Организация Объединенных Наций FCCC/PA/CMA/2021/8/Rev.1

Рамочная конвенция об изменении климата

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Конференция Сторон, действующая в качестве совещания Сторон Парижского соглашения
Третья сессия
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Определяемые на национальном уровне вклады по смыслу Парижского соглашения

Пересмотренный обобщающий доклад секретариата

Резюме

Это обновленный вариант основных выводов обобщающего доклада об определяемых на национальном уровне вкладах, содержащихся в документе FCCC/PA/CMA/2021/8, который был опубликован 17 сентября 2021 года. В нем учтена информация, содержащаяся в 165 последних имеющихся определяемых на национальном уровне вкладах, представленных 192 Сторонами Парижского соглашения и зарегистрированных во временном реестре определяемых на национальном уровне вкладов по состоянию на 12 октября 2021 года.

Содержание

Аббревиатуры и сокращения

Руководящие принципы МГЭИК 2006 года	*Руководящие принципы МГЭИК 2006 года для национальных кадастров парниковых газов*
CH_4	метан
CO_2	диоксид углерода
COVID-19	коронавирусное заболевание 2019 года
GWP-100*	значения потенциала глобального потепления на 100-летнем временном горизонте
N_2O	закись азота
NF_3	трифторид азота
SF_6	гексафторид серы
ВВП	валовой внутренний продукт
ГФУ	гидрофторуглерод
ДС СРНУВ	долгосрочная стратегия развития при низком уровне выбросов
ЗИЗЛХ	землепользование, изменения в землепользовании и лесное хозяйство
КС	Конференция Сторон
КСС	Конференция Сторон, действующая в качестве совещания Сторон Парижского соглашения
МГЭИК	Межправительственная группа экспертов по изменению климата
МКР*	межквартильный размах
МЧР	механизм чистого развития
НКЗ*	нестойкий климатический загрязнитель
НПА	национальный план в области адаптации
ОНУВ	определяемый на национальном уровне вклад
ОСЭТ	Общая социально-экономическая траектория
ПГ	парниковый газ
ПГП	потенциал глобального потепления
ПОНУВ	предполагаемый определяемый на национальном уровне вклад
ППИП	промышленные процессы и использование продуктов
ПФУ	перфторуглерод
РПВК	действия по расширению прав и возможностей для борьбы с изменением климата
СВОД-плюс	сокращение выбросов в результате обезлесения; сокращение выбросов в результате деградации лесов; сохранение накоплений углерода в лесах; неистощительное использование лесов; и увеличение накоплений углерода в лесах (решение 1/CP.16, п. 70)
СД1.5	Специальный доклад Межправительственной группы экспертов о воздействии глобального потепления на 1,5 °C
ЦУР	цели в области устойчивого развития
экв. CO_2	эквивалент диоксида углерода

* Используется только в диаграммах.

I. Резюме

1. Настоящий доклад был подготовлен в ответ на адресованные секретариату просьбы КС 21 и ККС 2[1] подготовить обобщающий доклад о представленных Сторонами ОНУВ. С учетом переноса с 2020 года на 2021 год Конференции Организации Объединенных Наций по изменению климата, которая должна состояться в Глазго, и воздействия пандемии COVID-19 на подготовку ОНУВ секретариат проинформировал Стороны о том, что он опубликует обобщающий доклад по ОНУВ в два этапа: первоначальный вариант — до 28 февраля 2021 года и полный вариант — до начала совещания в преддверии КС, которое должно пройти с 30 сентября по 2 октября 2021 года. Кроме того, 3 сентября 2021 года секретариат уведомил Стороны о том, что для того чтобы КС 26 имела в своем распоряжении самую последнюю имеющуюся информацию, секретариат представит обновленную информацию об основных выводах доклада незадолго до ее начала, к 25 октября 2021 года.

2. В настоящем обновленном варианте основных выводов обобщающего доклада об ОНУВ представлена информация содержащаяся в 165 последних имеющихся ОНУВ, т. е. информация от всех Сторон Парижского соглашения (192), включая 116 новых или обновленных ОНУВ, представленных 143 Сторонами и зарегистрированных во временном реестре определяемых на национальном уровне вкладов по состоянию на 12 октября 2021 года, что охватывает 94,1 % от общего объема глобальных выбросов в 2019 году, который оценивается в 52,4 Гт экв. CO_2 без учета ЗИЗЛХ[2].

3. В качестве основы для обобщения соответствующей информации, содержащейся в сообщенных ОНУВ, использовались руководящие указания КС и ККС[3] в отношении информации, необходимой для обеспечения ясности, транспарентности и понимания ОНУВ, которые были дополнены обобщением другой информации, включенной в ОНУВ, но не охваченной этими руководящими указаниями. Обобщенная информация приведена для всех представленных Сторон вместе взятых.

4. Почти все[4] Стороны предоставили информацию, необходимую для содействия ясности, прозрачности и пониманию их ОНУВ в соответствии с руководящими указаниями КС, причем почти все Стороны, представившие новые или обновленные ОНУВ, уже применяют соответствующие дополнительные руководящие указания ККС.

5. Все Стороны представили информацию о целевых показателях предотвращения изменения климата или сопутствующих выгодах для предотвращения изменения климата в результате действий по адаптации и/или реализации планов экономической диверсификации. Целевые показатели предотвращения изменения климата варьируются от целевых показателей абсолютного сокращения выбросов в масштабах всей экономики до стратегий, планов и действий по развитию с низким уровнем выбросов. В своих ОНУВ:

а) большинство Сторон представили четко определенные количественные целевые показатели предотвращения изменения климата, при этом некоторые Стороны включили стратегии, планы и действия в качестве компонентов своих ОНУВ, которые не могут быть оценены количественно;

[1] Решение 1/CMA.2, п. 10.

[2] Если не указано иное, в настоящем докладе глобальные суммарные показатели выбросов ПГ не включают выбросы, связанные с землепользованием и лесным хозяйством или ЗИЗЛХ, но включают выбросы от международного морского транспорта и международной авиации.

[3] Решения 1/CP.21, п. 27; и 4/CMA.1 и приложение I.

[4] В настоящем докладе используются следующие термины для обозначения процентной доли Сторон, в ОНУВ которых упоминается конкретная информация: «несколько» — менее 10 %; «некоторые» — 10−40 %; «многие» — 41−70 %; «большинство» — 71−90 %; и «почти все» — более 90 %.

b) большинство Сторон сообщили целевые показатели в масштабах всей экономики, охватывающие все или почти все сектора, определенные в Руководящих принципах МГЭИК 2006 года, при этом все большее число Сторон в своих новых или обновленных ОНУВ переходят к целевым показателям абсолютного сокращения выбросов;

c) что касается ПГ, то почти все ОНУВ охватывают выбросы CO_2, большинство — выбросы CH_4 и N_2O, многие — выбросы ГФУ и некоторые — выбросы ПФУ, SF_6 и/или NF_3;

d) некоторые Стороны представили информацию о сопутствующих выгодах для предотвращения изменения климата в результате действий по адаптации и/или реализации планов экономической диверсификации в основном в сочетании с другими целевыми показателями;

e) большинство Сторон, представивших новые или обновленные ОНУВ, укрепили свою приверженность сокращению или ограничению выбросов ПГ до 2025 и/или 2030 года, поставив перед собой более амбициозные цели в области решения проблем, связанных с изменением климата.

