project:
 - ... the key response to the issue of climate change needs to be made at a national and international policy or strategic planning level, outside and above the project assessment process in NSW.
- 1.114 Finally, in relation to the provisions of any environmental planning instrument, clause 14(2) of the Mining SEPP requires consideration of an assessment of the GHG emissions (including downstream emissions) of the Project having regard to any applicable State or national policies, programs or guidelines concerning GHG emissions.
- 1.115 Clause 14(2) of the Mining SEPP has already been addressed earlier in this report in the context of discussing the *Wilpinjong* and *Walarah 2* cases, and is not considered in any further detail here.
- 1.116 It is further noted, for completeness, that the application of provisions of other environmental planning instruments more generally to the Project has been addressed in detail in the EIS.

APPENDIX 1: GLENCORE'S CORPORATE INITIATIVES CONCERNING GHG EMISSIONS

GLENCORE

Overview

The deployment of a range of low emission technologies will be critical to achieving significant carbon emission reductions and the transition to a low carbon economy including the goals of the *Paris Agreement*.

Glencore participates in a number of organisations and a suite of projects that support the development and demonstration of low emission technologies.

They include the following:

Member of Australian Coal Association Research Program (ACARP)

ACARP is a mining research program that has been running in Australia since its establishment in 1992. It is 100% owned and funded by all Australian black coal producers through a five cents per tonne levy paid on saleable coal. Glencore contributes a levy to this research program that includes working groups on mine site greenhouse gas mitigation and low emission coal use. The ACARP program was also instrumental in designing regulation for insitu calculation of emissions for open cut coal mines as part of NGERs.

Further information: <https://www.acarp.com.au/>

Member of COAL21

The COAL21 Fund was established in 2006 by the Australian black coal industry for the demonstration of low-emissions coal technologies, such as carbon capture and storage. The Fund is supported by a voluntary levy on coal production and includes 26 investors from among Australia's black coal producers, including Glencore.

COAL21 primarily invests in the development of low-emissions technologies for the coal-fired power generation sector and in emissions reduction from coal mines.

Up to 30 June 2018, COAL21 has seen \$374m committed to demonstrating low-emission technologies in the coal-fired power generation sector, and safe fugitive emissions abatement from coal-mining operations.

COAL21 is now preparing to commit a further \$255m for the period to June 2027, to meet its objectives to:

- Build community confidence in CCUS technology for safe, long-term CO₂ storage
- Demonstrate safe abatement of fugitive emissions from coal mines
- Assist in making the case for coal to remain a key part of Australia's future energy supply.

Further information: <https://coal21.com/>

The Callide Oxyfuel project

Glencore partnered in this \$245million large-scale demonstration project that proved the suitability of oxyfuel technology in capturing CO₂ for both new-build and existing coal-fired power stations.

It involved burning coal in a mixture of oxygen and recirculated exhaust gases, instead of air, and resulted in a concentrated stream of CO₂ suitable for capture and storage.

The Project was highly successful, confirming that carbon capture technology could be applied to a coal-fired power station to generate electricity with almost no emissions.

By capturing CO₂, the project demonstrated that deep cuts could be made to power station emissions to help slow the process of climate change while maintaining the use of fossil fuels as a major energy source.

As one of only a handful of coal-fired, low-emission projects in the world to move beyond concept to construction, the project represented several firsts for Australia and the world:

- World's first industrial-scale demonstration of oxyfuel combustion and carbon capture technology
- World's first power station to be retrofitted with oxyfuel carbon capture technology
- First injection underground of CO₂ from an Australian power station
- World's first injection of CO₂ from an oxyfuel power station.

Further information: <https://callideoxyfuel.com/>

CTSCo (Carbon Transport Storage Company)

Glencore is hosting a carbon capture and storage research project called CTSCo on our land holdings at Wandoan in Queensland's Surat Basin.

The project aims to determine the viability of industrial-scale carbon capture and storage in the Surat Basin. It is funded by both industry and Government and will monitor, evaluate and verify CO₂ storage capacity.

In 2012, CTSCo was awarded a permit by the Queensland Government under the *Greenhouse Gas Storage Act 2009* authorising carbon storage exploration activities under an Environmental Authority.

This gave CTSCo permission to find a suitable location to investigate storing CO₂.

Carbon capture and storage is a group of technologies which can capture up to 90% of the CO₂ emissions produced by using fossil fuels in electricity generation and industrial processes, and store this CO₂ underground.

This prevents the CO₂ from entering the atmosphere and adding to global emissions. Carbon capture and storage involves three major steps:

- Capture: the separation of CO₂ from other gases produced at large industrial process facilities such as coal and natural gas power plants, oil and gas plants, steel mills and cement plants.
- Transport: once separated and cleaned, the CO₂ is compressed and transported via pipelines, or in this case trucks, for geological storage.
- Storage: CO₂ is injected into deep underground geological formations, often at depths of one kilometre or more.

Further information: <http://ctsco.com.au/>

APPENDIX 2: DOMESTIC LAWS, POLICIES AND MEASURES OF EXPORT COUNTRIES DIRECTED TOWARDS CLIMATE CHANGE IMPACTS, GHG EMISSIONS AND ACHIEVEMENT OF THE COUNTRY'S NDC

Country	Summary
<p>China</p>	<p>Paris Agreement and NDC</p> <p>China signed the Paris Agreement on 22 April 2016, and ratified it on 3 September 2016.</p> <p>China's NDC has the following goals:</p> <ul style="list-style-type: none"> • to peak carbon dioxide emissions around 2030 and make best efforts to peak early; • to lower carbon intensity (carbon dioxide emissions per unit of GDP) by 60% to 65% from the 2005 level; • to increase the share of non-fossil fuels in primary energy consumption to around 20%; and • to increase the forest stock volume by around 4.5 billion cubic meters compared to the 2005 level. <p>Through achieving these goals, China aims to limit emissions to approximately 1.042 billion tCO₂e in 2030.</p> <p>China's NDC sets out policies and measures to implement enhanced action on climate change. Measures relating to energy include to:</p> <ul style="list-style-type: none"> • control total coal consumption; • enhance the clean use of coal; • increase the share of concentrated and highly-efficient electricity generation from coal; • lower coal consumption of electricity generation from newly built coal-fired power plants to around 300 grams coal equivalent per kilowatt-hour; • expand the use of natural gas by 2020 by achieving more than 10% share of natural gas consumption in the primary energy consumption and making efforts to reach 30 billion cubic meters of coal-bed methane production; • proactively promote the development of hydro power, on the premise of ecological and environmental protection and inhabitant resettlement; • develop nuclear power in a safe and efficient manner; • scale up the development of wind power; • accelerate the development of solar power; • proactively develop geothermal energy, bio-energy and maritime energy; • achieve 200GW installed capacity of wind power, 100GW installed capacity of solar power and the utilization of thermal energy to 50 million tons coal equivalent by 2020; • enhance the recovery and utilization of vent gas and oilfield-associated gas; and • scale up distributed energy and strengthen the construction of smart grid.