6. Почти все Стороны сообщили, что их ОНУВ будут осуществляться до 2030 года, а некоторые другие сообщили, что они будут осуществлять свои ОНУВ до 2025, 2035, 2040 или 2050 года. Многие Стороны определили 1 января 2021 года в качестве даты начала осуществления ОНУВ; некоторые другие указали, что они начали осуществлять свои ОНУВ в 2020 году или раньше; и несколько Сторон начнут это делать в 2022 году.

7. Почти все Стороны представили количественную информацию о своих целевых и контрольных показателях по предотвращению изменения климата. Среди Сторон, представивших новые или обновленные ОНУВ, почти все обновили основу для определения своих целевых показателей, включая контрольные показатели и/или сценарии обычной хозяйственно-производственной деятельности. Хотя такие обновленные данные ведут к повышению качества ОНУВ, для некоторых Сторон они приводят к значительным изменениям в оценочных уровнях выбросов на 2025 и 2030 годы по причинам, не связанным с изменением целевых уровней.

8. Большинство Сторон представили информацию о добровольном сотрудничестве в соответствии со статьей 6 Парижского соглашения. Почти все они заявили, что планируют или, возможно, будут использовать хотя бы один вид добровольного сотрудничества. В то же время некоторые Стороны установили качественные ограничения на использование ими добровольного сотрудничества для достижения своих целевых показателей предотвращения изменения климата.

9. Среди Сторон, которые сообщили новые или обновленные ОНУВ, доля тех, кто указал на планируемое или возможное использование по крайней мере одного вида добровольного сотрудничества, увеличилась (с 46 до 85 %) с момента представления ими предыдущих ОНУВ. Аналогичным образом, с момента представления предыдущих ОНУВ резко увеличилась (с 20 до 36 %) доля Сторон, которые установили качественные ограничения на использование добровольного сотрудничества.

10. Общий глобальный уровень выбросов ПГ (без ЗИЗЛХ), с учетом реализации последних ОНУВ всех Сторон Парижского соглашения, оценивается примерно в 54,7 (52,7−56,7) Гт экв. CO_2 в 2025 году[5] и 54,9 (51,5−58,3) Гт экв. CO_2 в 2030 году[6], что составляет:

[5] Если не указано иное, в настоящем докладе используются значения ПГП на 100-летнем временном горизонте из ДО6. В случае ОНУВ, которые включают оценки выбросов ПГ, рассчитанные с использованием других значений ПГП (например, из предыдущих ДО), был применен перерасчет. Более подробную информацию, в том числе о методиках оценки и подходах к ней, см. документ FCCC/PA/CMA/2021/8/Add.3.

[6] Если не указано иное, в настоящем докладе за средним значением количественной оценки следует диапазон, который представляет собой минимальное и максимальное значения после

a) в 2025 году на 58,1 % выше, чем в 1990 году (34,6 Гт экв. CO_2), на 15,5 % выше, чем в 2010 году (47,4 Гт экв. CO_2) и на 4,3 % выше, чем в 2019 году (52,4 Гт экв. CO_2);

b) в 2030 году на 58,7 % выше, чем в 1990 году, на 15,9 % выше, чем в 2010 году, и на 4,7 % выше, чем в 2019 году.

11. Для сравнения, общие выбросы ПГ Сторон, которые сообщили новые или обновленные ОНУВ, оцениваются в 26,3 Гт экв. CO_2 в 2019 году, а общие уровни выбросов ПГ в результате осуществления их ОНУВ оцениваются примерно в 25,6 (24,7−26,4) Гт экв. CO_2 в 2025 году и 23,6 (22,2−25,0) Гт экв. CO_2 в 2030 году, что примерно на 3,7 (3,3−4,1) % ниже для 2025 года и на 11,0 (10,1−12,0) % ниже для 2030 года, чем предполагаемые общие выбросы ПГ для этих лет в соответствии с их предыдущими ОНУВ. В абсолютном выражении прогнозируемые уровни выбросов в 2025 и 2030 годах среди этой группы Сторон теперь ниже, чем в соответствии с их предыдущими ОНУВ, соответственно на 0,99 (0,91−1,06) Гт экв. CO_2 и 2,92 (2,80−3,03) Гт экв. CO_2. По сравнению с уровнем 2010 года, общие выбросы ПГ этих Сторон, по оценкам, снизятся на 1,5 (с +1,8 до –4,8) % к 2025 году и на 9,0 (3,6−14,5) % к 2030 году.

12. Общий уровень глобальных выбросов ПГ с учетом полной реализации всех последних ОНУВ (включая их условные элементы) предполагает возможность достижения пика глобальных выбросов до 2030 года, при этом нижняя граница уровня выбросов 2030 года (51,5 Гт экв. CO_2), по оценкам, будет на 1,8 % ниже уровня выбросов 2019 года (52,4 Гт экв. CO_2) и на 2,2 % ниже нижней границы расчетного уровня выбросов 2025 года (52,7 Гт экв. CO_2). Реализация большинства условных элементов зависит от доступа к более значительным финансовым ресурсам, передачи технологий и технического сотрудничества, а также от поддержки в области наращивания потенциала, наличия рыночных механизмов и поглотительной способности лесов и других экосистем.

13. Ожидается, что общий уровень глобальных выбросов ПГ в 2030 году с учетом реализации всех последних ОНУВ будет на 15,9 % выше уровня 2010 года. Согласно СД1.5[7], для того чтобы соответствовать глобальным траекториям выбросов без превышения или с ограниченным превышением цели в 1,5 °C, к 2030 году глобальные чистые антропогенные выбросы CO_2 должны сократиться примерно на 45 % от уровня 2010 года, достигнув чистого нулевого показателя примерно к 2050 году. Для того чтобы удержать глобальное потепление в пределах 2 °C, выбросы CO_2 должны сократиться примерно на 25 % от уровня 2010 года к 2030 году и выйти на чистый нулевой уровень примерно к 2070 году.

14. В контексте углеродного бюджета, соответствующего 50-процентной вероятности ограничения потепления до 1,5 °C, суммарные выбросы CO_2 в 2020−2030 годах на основе последних ОНУВ, вероятно, израсходуют 89 % оставшегося углеродного бюджета, в результате чего после 2030 года углеродный бюджет составит около 56 Гт CO_2, что эквивалентно среднегодовым выбросам CO_2 в 2020−2030 годах. Аналогичным образом, в контексте углеродного бюджета, соответствующего вероятному удержанию потепления ниже 2 °C, суммарные выбросы CO_2 в 2020−2030 годах на основе последних ОНУВ, вероятно, израсходуют около 39 % оставшегося углеродного бюджета.

15. Информация в пунктах 10, 13 и 14 выше указывает на срочную необходимость значительного повышения уровня амбициозности ОНУВ в период до 2030 года, либо значительного перевыполнения последних ОНУВ, либо сочетания того и другого, чтобы достичь оптимальных с точки зрения затрат уровней выбросов, предлагаемых

агрегирования, поскольку несколько Сторон представили условные и безусловные элементы своих ОНУВ и в некоторых случаях — диапазоны значений для обоих.

[7] IPCC. 2021. *IPCC Special Report on the Impacts of Global Warming of 1.5 °C above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*. V Masson-Delmotte, P Zhai, H-O Pörtner, et al. (eds.). Geneva: World Meteorological Organization. URL: https://www.ipcc.ch/sr15/.

во многих рассмотренных МГЭИК сценариях для сохранения потепления значительно ниже 2 °C или ограничения его до 1,5 °C. Если выбросы не будут сокращены к 2030 году, их необходимо будет существенно сократить в дальнейшем, чтобы компенсировать медленный старт на пути к чистому нулевому уровню выбросов. В СД1.5 чистый нулевой уровень выбросов CO_2 рассматривается как необходимое условие для прекращения потепления на любом уровне.

16. Некоторые Стороны представили информацию о долгосрочных концепциях, стратегиях и целевых показателях предотвращения изменения климата на период до 2050 года и последующий период, ссылаясь на климатическую нейтральность, углеродную нейтральность, нейтральность в отношении выбросов ПГ или чистый нулевой уровень выбросов. Общий уровень выбросов ПГ этих Сторон оценивается в 14,3 (13,6−14,9) Гт экв. CO_2 в 2030 году, что на 26 % (22–29) % ниже уровня 2010 года.

17. Учитывая неопределенность, присущую таким долгосрочным оценкам, имеющаяся информация показывает, что в 2050 году общий уровень выбросов ПГ этих Сторон может быть на 83−88 % ниже, чем в 2019 году, при этом ежегодные выбросы на душу населения оцениваются в 1,0−1,4 т экв. CO_2. Глобальные уровни выбросов на душу населения к 2050 году при сценариях повышения температуры значительно ниже 2 °C и 1,5 °C очень похожи и составляют соответственно 1,6−2,4 т экв. CO_2 и 0,6−1,2 т экв. CO_2.

18. Почти все Стороны пояснили свой подход к подготовке и осуществлению ОНУВ. Многие из них увязали свои ОНУВ с приверженностью переходу к устойчивой и/или низкоуглеродной и устойчивой экономике, принимая во внимание социальные, экологические и экономические факторы, а также ЦУР. Кроме того, многие Стороны указали, что они интегрировали свои цели, задачи и политику ОНУВ в национальные законодательные, регулятивные и плановые процессы в качестве средства обеспечения осуществления.

19. Многие Стороны особо отметили согласованность политики и синергизм между их внутренними мерами по предотвращению изменения климата[8] и приоритетами развития, которые включают ЦУР и для некоторых Сторон, сообщивших новые или обновленные ОНУВ, ДС СРНУВ и «зеленое» восстановление после пандемии COVID-19.

20. Многие Стороны упомянули об официальных механизмах, созданных для проведения консультаций с заинтересованными кругами внутри страны. Большинство из них указали, что они проводят консультации и участвуют в них на основе всеохватности и широкого участия, причем некоторые Стороны конкретно указывают на проведение консультаций с учетом гендерных аспектов.

21. Стороны все чаще[9] считают, что учет гендерных аспектов позволит повысить амбициозность и эффективность их действий в области климата. Большинство Сторон представили в своих ОНУВ информацию, связанную с гендерными вопросами, и многие Стороны подтвердили, что будут учитывать гендерные аспекты при их реализации[10]. Из Сторон, которые упомянули гендерную проблематику в своих предыдущих ОНУВ, большинство более подробно раскрыли эту тему в своих новых или обновленных ОНУВ. Некоторые из них включили информацию о том, каким образом гендерные аспекты уже учитываются или будут учитываться при осуществлении ОНУВ.

[8] В настоящем докладе под (внутренними) мерами по предотвращению изменения климата понимаются конкретные меры политики и действия внутри стран, способствующие достижению целей по предотвращению изменения климата, определенных в ОНУВ, включая действия по адаптации и планы экономической диверсификации с сопутствующими выгодами для предотвращения изменения климата.

[9] Доля Сторон, которые упомянули гендерную проблематику и считают ее сквозным вопросом в новых или обновленных ОНУВ, значительно возросла по сравнению с их предыдущими ОНУВ.

[10] Более подробную информацию о гендерных вопросах в рамках РКИКООН см. URL: https://unfccc.int/topics/gender/workstreams/chronology-of-gender-in-the-intergovernmental-process.

22. Некоторые Стороны описали в контексте своих ОНУВ роль местных общин и роль, положение и права коренных народов, рассказав о специфических факторах уязвимости коренных народов, характерных для их положения, важности использования знаний коренных народов и местного населения для повышения эффективности действий в области климата, а также мерах по обеспечению более широкого участия коренных народов в действиях в области климата и их вклада в эти действия.

23. Почти все Стороны представили информацию об использовании одного или нескольких элементов РПВК[11] для содействия осуществлению деятельности по предотвращению изменения климата и адаптации и в своих новых или обновленных ОНУВ более четко и подробно сообщили об общих принципах, прошлых достижениях, будущих обязательствах, а также потребностях и пробелах в отношении РПВК.

24. Большинство Сторон включили в свои ОНУВ информацию, связанную с адаптацией. Некоторые из компонентов адаптации были обозначены в качестве сообщений об адаптации. Стороны представили, в частности, информацию об исследованиях, связанных с адаптацией; факторах уязвимости; мерах по адаптации, в частности НПА и секторальных действиях; мерах на случай непредвиденных обстоятельств; синергии с предотвращением изменения климата и другими глобальными рамками; а также о мониторинге и оценке адаптации.

25. По сравнению с ПОНУВ, большее число ОНУВ содержат информацию об адаптации. В случае наличия адаптационных компонентов ОНУВ повышенное внимание в них уделяется национальному планированию в области адаптации, в частности, процессу разработки и реализации НПА. По сравнению с предыдущими ОНУВ Сторон, представивших новые или обновленные ОНУВ, последние включают больше информации о привязанных к конкретным срокам количественных целевых показателях адаптации и соответствующих системах показателей, более четкую увязку между усилиями по адаптации и усилиями по достижению ЦУР, а также более конкретную информацию о синергии и сопутствующих выгодах между мерами по адаптации и мерами по предотвращению изменения климата.

26. Что касается приоритетов в области адаптации, то в ОНУВ Стороны продолжают уделять основное внимание производству продовольствия и безопасности в области питания; запасам пресной воды; наземным и водно-болотным экосистемам; здоровью человека; ключевым секторам экономики и услугам; управлению риском бедствий и раннему оповещению; человеческой среде обитания и городским районам; прибрежным районам и повышению уровня моря; океаническим экосистемам; средствам к существованию и бедности.

27. Почти все Стороны представили информацию о внутренних мерах по предотвращению изменения климата в качестве ключевых инструментов для достижения целевых показателей по предотвращению изменения климата в рамках своих ОНУВ или целей в таких секторах и областях, как энергоснабжение, транспорт, строительство, промышленность, сельское хозяйство, ЗИЗЛХ и отходы.