Country	Summary
	<p>Measures relating to industry include to:</p> <ul style="list-style-type: none"> • strictly control the total expansion of industries with extensive energy consumption and emissions, accelerate the elimination of outdated production capacity and promote the development of service industry and strategic emerging industries; • promote low-carbon development of industrial sectors, implement the Action Plan of Industries Addressing Climate Change (2012-2020) and formulating carbon emission control targets and action plans in key industries; • research and formulate greenhouse gas emission standards for key industries; • effectively control emissions from key sectors including power, iron and steel, nonferrous metal, building materials and chemical industries through energy conservation and efficiency improvement; • strengthen the management of carbon emissions for new projects and to actively control greenhouse gas emissions originating from the industrial production process; and • construct a recycling-based industrial system, promoting recycling restructure in industrial parks, increasing the recycling and utilization of renewable resources and improving the production rate of resource. <p>Measures relating to enhancing support for science and technology include strengthening research and development and commercializing demonstration for low-carbon technologies, such as energy conservation, renewable energy, advanced nuclear power technologies and carbon capture, utilization and storage and promoting the technologies of utilizing carbon dioxide to enhance oil recovery and coal-bed methane recovery.</p> <p>Measures relating to emissions trading include to:</p> <ul style="list-style-type: none"> • build on carbon emission trading pilots, steadily implement a nationwide carbon emission trading system and gradually establish the carbon emission trading mechanism so as to make the market play the decisive role in resource allocation; and • develop mechanisms for the reporting, verifying and certificating of carbon emissions and to improve rules and regulations for carbon emission trading to ensure openness, fairness and justice in the operation of the carbon emission trading market. <p>Current policies</p> <p><u>National emissions trading scheme</u></p> <p>In December 2017, China launched its national emissions trading scheme (ETS). It is expected that the ETS will be fully operational in 2020. It will initially only cover companies in the power sector (including heat and power as well as captive power plants of other sectors) that emit more than 26,000 tons of GHG per year or consume more than 10,000 tons of standard coal equivalent (tce) per year - this will cover more than three billion tons of CO₂e, which accounts for approximately 30% of China's emissions. The National Carbon Emissions Trading Market Construction Plan (Power Generation Industry) set out the targets and roadmap for developing the ETS. While it has not yet been decided whether offsets will be available to be used in the ETS, it is expected that domestic offsets that have been used in China's existing regional ETS pilots will be able to be used.</p>

Country	Summary
	<p>China also has eight multiple regional pilot ETSS. including the:</p> <ul style="list-style-type: none"> • Beijing (Pilot) Emissions Trading System; • Chongqing (Pilot) Emissions Trading System; • Fujian (Pilot) Emissions Trading System; • Guangdong (Pilot) Emissions Trading System; • Hubei (Pilot) Emissions Trading System; • Shanghai (Pilot) Emissions Trading System; • Shenzhen (Pilot) Emissions Trading System; and • Tianjin (Pilot) Emissions Trading System. <p>These pilots have adopted different approaches to sectoral coverage, allocation methods, use of offsets and other design elements to test various approaches. The pilot ETSS will be integrated into the national ETS when it is fully established. They currently have prices ranging from the equivalent of US\$9/tCO_{2e} (Beijing) to US\$1/tCO_{2e} (Tianjin).</p> <p>The exact date of the ETS' formal, national implementation in 2020 is still unknown. However, the Chinese Ministry of Ecology and Environment is currently preparing a number of framework rules for the ETS (such rules to potentially cover the inclusion of verified voluntary reduction credits), with draft allocation plans for the power, cement and electrolytic aluminium sectors (developed in 2016) anticipated to feed into this framework.</p> <p><u>Five-year plan to save energy and cut emissions</u></p> <p>China issued a five-year plan to save energy and cut emissions (2016-2020) on 5 January 2017. The Plan aims to cut energy consumption by 15% in 2020 based on 2015 levels. It also sets a target of a 58% maximum share of coal in national energy consumption by 2020. Coal consumption will be controlled in key areas that are suffering from heavy air pollution, and gas is encouraged as a replacement for coal.</p> <p><u>Action Plan on the Efficient Use of Coal</u></p> <p>In 2015, MIIT and Finance Ministry released a 2015-2020 Action Plan on the Efficient Use of Coal. The action plan sets out how fiscal and financial policies will support cuts in coal consumption. Through the Action Plan on the Efficient Use of Coal, China intends to decrease coal consumption by 160 million tonnes over the next five years. Policies under this action plan included the closure of multiple coal-fired power plants, a ban on the construction of new coal-fired power plants until 2018, and now include a cap on the annual production capacity of coal to 700Mtce (approximately 15% of total coal production capacity).</p> <p>China supports CCUS and has recently implemented multiple measures to accelerate the deployment of CCUS. These include:</p> <ul style="list-style-type: none"> • widely promoting low-carbon technologies, with an emphasis on CCUS; • supporting CCUS pilots and Near Zero Carbon Emissions pilots; • providing grant funding for CCUS research projects promoted by the Ministry of Science and Technology; • amending the Environmental Impact Assessment Guidelines to better address CCUS projects; and • establishing a CCUS capacity building project for government officials and researchers directly involved in CCUS.

Country	Summary
	<p>A significant focus for China is the application of CCUS for EOR. China has over 20 CCUS for EOR projects at various stages of development. A number of these EOR projects have been, or will be, linked to facilities that capture the CO₂ generated by coal-fired power plants. For example, the Sinopec Shengli Power Plant, located near the Shengli oilfield in the Shangdong province (the second largest oil field in China), currently possesses an integrated CCUS pilot plant which captures 40,000 tons of CO₂ per annum, with a second phase of the CCUS plant currently under construction and intended to capture up to 1 million tons of CO₂ per annum. Once the second phase of the CCUS plant is complete, all captured CO₂ will be used for EOR to increase oil recovery by 10-15%.</p>
<p>India</p>	<p>Paris Agreement and NDC</p> <p>India signed the Paris Agreement on 22 April 2016, and ratified it on 2 October 2016.</p> <p>India's NDC includes the following targets:</p> <ul style="list-style-type: none"> • to reduce the emissions intensity of its GDP by 33-35% percent by 2030 from 2005 levels (India has not provided the specific coverage and metrics of its emissions intensity target); • to achieve about 40% cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030 with the help of transfer of technology and low cost international finance including from Green Climate Fund (GCF); and • to create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂-e through additional forest and tree cover by 2030. <p>Priority areas for emission reductions include:</p> <ul style="list-style-type: none"> • introducing new, more efficient and cleaner technologies in thermal power generation (noting that most thermal power generation in India is coal-fuelled); • promoting renewable energy generation and increasing the share of alternative fuels in the overall fuel mix; • reducing emissions from transportation sector; • promoting energy efficiency in the economy, notably in industry, transportation, buildings and appliances; • reducing emissions from waste; • developing climate resilient infrastructure; • fully implementing the Green India Mission and other programmes of afforestation; and • planning and implementing actions to enhance climate resilience and reduce vulnerability to climate change.

Country	Summary
	<p>Current policies</p> <p><u>Perform, Achieve, Trade Scheme</u></p> <p>India does not have a carbon market or carbon pricing policy. India has a Perform, Achieve, Trade Scheme, introduced in 2008, which reduces energy consumption in energy intensive industries. The scheme involves the trading of energy saving certificates and operates as a market based mechanism.</p> <p><u>National Action Plan on Climate Change</u></p> <p>India's National Action Plan on Climate Change (NAPCC), introduced in 2008, outlines priorities for mitigating and adapting to climate change. It established "missions" relating to solar energy and enhanced energy efficiency, among others. The NAPCC was revisited in 2015 and the government proposed to introduce new missions on wind energy, health, waste to energy, coastal areas and redesigning the National Water Mission & National Mission on Sustainable Agriculture.</p> <p><u>Clean Environment Cess</u></p> <p>Since 2010, the Indian Government has imposed a coal cess (i.e. a coal tax), the Clean Environment Cess, on all domestic and imported coal (in all forms). The Clean Environment Cess has been increased three times since its establishment, now reaching 400 rupees per tonne of coal. The revenues from the coal tax feed into the National Clean Environment Fund, which provides finance to renewable energy projects.</p> <p><u>National Electricity Plan</u></p> <p>In April 2018, India released its National Electricity Plan (NEP), which is valid to financial year 2026/27. The NEP provides electricity demand forecasts for the period 2017-2026/27, calculates installed capacities from conventional and renewable energy sources needed to meet that demand and describes relevant policies. During the period 2017-22, no additional capacity of coal will be added (except for the coal power plants currently under construction). Demand growth will be met by additional installed capacities in gas, hydro, nuclear and renewables. A share of 56.5% of installed capacity is expected to come from non-fossil sources by 2027. In 2027 the country aims to have 275GW installed capacity of solar and wind, 72GW of hydro and 15GW of nuclear. The Central Electricity authority estimates that this means that no additional coal capacity is needed until at least 2027.</p> <p><u>Draft National Energy Policy</u></p> <p>According to India's Draft National Energy Policy, published in 2017, coal based power generation capacity is likely to go up to more than 330-441GW by 2040 (from 192GW in FY 2017). The Draft Policy indicates India's preference for demand to be met by domestic coal, however the percentage of coal that is imported is likely to remain high unless domestic production increases rapidly.</p> <p>According to India's NDC, coal will continue to dominate power generation in the future. The Government has introduced the following initiatives to improve the efficiency of coal-fired power plants:</p> <ul style="list-style-type: none"> • all new, large coal-based generating stations have been required to use highly efficient supercritical technology; • R&M and LE of existing old power stations is being undertaken in a phased manner; and • approximately 144 old thermal stations have been assigned mandatory targets for improving energy efficiency.