28. Наиболее часто Стороны упоминали внутренние меры по предотвращению изменения климата для производства возобновляемой энергии, за которыми следовали меры по повышению энергоэффективности зданий. Некоторые Стороны сообщили о количественных целевых показателях в отношении доли (от 15 до 100 %) возобновляемых источников энергии в общем объеме производства электроэнергии к 2030 году; многие из этих целевых долей находятся в определенном МГЭИК диапазоне 47–65 % или выше в соответствии с траекториями 1,5 ºC[12]. Среди Сторон,

[11] РПВК обозначает работу в рамках статьи 12 Парижского соглашения; ее цель — расширить права и возможности всех членов общества для участия в действиях в области климата посредством образования, обучения, информирования общественности, участия общественности, доступа общественности к информации и международного сотрудничества по этим вопросам (шесть элементов РПВК).

[12] Межквартильный размах глобальной доли возобновляемых источников энергии в производстве электроэнергии к 2030 году в соответствии с траекториями выбросов для цели

представивших новые или обновленные ОНУВ, производство энергии из возобновляемых источников, как и в их предыдущих ОНУВ, продолжало оставаться наиболее часто указываемым вариантом предотвращения изменения климата, причем по сравнению с их предыдущими ОНУВ доля Сторон, указавших этот вариант, резко возросла (с 55 до 87 %).

29. Часто указывалось, что производство возобновляемой энергии и переход на низкоуглеродные виды топлива или виды топлива с нулевым содержанием углерода имеют большое значение для снижения углеродоемкости электроэнергии и других энергоносителей, в том числе за счет более активной электрификации энергоснабжения и конечного энергопотребления. В связи с сокращением энергопотребления часто упоминалось повышение энергоэффективности и переход на более эффективные виды транспорта. Во всех приоритетных областях предотвращения изменения климата Стороны часто указывали на преобразование отходов в энергию, совершенствование обращения с навозом и поголовьем скота, а также замещение фторированных газов в качестве ключевых вариантов предотвращения изменения климата, связанных с сокращением выбросов помимо CO_2. Стороны часто связывали меры с концепцией экономики замкнутого цикла[13], включая сокращение и переработку отходов. Введение цен на углерод часто указывалось как эффективное средство стимулирования низкоуглеродного поведения и технологий путем установления цены на выбросы ПГ.

30. Что касается мер по увеличению удержания углерода в почве или растительности, то чаще всего указывались такие меры, как облесение, лесовосстановление и восстановление растительного покрова, устойчивое лесопользование, а также сокращение обезлесения и деградации лесов. Многие Стороны, являющиеся развивающимися странами, указали в качестве приоритета с высоким потенциалом предотвращения изменения климата на сокращение обезлесения, в том числе путем осуществления деятельности СВОД+.

31. В СД1.5 определены варианты предотвращения изменения климата, которые рассматриваются как целесообразные в увязке с траекторией 1,5 °C, включая:

a) прекращение к 2030 году инвестиций в производства, использующие уголь без применения мер по сокращению выбросов. Несколько Сторон сообщили о соответствующих мерах, таких как поэтапное прекращение до 2025 года использования угля для производства электроэнергии без применения мер по сокращению выбросов;

b) поэтапное прекращение к 2035−2050 годам продаж пассажирских транспортных средств, работающих на ископаемом топливе. Несколько Сторон сообщили о соответствующих мерах, включая запрет на новую регистрацию дизельных и бензиновых транспортных средств после 2030 года;

c) требование о том, чтобы новые здания к 2020 году имели почти нулевое энергопотребление. Некоторые Стороны сообщили о соответствующих мерах, например о требовании, чтобы новые здания, построенные после 1 января 2020 года, имели почти нулевое энергопотребление;

d) увеличение лесного покрова к 2030 году. Некоторые Стороны сообщили о количественных целевых показателях, направленных на увеличение национального лесного покрова, например увеличение лесного покрова до 60 % национальной территории без конкуренции за землю с сельскохозяйственным сектором.

32. Некоторые Стороны рассмотрели сопутствующие выгоды для предотвращения изменения климата в результате их действий по адаптации и/или планов экономической диверсификации. Больше Сторон сообщили в своих новых или обновленных ОНУВ, по сравнению с предыдущими ОНУВ, о сопутствующих выгодах для предотвращения изменения климата действий в области адаптации и планов

в 1,5 °C при отсутствии превышения или ограниченном превышении согласно СД1.5.

[13] Экономика замкнутого цикла означает продолжение использования ресурсов и минимизацию отходов в целях снижения спроса на разработку новых ресурсов, включая минералы, ископаемое топливо и биомассу.

диверсификации экономики, включая информацию о конкретных проектах, мерах и видах деятельности с полученными в результате этого сопутствующими выгодами. Аналогичным образом, больше Сторон представили информацию о рассмотрении ими социальных и экономических последствий мер реагирования, а также справедливого перехода и/или диверсификации экономики.

33. Действия по адаптации и планы диверсификации экономики с сопутствующими выгодами для предотвращения изменения климата включают в себя меры по облесению и лесовосстановлению, климатически оптимизированное сельское хозяйство, сокращение пищевых отходов, вертикальную организацию сельского хозяйства, адаптацию прибрежных экосистем, планы охраны заповедных зон, основанные на природных факторах решения, увеличение доли возобновляемых источников энергии в ее производстве, повышение энергоэффективности, улавливание и хранение диоксида углерода, переход на новые виды топлива и реформу цен на топливо в транспортном секторе, а также переход на экономику замкнутого цикла в целях более эффективного удаления отходов.

34. Почти все Стороны упомянули некоторые или все средства осуществления в своих ОНУВ, хотя структура и глубина этой информации существенно различаются. Хотя некоторые Стороны включили специальный раздел, посвященный средствам осуществления, или отдельные разделы, посвященные финансированию, технологии и/или укреплению потенциала, многие из них упомянули или затронули аспекты средств осуществления в других разделах своих ОНУВ.

35. Многие Стороны представили количественные оценки потребностей в финансовой поддержке для осуществления ОНУВ. В своих новых или обновленных ОНУВ некоторые Стороны представили количественные оценки потребностей в финансовой поддержке: многие из них представили обновленные количественные оценки, а многие другие представили оценки впервые.

36. Многие Стороны указали определенные виды технологий, которые они намерены использовать для осуществления действий по адаптации и предотвращению изменения климата, такие как энергоэффективные приборы, технологии возобновляемой энергетики, транспортные средства с низким или нулевым уровнем выбросов, смешанное топливо и климатически оптимизированное сельское хозяйство. Кроме того, основными областями технологических потребностей, упомянутыми Сторонами, были энергетика, сельское хозяйство, водные ресурсы, отходы, транспорт, а также наблюдение за климатом и раннее оповещение.

37. Большинство Сторон отметили укрепление потенциала как необходимое условие для осуществления ОНУВ. Были выявлены потребности в укреплении потенциала для формулирования политики, интеграции предотвращения изменения климата и адаптации в процессы секторального планирования, доступа к финансированию и предоставления информации, необходимой для обеспечения ясности, транспарентности и понимания ОНУВ. В новых или обновленных ОНУВ по сравнению с предыдущими ОНУВ больше Сторон выразили потребности в укреплении потенциала для адаптации.