Country	Summary												
Japan	<p data-bbox="405 271 759 297">Paris Agreement and NDC</p> <p data-bbox="405 320 1422 472">Japan signed the Paris Agreement on 22 April 2016, and ratified it on 8 November 2016. The Paris Agreement entered into force for Japan on 8 December 2016. Japan's NDC includes an emissions reduction target of 26% below 2013 levels in 2030. This equates to emissions of approximately 1.042 billion tCO₂-e in 2030. The table below sets out further information relating to Japan's NDC:</p> <table border="1" data-bbox="405 495 1422 1480"> <thead> <tr> <th data-bbox="405 495 703 584">Emissions reduction target</th> <th data-bbox="703 495 1422 584">Emission reductions of 26% below 2013 levels in 2030.</th> </tr> </thead> <tbody> <tr> <td data-bbox="405 584 703 674">Total emissions in 2030</td> <td data-bbox="703 584 1422 674">Approximately 1.042 billion tCO₂e in 2030.</td> </tr> <tr> <td data-bbox="405 674 703 741">Coverage</td> <td data-bbox="703 674 1422 741">100% (economy-wide)</td> </tr> <tr> <td data-bbox="405 741 703 1032">Scope</td> <td data-bbox="703 741 1422 1032"> All sectors, including: <ul style="list-style-type: none"> ▪ energy; ▪ industrial processes and product use; ▪ agriculture; ▪ Land Use, Land-Use Change and Forestry (LULUCF); and ▪ waste. </td> </tr> <tr> <td data-bbox="405 1032 703 1099">Gases</td> <td data-bbox="703 1032 1422 1099">CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃.</td> </tr> <tr> <td data-bbox="405 1099 703 1480">Sectoral targets</td> <td data-bbox="703 1099 1422 1480"> Japan has sector-specific emissions reduction targets. Relevantly, Japan's target for: <ul style="list-style-type: none"> ▪ the industry sector is to reduce emissions from 429 MtCO₂ in 2013 to 401 MtCO₂ in 2030; and ▪ the energy conversion sector is to reduce emissions from 101 MtCO₂ in 2013 to 73 MtCO₂ in 2030. Japan also has a "removals target" for the LULUCF sector, of removing 37 MtCO₂ from the atmosphere by 2030. Japan did not provide a base year figure. </td> </tr> </tbody> </table> <p data-bbox="405 1503 1422 1559">Japan's NDC sets out a variety of measures to achieve its 2030 emissions reduction target. Relevantly, measures in the energy conversion sector include:</p> <ul style="list-style-type: none"> • expanding renewable energy introduction to the maximum extent possible; • utilizing nuclear power generation whose safety is confirmed; and • pursuit of high efficiency in thermal power generation, including coal-fuelled technologies such as USC, A-USC, integrated gasification and combined cycle, etc. <p data-bbox="405 1816 1422 1939">Measures in the industry sector are classified as measures which relate to the iron and steel industry, the chemical industry, the ceramics, stone and clay products industry, factory energy management and cross-sectoral/other. Measures in the iron and steel industry include:</p> <ul style="list-style-type: none"> • efficiency improvement of electricity-consuming facilities; • increased chemical recycling of waste plastic at steel plants; 	Emissions reduction target	Emission reductions of 26% below 2013 levels in 2030.	Total emissions in 2030	Approximately 1.042 billion tCO ₂ e in 2030.	Coverage	100% (economy-wide)	Scope	All sectors, including: <ul style="list-style-type: none"> ▪ energy; ▪ industrial processes and product use; ▪ agriculture; ▪ Land Use, Land-Use Change and Forestry (LULUCF); and ▪ waste. 	Gases	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ and NF ₃ .	Sectoral targets	Japan has sector-specific emissions reduction targets. Relevantly, Japan's target for: <ul style="list-style-type: none"> ▪ the industry sector is to reduce emissions from 429 MtCO₂ in 2013 to 401 MtCO₂ in 2030; and ▪ the energy conversion sector is to reduce emissions from 101 MtCO₂ in 2013 to 73 MtCO₂ in 2030. Japan also has a "removals target" for the LULUCF sector, of removing 37 MtCO ₂ from the atmosphere by 2030. Japan did not provide a base year figure.
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Sectoral targets	Japan has sector-specific emissions reduction targets. Relevantly, Japan's target for: <ul style="list-style-type: none"> ▪ the industry sector is to reduce emissions from 429 MtCO₂ in 2013 to 401 MtCO₂ in 2030; and ▪ the energy conversion sector is to reduce emissions from 101 MtCO₂ in 2013 to 73 MtCO₂ in 2030. Japan also has a "removals target" for the LULUCF sector, of removing 37 MtCO ₂ from the atmosphere by 2030. Japan did not provide a base year figure.												

Country	Summary
	<ul style="list-style-type: none"> • introduction of a next-generation coke making process (SCOPE21); • improvement of power generation efficiency; • enhanced energy efficiency and conservation facilities; • introduction of an innovative ironmaking process (Ferro Coke); and • introduction of an environmentally harmonized steelmaking process (COURSE50). <p>Current policies</p> <p><u>Plan for Global Warming Countermeasures</u></p> <p>The Plan for Global Warming Countermeasures was adopted by the Cabinet of Japan on 13 May 2016. The Plan incorporates the emissions reduction target in Japan's NDC of 26% below 2013 levels in 2030. The Plan also sets out strategic actions towards Japan's long-term goal of an 80% reduction by 2050. The base year of this long-term goal is not specified. The Plan incorporates the sectoral targets and measures set out in Japan's NDC (see above). The Plan also emphasises the key role of innovative technology, which the Government is promoting through its "Environmental and Energy Technology Innovation Plan" and its "National Energy and Environment Strategy for Technological Innovation towards 2050". The Plan will be revised every three years as necessary.</p> <p><u>Long-term Low-Carbon Vision</u></p> <p>Japan's Long-term Low-carbon Vision, published in March 2017, establishes that Japan's long-term goal of reducing emissions by 80% in 2050 will be met through energy efficiency, low-carbon energy supply and a switch to end-use low-carbon energies. This will be achieved through existing technologies and the development and deployment of new technologies. Carbon pricing is highlighted as a key policy direction. Relevantly, Japan's vision refers to CCUS as a means of achieving emission reductions in the energy sector, as well as centralised/distributed energy management. The Vision sets out that "now" is the time to act, and refers to concepts including:</p> <ul style="list-style-type: none"> • the carbon budget, which is set in accordance with the total amount of cumulative emissions that can be emitted in order to allow Japan to achieve its 2°C target; • the avoidance of "lock-in" through introducing city structures and large-scale facilities; and • key principles of environmental policy including prevention, the precautionary principle and the polluter pays principle. <p><u>Tax for Climate Change Mitigation</u></p> <p>Japan implemented a Tax for Climate Change Mitigation (a carbon tax) on 1 October 2012. It currently has a value of JPY289/tCO_{2e} (US\$3/tCO_{2e}). The tax covers all fossil fuels, which comprise 68% of Japan's emissions. Revenues earned from the tax are applied to bolstering mitigation activities, such as encouraging energy savings and increasing utilisation of renewable energy.</p> <p>Tokyo also has a cap and trade scheme and Saitama has an emissions trading system - these schemes are bilaterally linked and cover an additional 2% of Japan's emissions. In 2015, Tokyo's cap and trade scheme had reduced emissions by 26% compared to emissions in 2000, and Saitama's ETS had achieved a 27% reduction in emissions below 2005 levels. Both Tokyo's cap and trade scheme and Saitama's ETS cover large-scale facilities in all commercial and industrial sectors which consume more than 1,500KL of crude oil equivalent in energy per year.</p>