38. В своих новых или обновленных ОНУВ некоторые Стороны упомянули о потенциальном воздействии пандемии COVID-19. Долгосрочные последствия соответствующих изменений в национальных и глобальных выбросах ПГ будут зависеть от продолжительности пандемии, а также от характера и масштабов мер по восстановлению. На данном этапе неясно, как наблюдаемое снижение общих выбросов CO_2 с 2019 по 2020 год (оцениваемое примерно в 7 % в материалах Рабочей группы I для ДО6 (врезка 6.1)[14]), связанное с воздействием COVID-19, и воздействие глобальных пакетов мер по восстановлению может повлиять на глобальные уровни выбросов ПГ в 2025 и 2030 годах.

[14] IPCC. 2021. *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. V Masson-Delmotte, P Zhai, A Pirani, et al. (eds.). Cambridge: Cambridge University Press. URL: https://www.ipcc.ch/report/ar6/wg1/.

[English only]

II. Mandate

39. Under Article 4, paragraph 2, of the Paris Agreement, each Party is to prepare, communicate and maintain successive NDCs that it intends to achieve. The communicated NDCs are to be recorded in a public registry maintained by the secretariat.[15]

40. COP 21 invited Parties to communicate their first NDC no later than when the Party submits its respective instrument of ratification, acceptance or approval of or accession to the Paris Agreement. A Party is also considered to have satisfied this provision, unless the Party decides otherwise, if it had communicated an INDC prior to becoming a Party to the Paris Agreement.[16]

41. COP 21 requested Parties whose INDC pursuant to decision 1/CP.20 contains a time frame:

(a) Up to 2025: to communicate by 2020 a new NDC, and to do so every five years thereafter pursuant to Article 4, paragraph 9, of the Paris Agreement;

(b) Up to 2030: to communicate or update by 2020 their NDC, and to do so every five years thereafter pursuant to Article 4, paragraph 9, of the Paris Agreement.[17]

42. COP 21 decided that Parties shall submit their NDCs to the secretariat at least 9–12 months in advance of the relevant CMA session with a view to facilitating the clarity, transparency and understanding of the NDCs, including through a synthesis report prepared by the secretariat.[18]

43. Recalling that decision, CMA 2 requested the secretariat to make the synthesis report available to COP 26.[19]

III. Background, scope and approach

A. Background

44. Owing to the circumstances related to the COVID-19 pandemic, the Bureau of the governing bodies, at its meeting on 28 May 2020, decided to postpone from November 2020 to November 2021 the Glasgow Conference, including COP 26.[20]

45. The pandemic has had an adverse impact on many Parties' NDC preparation process, leading to challenges in meeting the timelines stipulated in decision 1/CP.21.

46. In view of the postponement of the Glasgow Conference and the impact of the pandemic on the NDC preparation process, the secretariat notified Parties on 13 August 2020 that it was planning to publish two editions of the NDC synthesis report: an initial version by 28 February 2021 based on the NDCs recorded in the interim NDC registry as at 31 December 2020; and the full version containing all the latest information, to be made available to COP 26 in accordance with decision 1/CMA.2.

[15] Until the modalities and procedures for the operation and use of the public registry have been finalized under the Subsidiary Body for Implementation, NDCs are being recorded in the interim NDC registry (available at https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx).

[16] Decision 1/CP.21, para. 22.

[17] Decision 1/CP.21, paras. 23–24.

[18] Decision 1/CP.21, para. 25.

[19] Decision 1/CMA.2, para. 10.

[20] The notification is available at https://unfccc.int/sites/default/files/resource/message_to_parties_and_observers_dates_of_cop_26.pdf.

47. The initial version of the NDC synthesis report, along with its three technical addenda, was published on the UNFCCC website on 26 February 2021.[21] It synthesizes information from 48 NDCs, representing 75 Parties, submitted as at 31 December 2020 as new or updated NDCs in response to paragraphs 23–24 of decision 1/CP.21, or as new NDCs in case the Party's INDC was not converted automatically in accordance with paragraph 22 of that decision.

48. The full version of the NDC synthesis report, along with its three technical addenda, was published on 17 September 2021 on the basis of all NDCs recorded in the interim NDC registry as at 30 July 2021.[22]

49. On 3 September 2021, the secretariat notified Parties[23] that in order to ensure that COP 26 has before it the latest information available, the secretariat will issue an update of the key findings of the report shortly before its start, by 25 October 2021. The update of the key findings of the synthesis report contained in this document takes into account new or updated NDCs submitted to the secretariat between 31 July and 12 October 2021.

B. Scope

50. This is an update of the key findings of the NDC synthesis report being prepared for COP 26. It synthesizes information from the 165 latest available NDCs, representing all 192 Parties to the Paris Agreement,[24] recorded in the interim NDC registry as at 12 October 2021.[25, 26] The three technical addenda referred to in paragraph 48 above could not be updated owing to the limited time available for the preparation of the update.

51. The 165 NDCs comprise 116 new or updated NDCs from 143 Parties[27] and 49 NDCs from Parties that have not communicated new or updated NDCs in response to paragraphs 23–24 of decision 1/CP.21.

[21] Available at https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/nationally-determined-contributions-ndcs/ndc-synthesis-report.

[22] FCCC/PA/CMA/2021/8 and Add.1–3. Available at https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/nationally-determined-contributions-ndcs/ndc-synthesis-report.

[23] The message to Parties is available at https://unfccc.int/documents/306494.

[24] The European Union and its 27 member States communicated one joint NDC in accordance with Article 4, paras. 16–18, of the Paris Agreement, which for this report has been counted as one NDC representing 28 Parties.

[25] A list of the NDCs covered by this version of the NDC synthesis report is available at https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement/nationally-determined-contrinutions-ndcs/NDC-submissions.

[26] Between 13 and 25 October 2021 the secretariat received new/updated NDCs from a number of Parties: Bahrain, Chad, Ghana, Japan (full version following up on the interim version submitted on 12 October 2021), Nauru, Pakistan (full version following up on the abridged version submitted on 12 October 2021) and Saudi Arabia. The secretariat also received an NDC submission from Iraq, which, at the time of the preparation of this report, was not a Party to the Paris Agreement. These NDC submissions have not been considered in this update.

[27] Albania, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Bangladesh, Barbados, Belarus, Belize, Benin, Bhutan, Bosnia and Herzegovina, Brazil, Brunei Darussalam, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Chile, Colombia, Congo, Costa Rica, Cuba, Democratic People's Republic of Korea, Dominican Republic, Ecuador, Ethiopia, Eswatini, European Union (and its 27 member States), Fiji, Gambia, Georgia, Grenada, Guinea, Guinea-Bissau, Honduras, Iceland, Indonesia, Israel, Jamaica, Japan, Jordan, Kenya, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Lebanon, Liberia, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Mexico, Monaco, Mongolia, Montenegro, Morocco, Myanmar, Namibia, Nepal, New Zealand, Nicaragua, Nigeria, North Macedonia, Norway, Oman, Pakistan (abridged), Palestine, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Republic of Korea, Republic of Moldova, Russian Federation, Rwanda, Saint Lucia, Samoa, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, South Sudan, South Africa, Sri Lanka, Sudan, Suriname, Switzerland, Tajikistan, Thailand, Togo, Tonga, Tunisia, Uganda, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland,

52. Under Article 4, paragraph 8, of the Paris Agreement, in communicating their NDCs, Parties are to provide the information necessary for clarity, transparency and understanding in accordance with decision 1/CP.21 and any relevant decisions of the CMA.