Country	Summary				
	<p><u>Joint Crediting Mechanism</u></p> <p>Japan has introduced a Joint Crediting Mechanism (JCM), through which Japan will cooperate with developing countries to achieve a reduction in greenhouse gas emissions through the diffusion of low-carbon technologies. The JCM's partnership document has been signed by 17 developing countries. Credits generated from emission reductions under the JCM will be allocated according to agreed terms between the participating countries.</p> <p><u>Development of CCUS technologies</u></p> <p>Japan is actively engaged in the development of CCUS technologies. According to the Global CCS Institute's Global Status Report 2018, Japan has achieved the following major milestones:</p> <ul style="list-style-type: none"> • commenced of CO₂ injections at the Tomakomai CCUS facility by Japan CCUS with the Ministry of Economy, Trade and Industry's full support – this is Asia's first full-cycle CCUS hydrogen plant, which will capture more than 300,000 tonnes of CO₂ by 2020; • retrofitted the Toshiba Corporation 49MW Mikawa power plant in Omuta (Fukuoka Prefecture) to accept biomass (in addition to coal) with a carbon capture facility; • launched JPOWER and Chugoku Electric Power Company's Osaki CoolGen facility, a 166 MW oxygen-blown IGCC (integrated gasification combined cycle) plant in Osakikamijima (Hiroshima Prefecture), which will separate and capture CO₂; • completed construction of Toshiba's carbon capture and utilisation system at the Saga City Waste Incineration Plant (on Japan's Kyushu Island), using captured CO₂ for algae culture; and • announced (by Kawasaki Heavy Industries) of a Japanese Hydrogen Energy Supply Chain that plans to gasify Australian brown coal in Victoria's Latrobe Valley and transport it by ship to Japan for future decarbonised hydrogen developments. 				
<p>Malaysia</p>	<p>Paris Agreement and NDC</p> <p>Malaysia signed the Paris Agreement on 22 April 2016, and ratified it on 16 November 2016.</p> <p>Malaysia's NDC has a target to reduce its GHG emissions intensity of GDP by 45% by 2030 relative to the emissions intensity of GDP in 2005. This comprises a 35% reduction on an unconditional basis and a further 10% conditional reduction based upon receipt of climate finance, technology transfer and capacity building from developed countries. The table below sets out key information relating to Malaysia's NDC:</p> <table border="1" data-bbox="405 1720 1422 2024"> <tbody> <tr> <td data-bbox="405 1720 667 1883">Emissions reduction target</td> <td data-bbox="667 1720 1422 1883">Reduce GHG emissions intensity of GDP by 45% by 2030 relative to the emissions intensity of GDP in 2005. Emissions intensity in 2005 was Emissions intensity of GDP in the base year: 0.531 tons CO₂e per thousand RM.</td> </tr> <tr> <td data-bbox="405 1883 667 1944">Coverage</td> <td data-bbox="667 1883 1422 1944">Economy-wide</td> </tr> </tbody> </table>	Emissions reduction target	Reduce GHG emissions intensity of GDP by 45% by 2030 relative to the emissions intensity of GDP in 2005. Emissions intensity in 2005 was Emissions intensity of GDP in the base year: 0.531 tons CO ₂ e per thousand RM.	Coverage	Economy-wide
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Coverage	Economy-wide				

Country	Summary				
	<table border="0"> <tr> <td data-bbox="419 259 671 443">Scope</td> <td data-bbox="679 259 1412 443"> <ul style="list-style-type: none"> ▪ Energy ▪ Industrial processes ▪ Waste ▪ Agriculture ▪ Land Use, Land-Use Change and Forestry (LULUCF) </td> </tr> <tr> <td data-bbox="419 450 671 517">Gases</td> <td data-bbox="679 450 1412 517">CO₂, CH₄, N₂O</td> </tr> </table> <p data-bbox="403 533 1420 600">Malaysia's NDC is based on the Eleventh Malaysia Plan, as well as the following policies:</p> <ul style="list-style-type: none"> • National Petroleum Policy (1975); • National Energy Policy (1979); • National Depletion Policy (1980); • Four-Fuel Diversification Policy (1981); • National Forestry Policy (1978, Revised 1992); • National Policy on Biological Diversity (1998); • Five-Fuel Policy (2001); • National Policy on the Environment (2002); • National Strategic Plan for Solid Waste Management (2005); • National Biofuel Policy (2006); • National Energy Policy (2008); • National Green Technology Policy (2009); • National Policy on Climate Change (2009); • New Economic Model, Government Transformation Programme and Economic Transformation Programme (2010); • Renewable Energy Policy and Action Plan (2010); • Second National Physical Plan (2010); • Low Carbon Cities Framework (2011); • National Agro-food Policy (2011); • National Water Resources Policy (2012); and • National Automotive Policy (2014). <p data-bbox="403 1451 624 1480">Current policies</p> <p data-bbox="403 1496 887 1525"><u>Energy Efficiency and Conservation Act</u></p> <p data-bbox="403 1541 1420 1697">The Malaysian government has set a renewable energy target of 20% (equivalent to 3,991MW) by 2025. Currently the country only sources 2% of its energy from renewable sources. However, it is intended for the target to be met through various policies and frameworks under the Energy Efficiency and Conservation Act, a first draft of which is to be presented to Parliament later this year.</p> <p data-bbox="403 1713 687 1742"><u>Eleventh Malaysia Plan</u></p> <p data-bbox="403 1758 1420 1951">The government will continue to pursue the green growth goal under the Eleventh Malaysia Plan (2016-2020), and will further focus on pursuing green growth for sustainability and resilience. The Plan includes strategies to enable green growth, adopt sustainable consumption and production methods, conserve natural resources and strengthen resilience against climate change and natural disasters. These actions will further reduce Malaysia's carbon footprint.</p> <p data-bbox="403 1966 1198 1995"><u>A Roadmap of Emissions Intensity Reduction in Malaysia in 2014</u></p>	Scope	<ul style="list-style-type: none"> ▪ Energy ▪ Industrial processes ▪ Waste ▪ Agriculture ▪ Land Use, Land-Use Change and Forestry (LULUCF) 	Gases	CO ₂ , CH ₄ , N ₂ O
Scope	<ul style="list-style-type: none"> ▪ Energy ▪ Industrial processes ▪ Waste ▪ Agriculture ▪ Land Use, Land-Use Change and Forestry (LULUCF) 				
Gases	CO ₂ , CH ₄ , N ₂ O				

Country	Summary						
	<p>Malaysia developed A Roadmap of Emissions Intensity Reduction in Malaysia in 2014. The study indicated that Malaysia has opportunities across various sectors to meet the emissions intensity reduction target of 40% of GDP. However, while these opportunities exist, considerable efforts would be required to realise these emissions reductions in light of the challenges and barriers described below.</p> <p>Malaysia does not have an integrated CCUS legal framework. A scoping study on CCUS in Malaysia was released by the Global CCS Institute, the Clinton Climate Initiative and the Malaysian Ministry of Energy, Green Technology and Water in January 2011. The study found that CCUS technologies present an opportunity to significantly reduce CO₂ emissions in Malaysia. It also found that Malaysia lacks legal and regulatory frameworks that are capable of being applied to the stages of the CCUS project cycle. Despite this, two commercial-scale CCUS projects are currently underway in Malaysia – the K5 Strategic Technology Project (with a CO₂ processing platform due for installation by 2022) and the TNB Janamanjung Project.</p>						
<p>Philippines</p>	<p>Paris Agreement and NDC</p> <p>The Philippines signed the Paris Agreement on 22 April 2016, and ratified it on 23 March 2017.</p> <p>The Philippines communicated an INDC in 2015, however it has not yet submitted its NDC. The Philippines' INDC has a target to reduce its GHG emissions by "about" 70% below BAU by 2030. This is conditional on the extent of financial resources, including technology development and transfer, and capacity building, that will be made available to the Philippines.</p> <p>The table below sets out key information relating to the Philippines' INDC:</p> <table border="1" data-bbox="405 1126 1422 1630"> <tbody> <tr> <td data-bbox="405 1126 703 1256">Emissions reduction target</td> <td data-bbox="703 1126 1422 1256">GHG (CO₂e) emissions reduction of about 70% by 2030 relative to its BAU scenario of 2000-2030. No BAU scenario is provided.</td> </tr> <tr> <td data-bbox="405 1256 703 1458">Scope</td> <td data-bbox="703 1256 1422 1458"> <ul style="list-style-type: none"> ▪ Energy ▪ Industry ▪ Waste ▪ Transport ▪ Forestry </td> </tr> <tr> <td data-bbox="405 1458 703 1630">Conditional</td> <td data-bbox="703 1458 1422 1630">Mitigation contribution is conditional on the extent of financial resources, including technology development and transfer, and capacity building, that will be made available to the Philippines.</td> </tr> </tbody> </table> <p>The Philippines' Climate Change Commission is currently working on revising the Philippines' INDC. The current draft NDC revised the emission reductions target down to 67% below BAU by 2030.</p> <p>Current policies</p> <p><u>Climate Change Act of 2009</u></p> <p>The Philippines enacted the Climate Change Act of 2009 and amended in 2011. The Act established the Climate Change Commission (CCC) to lead policy development and coordinate, monitor and evaluate the programs and action plans of the government relating to climate change. The amended law established the People's Survival Fund which is to finance adaptation programs and projects based on the National Strategic Framework.</p>	Emissions reduction target	GHG (CO ₂ e) emissions reduction of about 70% by 2030 relative to its BAU scenario of 2000-2030. No BAU scenario is provided.	Scope	<ul style="list-style-type: none"> ▪ Energy ▪ Industry ▪ Waste ▪ Transport ▪ Forestry 	Conditional	Mitigation contribution is conditional on the extent of financial resources, including technology development and transfer, and capacity building, that will be made available to the Philippines.
Emissions reduction target	GHG (CO ₂ e) emissions reduction of about 70% by 2030 relative to its BAU scenario of 2000-2030. No BAU scenario is provided.						
Scope	<ul style="list-style-type: none"> ▪ Energy ▪ Industry ▪ Waste ▪ Transport ▪ Forestry 						
Conditional	Mitigation contribution is conditional on the extent of financial resources, including technology development and transfer, and capacity building, that will be made available to the Philippines.						

Country	Summary
	<p><u>Philippine Development Plan 2017-2022</u></p> <p>The Philippine Development Plan 2017-2022 identifies the Philippines' priorities in the development of energy infrastructure, which include to:</p> <ul style="list-style-type: none"> • support the required investments and fast track the implementation of infrastructure projects to improve power generation; • encourage competition to drive down electricity costs; • pursue development of the natural gas industry, as well as the renewable energy such as wind and solar; • ensure efficient transmission of electricity to various load centers and interconnect the entire grid; • prioritize provision of electricity services to the remaining unelectrified off-grid, island, remote, and last-mile communities; • continue the implementation of energy efficiency and conservation programs; and • review mandated biofuels blending with due consideration to the impact on prices, farmer incomes, and environmental protection. <p><u>National Framework Strategy on Climate Change 2010-2022</u></p> <p>The National Framework Strategy on Climate Change 2010-2022 has a long-term objective of facilitating "the transition towards low greenhouse gas emissions for sustainable development". The Strategy sets Key Result Areas to achieve this long-term objective which, relevantly, relate to energy efficiency and conservation and renewable energy. The Strategy sets a goal of doubling the renewable energy capacity in the country from 4,500MW to 9,000MW by 2030.</p> <p><u>National Climate Change Action Plan 2011-2028</u></p> <p>The National Climate Change Action Plan (2011-2028) (NCCAP) sets strategic priorities for the Government to implement in seven thematic areas of food security, water security, ecological and environmental stability, human security, climate smart industries and services, sustainable energy, and knowledge and capacity development. Relevantly, the NCCAP prioritizes the promotion and expansion of energy efficiency and conservation; the development of sustainable and renewable energy; environmentally sustainable transport; and climate-proofing and rehabilitation of energy systems infrastructures. Within these priority areas, the NCCAP identifies outputs, for example development and implementation of a national renewable energy program and technology roadmap based on RA 9513, and activities specific to each output, for example the development of a national renewable energy program, increasing generation capacities of RE systems and increasing research and development on renewable energy. The NCCAP recognises the potential to improve efficiency in the power sector by rehabilitating power plants, fuel switching from coal to gas, and reducing transmission and distribution losses.</p> <p>The Department of Energy released Circular No. DC2015-07-0014 in 2015, which sets a policy of achieving at least a 30% share of renewable energy in total power generation capacity. The Circular was made in accordance with the <i>Renewable Energy Act of 2008</i>, which aims to accelerate the development and increase the utilisation of renewable energy resources.</p>

Country	Summary
	<p>The Climate Change Commission issued Commission Resolution No. 2016-001, Resolution on the Development of a Clear Policy on Coal-Fired Power Plants in Pursuit of a Low Carbon Development Pathway for the Philippines. The Resolution requires the Climate Change Commission and other National Government Agencies and stakeholders to facilitate a national policy review and develop a new framework on energy. Key messages from the policy review include:</p> <ul style="list-style-type: none"> • security: renewable energy can provide a major share of the Philippine electricity mix in a stable and reliable manner and at the same time increase energy self-sufficiency and reduce supply related risks; • affordability: if initiated now, the large-scale application of renewables can lead to significant economic benefits for the Philippines. These benefits are due to four main aspects: decreasing renewable technology costs, reducing susceptibility to uncertain fossil fuel price developments, lowering electricity prices on the wholesale market, and reducing subsidies for off-grid electricity supply; and • sustainability: an energy system with increasing shares of renewable energy sources can provide the Philippines with clean air and a healthy environment. Additionally, it can insure the achievement of established GHG reduction goals and trigger economic growth through the creation of a renewable industry and energy access in remote areas. <p>The policy review calls for a thorough assessment of whether coal-based generation is "least cost" electricity, and whether societal and environmental costs should be factored into the assessment of "least cost". Carbon taxes and emissions trading schemes are flagged as a possible approach to "transfer the cost burden from the Philippine society to the ones that actually cause it." The policy review also notes that conventional power plants "play a major role in today's energy sector and will not cease to exist in the foreseeable future" and additional coal-fired power plants will be required to meet electricity demand. To this end, the policy review recommends the introduction of "new standards and strict implementation of existing rules are necessary to integrate coal at least damage to Philippine consumers", including:</p> <ul style="list-style-type: none"> • EIA System: establishing specific should be implemented that prohibit the construction of coal plants which do not comply with international emission standards should be implemented. These standards should - as requested by the CCC - include rules on GHG emissions; • establishing limits for new coal-fired power plants in accordance with the commitments to reduce GHG emissions until 2030; and • improving the <i>Philippine Clean Air Act of 1999</i> (Republic Act No. 8749) through (i) the effective implementation of existing rules, (ii) the stringency of existing rules compared to other international emission restrictions, (iii) the review process of the standards, and (iv) the rules on the Emission Charge System. <p>The government has made progress on some of the above recommendations. For example, the bill for the amendment of the <i>Philippine Clean Air Act of 1999</i> was filed in Parliament in May 2018, and is currently under Committee review. However, it has not yet released details of any frameworks with regards to the EIA System or limits on the construction of new coal-fired power plants.</p>