53. For first NDCs, including those communicated or updated by 2020, this information may cover, as appropriate, quantifiable information on the reference point (including, as appropriate, a base year); time frames and/or periods of implementation; scope and coverage; planning processes; assumptions and methodological approaches, including for estimating and accounting for anthropogenic GHG emissions and, as appropriate, removals; and how the Party considers that its NDC is fair and ambitious in the light of its national circumstances, and how it contributes towards achieving the objective of the Convention as set out in its Article 2.[28]

54. CMA 1 adopted further guidance on the information necessary for clarity, transparency and understanding of NDCs. In communicating their second and subsequent NDCs, Parties shall provide the information necessary for clarity, transparency and understanding contained in annex I to decision 4/CMA.1 as applicable to their NDCs. In addition, CMA 1 strongly encouraged Parties to provide this information in relation to their first NDC, including when communicating or updating it by 2020.[29]

55. The guidance on the information necessary for clarity, transparency and understanding is without prejudice to the inclusion of components other than information on mitigation in an NDC.[30]

C. Approach

56. The guidance on the information necessary for clarity, transparency and understanding of NDCs was used as a framework for synthesizing the relevant information contained in the communicated NDCs,[31] which was supplemented by the synthesis of other information included in the NDCs but not covered by the guidance, such as on adaptation, means of implementation necessary for NDC implementation, domestic mitigation measures,[32] and economic diversification plans and response measures.

57. The synthesis covers only the information communicated by Parties in their NDCs and the synthesized information is presented for all those Parties taken together.

58. In this report, the following terms are used to indicate the percentage of Parties whose NDCs mention particular information: “a few” for less than 10 per cent; “some” for 10–40 per cent; “many” for 41–70 per cent; “most” for 71–90 per cent; and “almost all” for more than 90 per cent.

IV. Synthesis of information contained in nationally determined contributions

A. Overview

59. This report considers the 165 latest available NDCs,[33] representing all 192 Parties to the Paris Agreement, recorded in the interim NDC registry as at 12 October 2021, covering

Ukraine, United Republic of Tanzania, United States of America, Uruguay, Vanuatu, Viet Nam, Zambia and Zimbabwe.

[28] Decisions 1/CP.21, para. 27; and 4/CMA.1, para. 9.

[29] Decision 4/CMA.1, paras. 6–10 and annex I.

[30] Decision 4/CMA.1, para. 8.

[31] As per decision 1/CP.21, para. 25.

[32] In this report, (domestic) mitigation measures refers to specific policies and actions that contribute to achieving mitigation objectives identified in NDCs, including adaptation actions and economic diversification plans with mitigation co-benefits.

[33] The NDC of the European Union has been counted as reflecting the inclusion of particular information by its 27 member States.

94.1 per cent of total global emissions in 2019, which are estimated at 52.4 Gt CO_2 eq[34] without LULUCF (and around 56.0 Gt CO_2 eq with LULUCF[35]).

60. Almost all Parties provided the information necessary for clarity, transparency and understanding of their NDCs in accordance with Article 4, paragraph 8, of the Paris Agreement and decision 1/CP.21, paragraph 27. Of the Parties that submitted new or updated NDCs, almost all provided such elements of information, already applying the CMA guidance referred to in paragraph 54 above.

61. Most Parties provided information on adaptation, with a few identifying the adaptation component of their NDC as their adaptation communication, and a few provided information organized around the elements identified in the annex to decision 9/CMA.1.

62. In addition, almost all Parties provided other information, such as on the means of implementation necessary for NDC implementation; domestic mitigation measures; and/or economic diversification plans and response measures.

B. Scope and coverage

63. All Parties provided information on mitigation targets or mitigation co-benefits resulting from adaptation actions and/or economic diversification plans in their NDCs (see figure 1), which range from economy-wide absolute emission reduction targets to strategies, plans and actions for low-emission development, to be implemented within a specified time frame or implementation period:

(a) Some Parties included absolute emission reduction targets expressed as an emission reduction from the level in a specified base year, ranging from 7.2 to 88.0 per cent. A few other Parties specified a year or time frame in which their emissions are expected to peak or reach a maximum level of absolute emissions (e.g. by 2030). In addition, a few of these Parties expressed their target as a carbon budget in addition to the absolute target, establishing an overall limit on GHGs to be emitted over a specified period of time (e.g. between 2021 and 2030);

(b) Many Parties included relative targets for reducing emissions below the 'business as usual' level by a specified target year, either for the whole economy or for specific sectors, ranging from 5 to 103.5 per cent and thus achieving carbon neutrality; or emission intensity targets for reducing specific GHG emissions per GDP unit relative to a base-year (e.g. 1990) level;

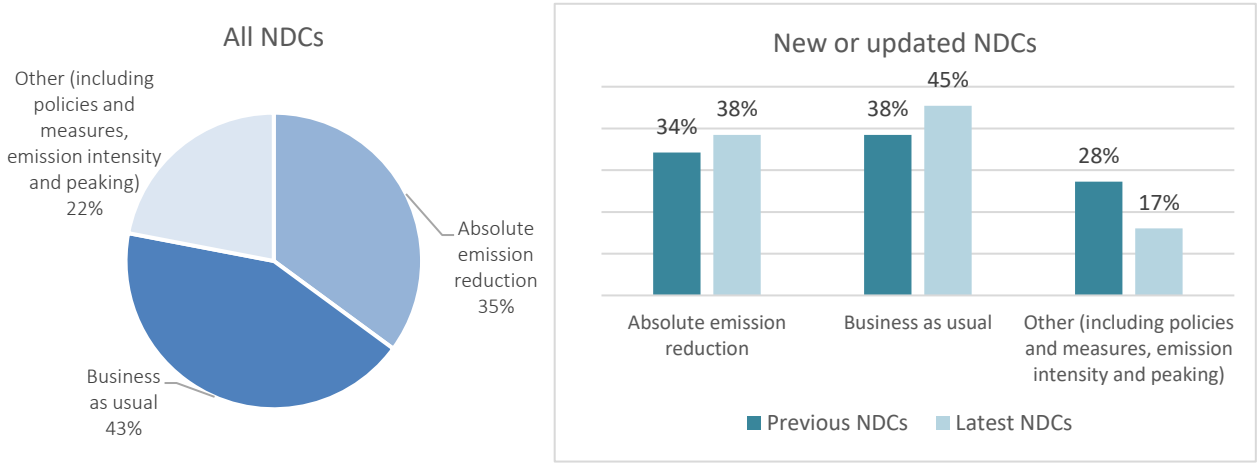
(c) Some Parties included strategies, plans and actions for low-emission development reflecting their particular national circumstances;

(d) Some Parties provided information on mitigation co-benefits resulting from their adaptation actions and/or economic diversification plans, mostly in combination with other targets.