Country	Summary										
South Korea	<p data-bbox="405 271 759 300">Paris Agreement and NDC</p> <p data-bbox="405 315 1423 472">South Korea signed the Paris Agreement on 22 April 2016, and ratified it on 3 November 2016. The Paris Agreement entered into force for South Korea on 3 December 2016. South Korea's NDC has proposes an economy-wide target to reduce GHG emissions by 37% below BAU emissions of 850.6 MtCO₂e/year in 2030. The table below sets out key information relating to South Korea's NDC:</p> <table border="1" data-bbox="405 495 1423 920"> <tbody> <tr> <td data-bbox="405 495 703 584">Emissions reduction target</td> <td data-bbox="703 495 1423 584">37% below BAU by 2030. BAU emissions in 2030 are projected at 850.6 MtCO₂e.</td> </tr> <tr> <td data-bbox="405 584 703 645">Coverage</td> <td data-bbox="703 584 1423 645">Economy-wide</td> </tr> <tr> <td data-bbox="405 645 703 705">Scope</td> <td data-bbox="703 645 1423 705">100% (economy-wide)</td> </tr> <tr> <td data-bbox="405 705 703 869">Scope</td> <td data-bbox="703 705 1423 869">Energy, industrial processes and product use, agriculture and waste (A decision on whether to include land use, land-use change and forestry (LULUCF) will be made at a later stage.)</td> </tr> <tr> <td data-bbox="405 869 703 920">Gases</td> <td data-bbox="703 869 1423 920">CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆</td> </tr> </tbody> </table> <p data-bbox="405 943 1423 1066">South Korea's NDC indicated that it would subsequently develop a detailed plan to implement its mitigation target. To this end, South Korea released a revised roadmap for achieving the 2030 National Greenhouse Gas Reduction Goal in July 2018 (the Roadmap). The Roadmap sets out sectoral targets, including:</p> <ul data-bbox="405 1088 1423 1402" style="list-style-type: none"> • emission reductions of 24 million tons in the energy conversion sector (power generation, group energy) through policies to reduce fine dust and promote the use of eco-friendly energy. The sector will create a detailed plan to reduce another 34 million tons before submitting the revised NDC in 2020 by establishing a third basic energy plan, revising the energy tax framework, and enhancing the dispatch of environmental power; and • emission reductions of 99 million tons in the industry sector through the revision of industrial processes, energy use reduction, and sharing of emission reductions technologies. <p data-bbox="405 1424 1423 1514">The Roadmap indicates that South Korea intends to achieve a 32.5% reduction on BAU emissions domestically, and the remaining 4.5% through international market mechanisms.</p> <p data-bbox="405 1536 624 1559">Current Policies</p> <p data-bbox="405 1581 1270 1603"><u>Act on the Allocation and Trading of Greenhouse Gas Emission Permits</u></p> <p data-bbox="405 1626 1423 1872">South Korea enacted the Act on the Allocation and Trading of Greenhouse Gas Emission Permits in 2012, and launched an ETS on 1 January 2015. It currently has a price of approximately US\$20/tCO₂e. The ETS covers 68% of Korea's emissions, including emissions from the industry, power, aviation, building and waste sectors. Liable emitters comprise companies and factories in the relevant sectors which produce over 125,000 tons of CO₂ per year and 25,000 tons of CO₂ per year (respectively). This represents approximately 600 companies, including 5 domestic airlines.</p> <p data-bbox="405 1895 1423 2016">During the first phase of the scheme (2015-2017), only domestic offset credits could be used for compliance. CERs generated from domestic CDM projects and credits from domestically certified projects (Korean Offset Credits) were allowed. These credits had to be converted to Korean Credit Units (KCU) before being used</p>	Emissions reduction target	37% below BAU by 2030. BAU emissions in 2030 are projected at 850.6 MtCO ₂ e.	Coverage	Economy-wide	Scope	100% (economy-wide)	Scope	Energy, industrial processes and product use, agriculture and waste (A decision on whether to include land use, land-use change and forestry (LULUCF) will be made at a later stage.)	Gases	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, and SF ₆
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Country	Summary										
	<p>for compliance. Offsets could only be used for up to 10% of each entity's compliance obligation. During the second phase of the scheme (2018-2020), CERs generated from international CDM projects developed by domestic companies can be used for compliance (up to 5% of each entity's emission volume). During the third phase of the scheme (2021-2025), credits of up to 10% of each entity's compliance obligation with a maximum of 5% coming from international offsets will be allowed.</p> <p><u>Framework Act on Low Carbon Green Growth</u></p> <p>South Korea enacted a Framework Act on Low Carbon Green Growth on 6 June 2016. Article 25 of the Act incorporates the 2030 emissions reduction target in South Korea's NDC. Article 4 of the Act requires the Government to establish a five-year National Strategy for Low Carbon Green Growth every five years. Article 39 of the Act requires the Government to gradually reduce the use of fossil fuels such as petroleum and coal.</p> <p><u>Eighth Plan for Electricity Supply and Demand</u></p> <p>In December 2017, the government released its Eighth Plan for Electricity Supply and Demand which sets targets for increased electricity supply from renewables and natural gas, and decreases supply from coal and nuclear. The Plan sets an objective of 20% share of electricity production obtained from renewables by 2030, while natural gas would reach 18.8%, and both coal and nuclear decreasing to 36.1% and 23.9% respectively. These targets are intended to be achieved through the addition of 4.3GW in new LNG and pumped-storage hydroelectric generation facilities and an increase in the installed capacity of renewable energy (to be comprised mainly of wind and solar projects) from 11.3GW to 58.5GW, by 2030.</p>										
Taiwan	<p>Paris Agreement and NDC</p> <p>Taiwan is not a party to the UNFCCC or the Paris Agreement. Nevertheless, Taiwan's Cabinet put forward an Intended Nationally Determined Contribution (INDC) on 17 September 2015. Taiwan's INDC has an emissions reduction target of 50% from the BAU level by 2030. The BAU level is 428 MtCO₂e and the 2030 target is 214 MtCO₂e by 2030. The table below sets out key information relating to Taiwan's INDC:</p> <table border="1" data-bbox="405 1397 1422 1980"> <tbody> <tr> <td data-bbox="405 1397 715 1496">Emissions reduction target</td> <td data-bbox="715 1397 1422 1496">Emission reductions of 50% below BAU levels by 2030.</td> </tr> <tr> <td data-bbox="405 1496 715 1563">Total emissions in 2030</td> <td data-bbox="715 1496 1422 1563">Approximately 214 MtCO₂e in 2030.</td> </tr> <tr> <td data-bbox="405 1563 715 1630">Coverage</td> <td data-bbox="715 1563 1422 1630">Economy-wide</td> </tr> <tr> <td data-bbox="405 1630 715 1912">Scope</td> <td data-bbox="715 1630 1422 1912"> All sectors, including: <ul style="list-style-type: none"> ▪ energy; ▪ industrial processes and product use; ▪ agriculture; ▪ Land Use, Land-Use Change and Forestry (LULUCF); and ▪ waste. </td> </tr> <tr> <td data-bbox="405 1912 715 1980">Gases</td> <td data-bbox="715 1912 1422 1980">CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃.</td> </tr> </tbody> </table>	Emissions reduction target	Emission reductions of 50% below BAU levels by 2030.	Total emissions in 2030	Approximately 214 MtCO ₂ e in 2030.	Coverage	Economy-wide	Scope	All sectors, including: <ul style="list-style-type: none"> ▪ energy; ▪ industrial processes and product use; ▪ agriculture; ▪ Land Use, Land-Use Change and Forestry (LULUCF); and ▪ waste. 	Gases	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ and NF ₃ .
Emissions reduction target	Emission reductions of 50% below BAU levels by 2030.										
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Gases	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ and NF ₃ .										

Country	Summary
	<p>Taiwan's INDC sets out measures for achieving sectoral mitigation measures. Relevantly, in relation to energy, the government will:</p> <ul style="list-style-type: none"> • reduce energy demand by introducing energy conservation measures; • raise the renewable energy development target to 17,250MW in 2030; • continue to phase out nuclear power plants; • increase the use of natural gas; • replace old power plants with the "best feasible technology"; • promote the construction of smart grids; and • use low-carbon fuel and energy-efficient technologies in the refining sector. <p>Emissions reductions will be achieved in the industrial sector through:</p> <ul style="list-style-type: none"> • industrial structure adjustment; • technical advice service of energy conservation and carbon reduction; • integrated utilization of energy and resources in industrial zones; • regulation of energy efficiency standards; • alternative fuels; • heat recovery; and • a renewal of facilities. <p>Current policies</p> <p><u>Greenhouse Gas Reduction and Management Act 2015</u></p> <p>Taiwan enacted its Greenhouse Gas Reduction and Management Act on 1 July 2015. Key features of the Act are:</p> <ul style="list-style-type: none"> • Article 4 of the Act sets a goal to reduce GHG emissions to no more than 50% of 2005 emissions by 2050; • Article 5(1) requires the Government to draft mid- to long-term strategies for gradually reducing dependence on fossil fuels, with a mid-to long-term aim of improving renewable energy policies, and the gradual realization of a nuclear-free homeland; • Article 5(3)-(4) recommends that the Government implement tax mechanisms on imported fossil fuels based on their CO₂-e emissions, and actively help traditional industries achieve energy conservation and carbon reduction or transition, develop green technology and green industry, create new employment opportunities and green economies, and promote a low-carbon, green growth plan for Taiwan's infrastructure; • Article 8 requires relevant government agencies to promote GHG reduction and climate change adaptation through, relevantly, development of renewable energy and energy technology, reduction in GHG emissions by industrial sectors, establishment of GHG cap-and-trade scheme and facilitation of international emission reduction cooperation mechanism, and research, development and implementation of GHG reduction technologies; and

Country	Summary
	<ul style="list-style-type: none"> Article 18 requires Taiwan's Environmental Protection Administration (EPA) to implement a domestic cap and trade scheme, and Article 20 outlines matters to be considered in the development of the scheme, including trade intensities of various sectors, avoiding carbon leakage and overall national competitiveness. <p><u>National Climate Change Action Guideline/GHG Reduction Action Plan</u></p> <p>The Act also required the Government to develop the National Climate Change Action Guideline (which was approved on 23 February 2017) and a GHG Reduction Action Plan.¹⁰ The National Climate Change Action Guideline is to include periodic regulatory goals, implementation timetables, implementation strategies and an evaluation mechanism.¹¹ Under the GHG Reduction Action Plan, the authorities responsible for the Taiwan's energy, manufacturing, transportation, residential, commercial, and agriculture sectors are required to formulate GHG Emission Control Action Programs. These Action Programs must include GHG emissions targets, timetables and economic incentive measures. These Action Programs are to be regularly reviewed and revised and are to propose improvement plans if sectors are failing to meet their emission targets.</p> <p>Multiple subsidiary regulations have been introduced, including the:</p> <ul style="list-style-type: none"> Regulations Governing Incentives for Landfill Sites to Reduce Greenhouse Gas Emissions (announced 25 December 2015). Regulations Governing Greenhouse Gases Offset Program Management (announced 31 December 2015). Management Regulations Governing Greenhouse Gas Emission Inventories and Registration (announced 5 January 2016). Greenhouse Gas Reduction and Management Enforcement Rules (announced 6 January 2016). First Batch of Emission Sources Required to Report Greenhouse Gas Emission Inventory and Registration (announced 7 January 2016). Greenhouse Gas Management Fund Revenues and Expenditures, Safekeeping, and Utilization Regulations (announced 30 January 2016). <p><u>Annual Emission Reports</u></p> <p>Since 1 January 2012, Taiwan's EPA has been, in batches, requesting major enterprises to submit annual emission reports. As of the end of 2015, the EPA had added 269 firms to the list, and the reporting rate has been 100%. These enterprises account for approximately 80% of CO₂ emissions from industry and fossil-fuel energy generation in Taiwan.</p> <p><u>National CCUS Strategic Alliance</u></p> <p>Taiwan's EPA established a national CCUS strategic alliance in 2011. This alliance brings together domestic experts from government, academia and industry, for the purpose of developing the technology and regulatory framework required for the commercial use of CCUS technology, with the ultimate goal of achieving widespread use of CCUS technology by 2020. Through the alliance, the Taiwan Cement Corporation (in partnership with the Industrial Technology Research</p>

¹⁰ Taiwan, *Greenhouse Gas Reduction and Management Act*, Article 9.

¹¹ Taiwan, *Greenhouse Gas Reduction and Management Act*, Article 9.