[34] Including emissions from countries that are not Parties to the Paris Agreement, a harmonization factor to ensure comparability with SSP scenarios assessed by the IPCC, and emissions from international aviation and maritime transport, which accounted for approximately 1.2 and 1.5 per cent, respectively, of total global emissions in 2019.

[35] In line with anthropogenic land-use emissions and removals in the scenarios assessed by the IPCC, although actual directly induced net emissions from LULUCF could be higher.

Figure 1
Types of mitigation target and share of Parties that communicated them in nationally determined contributions



64. Total global GHG emission levels (without LULUCF) taking into account implementation of the latest NDCs of all Parties to the Paris Agreement are estimated to be around 54.7 (52.7–56.7) Gt CO_2 eq in 2025 and 54.9 (51.5–58.3) Gt CO_2 eq in 2030[36] (see figure 2).

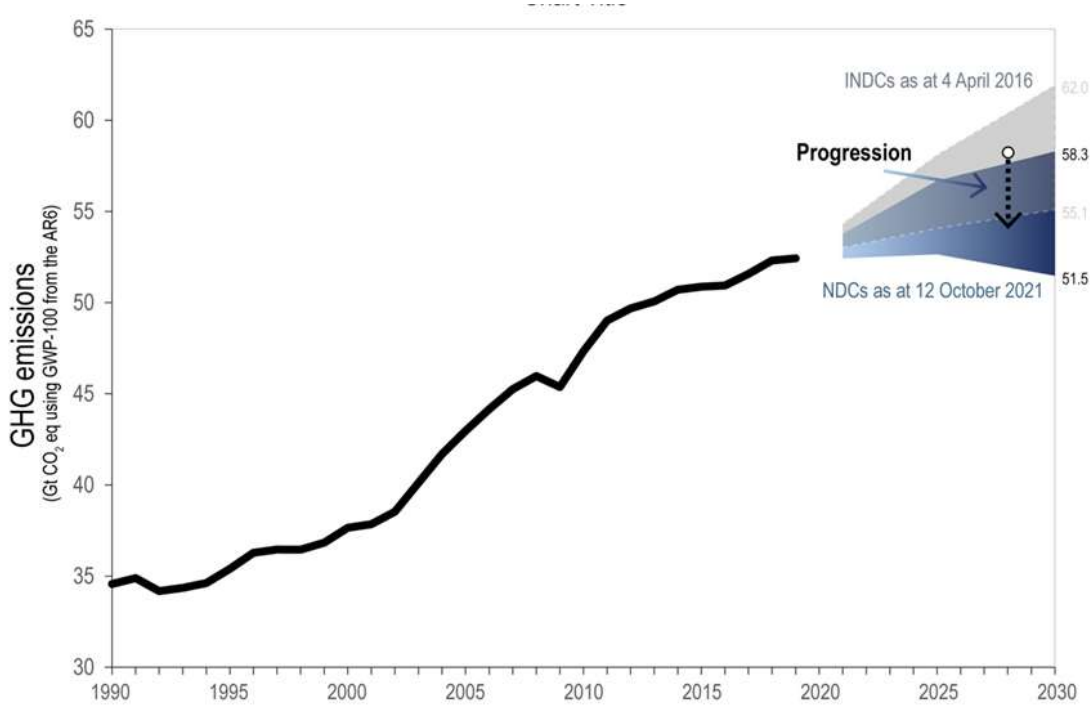
65. Most Parties' NDCs are unconditional, at least in part, with many including more ambitious conditional elements. The implementation of most conditional elements depends on access to enhanced financial resources, technology transfer and technical cooperation, and capacity-building support; availability of market-based mechanisms; and absorptive capacity of forests and other ecosystems. Total GHG emission levels resulting from implementation of the unconditional elements of the NDCs are estimated to be 55.5 (54.3–56.7) Gt CO_2 eq in 2025 and 56.4 (54.4–58.3) Gt CO_2 eq in 2030 (see figure 2).

66. When considering only the new or updated NDCs, the total GHG emissions of the relevant Parties are estimated to be around 25.6 (24.7–26.4) Gt CO_2 eq in 2025 and 23.6 (22.2–25.0) Gt CO_2 eq in 2030.

67. Of the Parties that submitted new or updated NDCs, most included unconditional components, and many included additional conditional elements. Compared with their previous NDCs, some 20 per cent more Parties included unconditional elements in their new or updated NDCs.

[36] Unless otherwise noted, in this report the average of the quantification is followed by a range that represents the minimum and maximum values after aggregation for the Parties NDCs, since several presented conditional and unconditional elements of their NDCs and, in some cases, ranges of values for both.

Figure 2
Projected range and progression of emission levels



Note: The projected ranges cover the higher-emission end for unconditional elements of NDCs to the lower-emission end when also taking conditional elements of NDCs into account. Emissions from international aviation included are assumed constant by 2030 at the 2019 level (~628 Mt CO_2); emissions from international maritime transport of 755 Mt CO_2 eq in 2018 are assumed to be on a linear trajectory by 2030 towards the international maritime sector's target of halving emissions by 2050 compared with the 2008 level. The comparison of total emissions resulting from implementation of the INDCs and the latest NDCs includes the difference in assumed bunker emissions (approximately 390 and 540 Mt CO_2 eq lower emissions in 2025 and 2030, respectively).

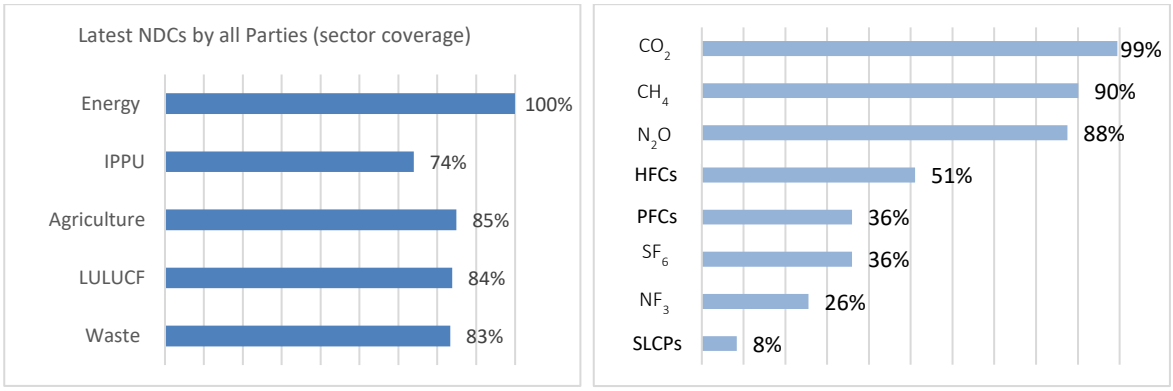
68. All Parties provided information on the scope and coverage of their NDCs, including sectors and gases covered.

69. Most Parties have economy-wide NDCs, with many covering all sectors defined in the 2006 IPCC Guidelines. All NDCs cover the energy sector, most cover agriculture, LULUCF, waste and IPPU (see figure 3).