Country	Summary								
	<p>Institute) commissioned the world's first CCUS pilot project in the cement industry in 2013, with the two entities agreeing in 2016 to extend their cooperation on the project.</p> <p><u>Renewable Energy Development Act</u></p> <p>Taiwan introduced a Renewable Energy Development Act in 2009, which encourages renewable energy use and promotes energy diversification.</p>								
<p>Vietnam</p>	<p>Paris Agreement and NDC</p> <p>Vietnam signed the Paris Agreement on 22 April 2016, and "approved" it on 3 November 2016.</p> <p>Vietnam has an unconditional emissions reduction target of reducing GHG emissions by 8% compared to BAU by 2030. This is to be achieved by reducing emissions intensity per unit of GDP by 20% compared to 2010 levels, and increasing forest cover to 45%. If sufficient international support is received, the target of reducing GHG emissions by 8% compared to BAU by 2030 could be increased to 25%.</p> <table border="1" data-bbox="408 840 1420 1388"> <tr> <td data-bbox="408 840 715 1093">Emissions reduction target</td> <td data-bbox="715 840 1420 1093"> <p>Unconditional target of reducing GHG emissions by 8% compared to BAU by 2030. BAU emissions were 246.8 million tCO₂e in 2010, and are projected to be 474.1 million tCO₂e in 2020 and 787.4 million tCO₂e in 2030.</p> <p>Conditional target of reducing GHG emissions by 25% compared to BAU by 2030.</p> </td> </tr> <tr> <td data-bbox="408 1093 715 1160">Coverage</td> <td data-bbox="715 1093 1420 1160">Economy-wide</td> </tr> <tr> <td data-bbox="408 1160 715 1321">Scope</td> <td data-bbox="715 1160 1420 1321"> <ul style="list-style-type: none"> ▪ Energy ▪ Agriculture ▪ Land Use, Land-Use Change and Forestry (LULUCF) ▪ Waste </td> </tr> <tr> <td data-bbox="408 1321 715 1388">Gases</td> <td data-bbox="715 1321 1420 1388">CO₂, CH₄, N₂O, HFCs, PFCs and SF₆.</td> </tr> </table> <p>Vietnam will exert efforts in implementing a range of measures to achieve its NDC. Measures relating to energy efficiency and reducing energy consumption include:</p> <ul style="list-style-type: none"> • innovating technologies and applying advanced management and operation procedures for efficient and effective use of energy in production, transmission and consumption, especially in large production facilities where energy consumption is high; • applying energy savings and efficiency, and renewable energy applications in the residential sector, trade and services; • developing public passenger transport, especially fast modes of transit in large urban centres, restructuring freight to reduce the share of road transport in exchange for an increase in the share of transportation via rail and inland waterways; and • establishing standards on fuel consumption, and developing a roadmap to remove obsolete and energy-consuming technologies in energy production and consumption systems. 	Emissions reduction target	<p>Unconditional target of reducing GHG emissions by 8% compared to BAU by 2030. BAU emissions were 246.8 million tCO₂e in 2010, and are projected to be 474.1 million tCO₂e in 2020 and 787.4 million tCO₂e in 2030.</p> <p>Conditional target of reducing GHG emissions by 25% compared to BAU by 2030.</p>	Coverage	Economy-wide	Scope	<ul style="list-style-type: none"> ▪ Energy ▪ Agriculture ▪ Land Use, Land-Use Change and Forestry (LULUCF) ▪ Waste 	Gases	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆ .
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Country	Summary
	<p>Measures relating to changing the fuel structure in industry and transportation include:</p> <ul style="list-style-type: none"> • assuring national energy security by developing and exploiting different energy sources, while simultaneously using energy sources effectively; • changing the energy structure towards a reduced share of fossil fuel, and encouraging the exploitation and use of renewable and low GHG emission energy sources; • encouraging buses and taxis to use compressed natural gas and liquefied petroleum gas (LPG); • implementing management solutions for fuel quality, emissions standards, and vehicle maintenance; • applying market instruments to promote structural change and improve energy efficiency; encourage the use of clean fuels; • supporting the development of renewable energy; • implementing the roadmap to phase out subsidies for fossil fuels; and • labelling energy-saving equipment and issue national standards for the quality of equipment. <p>Measures relating to increasing the proportion of new and renewable energy sources in energy production and consumption include:</p> <ul style="list-style-type: none"> • developing and implementing financial and technical mechanisms and policies to support research and the application of appropriate advanced technologies; • exploiting and optimizing the use of renewable energy sources, both on-grid as well as off grid; and • developing a renewable energy technology market, domestic industries and local service providers. <p>Current Policies</p> <p>Legal documents and policies on climate change support to NDC implementation in Vietnam include:</p> <ul style="list-style-type: none"> • Law on Environment (6/2014); • Law on Economical and Efficient use of Energy (6/2010); • Resolution No. 24-NQ/TW on "Pro-actively responding to climate change, enhancing natural resource management and environmental protection" (6/2013); • National Climate Change Strategy (2011); • National Green Growth Strategy (2012); and • Decision 1775/Q?-TTg on "Management of GHG emissions; management of carbon credit trading activities to the world market" (11/2012). <p><u>National Climate Change Strategy 2011-2020</u></p> <p>The National Climate Change Strategy (2011-2020) has a strategic target "to turn low-carbon economy and green growth into main orientations for sustainable development; lower emission and higher absorption of greenhouse gases to become compulsory indicators of socio-economic development". The Strategy has multiple missions, including, relevantly, reducing greenhouse gas emissions through:</p>

Country	Summary
	<ul style="list-style-type: none"> • Developing new and recycled energies: <ul style="list-style-type: none"> ○ to review, plan and develop hydroelectric projects properly for various purposes, so that the total output capacity of hydroelectric plants can reach 20,000-22,000 MW by 2020; ○ to boost research and development of technologies which can produce recycled energies and new ones, including wind energy, solar energy, tidal energy, geothermal energy, biofuel, and universal energy; ○ to design and implement policies on engaging socio-economic sectors in applying and popularizing recycled energies; ○ to guarantee national energy security through synchronously developing different sources of energy; and ○ to raise the percentage of new energies and recycled ones to 5% of the totality of primary commercial energies by 2020 and 11% by 2050, • Saving and effectively using energies: <ul style="list-style-type: none"> ○ to restructure the economy through narrowing energy-intensive industries and developing energy-efficient ones; ○ to design and implement policies which support and encourage the effective use of energies in economic fields, especially in transportation, urban development, industry, and agriculture; ○ to check and reject ineffective technologies which largely consume energies and create greenhouse gases; ○ to research, develop and apply technologies, equipment and consumer goods which use energies effectively, consume non-fossil energies and create low emission, especially in transportation, urban development, industry and agriculture; ○ to set up a sound energy valuing system for effectively using and saving energies and for development of new and recycled; ○ to introduce advanced technologies for increasing the output of electricity generation and reducing greenhouse gas emission at all newly-built thermoelectric plants; ○ to apply small-scale electricity generating systems which use methane collected from dumping sites and other sources; ○ to collect gases and make full use of redundant heat of industrial production factories for discovering and burning solid wastes for electricity generation; ○ to improve the economical use and preservation of energies; to monitor and supervise the use of energy in energy-intensive industries; and ○ to apply standards on energy efficiency to energy-saving products and systems, • Industrial production and construction: <ul style="list-style-type: none"> ○ to research and apply new technologies for low greenhouse gas emissions in industrial production; ○ to speed up the replacement of fossil fuels with low-carbon ones;

Country	Summary
	<ul style="list-style-type: none"> ○ to popularize cleaner production, so that by 2020, 90% of industrial production facilities must use cleaner technologies and save energies, fuels, and materials; ○ to enhance research and development of high technologies in key industries by 2020, the added value of hi-tech industries must be raised to 42-45% of the total industrial production; ○ to boost technological renovation through adopting high technologies and renewing 20% of machinery and equipment by 2020. The production value of hi-tech industries must be raised to 80% by 2050; and ○ to put forth and apply technical standards and norms of effective energy use in the production of materials and to construction projects. <p><u>The National Green Growth Strategy 2011-2020</u></p> <p>The National Green Growth Strategy (2011-2020) aims to reduce the intensity of greenhouse gas emissions by 8-10% as compared to the 2010 level and reduce energy consumption per unit of GDP by 1-1.5% per year over the period of 2011-2020. The Strategy also aims to reduce annual greenhouse gas emissions by at least 1.5-2% and reduce greenhouse gas emissions in energy activities by 20 - 30% compared to business as usual levels by 2030. Of this commitment, the voluntary reduction will be approximately 20%, and 10% will be dependent on additional international support. Relevantly, the Strategy identifies solutions including:</p> <ul style="list-style-type: none"> • innovating technologies, applying advanced management and operation procedures for efficient and effective use of energy in production, transmission and consumption (in particular in large production facilities where energy consumption is high); • establishing and publically announcing standards on fuel consumption norms, developing roadmaps to remove obsolete and energy consuming technologies in energy production and consumption systems; • developing a legal basis to prepare for the application of technologies to capture, restore and trade various types of greenhouse gases; • assuring national energy security by simultaneously developing different energy sources, exploiting and using economically domestic energy sources, reducing reliance on petroleum products, gradually decreasing the volume of coal export and import an appropriate amount, while creating linkages with energy systems in neighbouring countries; • changing the energy structure so that the share of energy which originates from fossil fuel is gradually decreased, and encouraging the exploitation and use of new, renewable and low greenhouse gas emission energy sources; • applying market instruments to promote changes in the energy structure and increase energy efficiency, encouraging the use of clean energy, supporting the development of renewable energy, building a roadmap to phase out subsidies for fossil fuels, and assuring principles of competitiveness, transparency and efficiency; • establishing and implementing financial and technical policies to promote research and application of appropriate advanced technologies to exploit and optimize the potentials of renewable energy sources both on-grid as well as off grid; and

Country	Summary
	<ul style="list-style-type: none"> <li data-bbox="464 262 1366 360">• developing a renewable energy technology market which stimulates domestic industries to commence the production of renewable energy equipment and provide related services in the country. <p data-bbox="405 376 1426 465">The government reported in 2017 that five government ministries, and nearly 30 provinces and cities across Vietnam had implemented their Green Growth Action Plans.</p> <p data-bbox="405 488 1426 577">Vietnam does not have an integrated CCUS framework, though the government has previously acknowledged the role that CCUS technology could play in assisting Vietnam to achieve its emissions reduction goals.</p>