70. Some Parties provided information on coverage of specific sectors of national importance, which are often a subset of one or more IPCC sectors, such as shipping and aviation, cooling, food production, transport, mining or buildings, while others mentioned specific carbon pools, oceans or blue carbon.

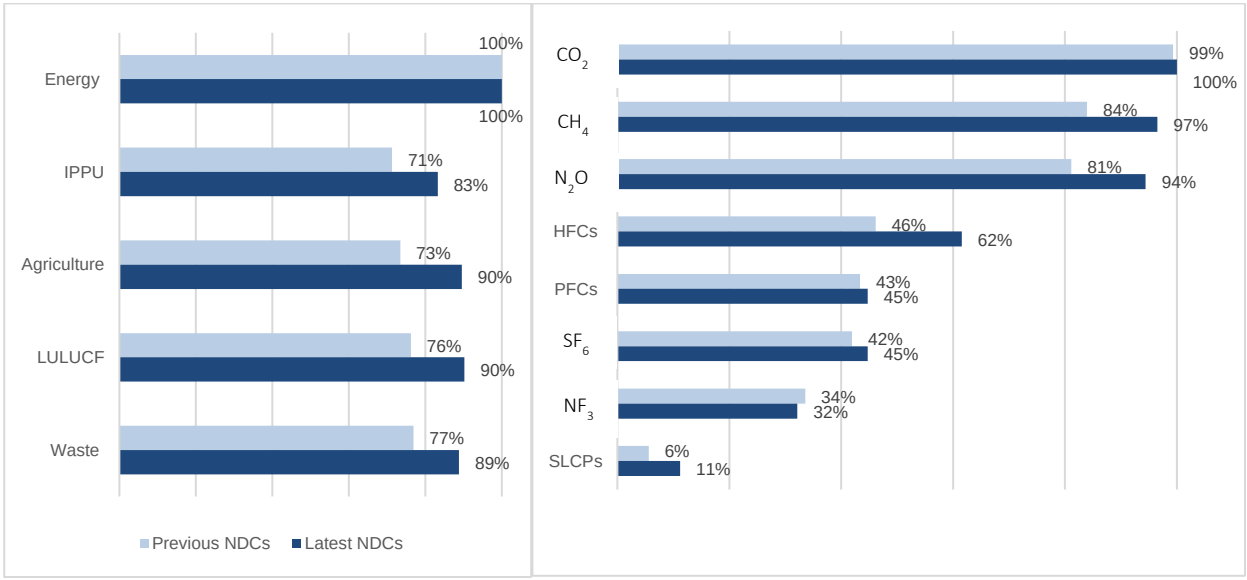
71. Almost all NDCs cover CO_2 emissions, most cover CH_4 and N_2O emissions, many cover HFC emissions and some cover PFC, SF_6 and NF_3 emissions. Some Parties included additional gases or emissions, including short-lived climate pollutants, such as black carbon, sulfur dioxide and non-methane volatile organic compounds (see figure 3).

Figure 3
Sectors and greenhouse gases covered in nationally determined contributions



72. The coverage of sectors and gases has increased in the new or updated NDCs compared with the Parties' previous NDCs, covering 99.0 per cent (25.5 Gt CO_2 eq) of the Parties' total economy-wide emissions in 2019, up from 97.3 per cent (25.1 Gt CO_2 eq) previously, resulting in most Parties having economy-wide NDCs, covering all 2006 IPCC Guidelines sectors (see figure 4).

Figure 4
Sectors and greenhouse gases covered by Parties that submitted new or updated nationally determined contributions



73. Most Parties provided information on how they are striving to include all categories of anthropogenic emissions and removals in their NDCs over time, as well as explanations for the exclusion of any categories. Some Parties stated that they already have economy-wide NDCs including all sectors and GHGs. Some other Parties explained why certain sectors and/or gases had been excluded, such as owing to categories being negligible or insignificant, data unavailability or inaccuracy, or lack of technical capacity.

74. In addition to communicating information on mitigation targets or plans for the near to medium term, many Parties provided information on long-term mitigation visions, strategies or targets for up to and beyond 2050 that either have already been formulated or are under preparation. Of those Parties, most referred to climate neutrality, carbon neutrality, GHG neutrality or net zero emissions by 2030, 2040, 2050, 2060 or mid-century.[37, 38]

[37] As at 12 October 2021, 33 Parties had communicated LT-LEDS, 32 of which had communicated a new or updated NDC; see https://unfccc.int/process/the-paris-agreement/long-term-strategies.

[38] See document FCCC/PA/CMA/2021/8/Add.3 for additional information on long-term goals.

C. Time frames and/or periods of implementation

75. All Parties communicated in their NDCs the time frame and/or period of implementation, which refers to a time in the future by or in which an objective is to be achieved.

76. Almost all Parties communicated a time frame and/or period of implementation of until 2030, while a few specified periods of until 2025, 2035, 2040 or 2050. Many Parties indicated 1 January 2021 as their starting date for NDC implementation; some started implementing their NDC in or before 2020; and a few Parties will start doing so from 2022.

77. All Parties communicated a target year, expressing a single-year target, a multi-year target (i.e. for a period of consecutive years) or multiple target years (i.e. several non-consecutive target years) depending on the target.

78. Most Parties communicated a single-year target for 2030, while a few indicated a single-year target for 2025, 2035 or 2040. A few Parties communicated multiple target years, including when target years were associated with the implementation of different policies and measures. A few other Parties indicated having a multi-year target for NDC implementation.

D. Quantifiable information on the reference point (including, as appropriate, a base year)

79. Most Parties provided quantified mitigation targets, expressed as clear numerical targets, while some included strategies, plans and actions as referred to in Article 4, paragraph 6, of the Paris Agreement or policies and measures as components of their NDCs for which there is no quantifiable information (see para. 63 above).

80. Most Parties also provided information on the reference year, base year, reference period or other starting point for measuring progress towards the target. Most of those Parties are measuring the achievement of their targets against a base-year level, with many selecting 1990 and others selecting a year between 2000 and 2020. Some have chosen to measure progress in terms of a deviation from a level in the target year, with most selecting 2030; and a few provided a reference period.

81. Almost all Parties further provided information on the reference indicator used to express their target. Most of those Parties chose as the reference indicator absolute GHG emissions, some the ‘business as usual’ GHG emission level, a few a GHG emission budget, and a few others emission intensity per GDP unit or sectoral ‘business as usual’ levels. Most Parties provided a quantified value for their reference indicator for either the base year, the target year or both, as appropriate.

82. Of the Parties that submitted new or updated NDCs, most updated the basis for defining their targets, including reference points and ‘business as usual’ scenarios. Although such updates lead to higher-quality NDCs, for some Parties they lead to significant changes in the estimated emission levels for 2025 and 2030, for reasons other than changes to target levels.

83. Most Parties that included strategies, plans and actions as referred to in Article 4, paragraph 6, of the Paris Agreement provided other information for clarification, including on expected levels of emission reduction or prevention, increased forest coverage, reduction of deforestation, energy efficiency targets, renewable energy share or other non-GHG policy targets.

84. Most Parties provided information on the sources of the emission data used for quantifying the reference point, many referring to national inventory reports and many to biennial reports, biennial update reports and/or national communications. Some Parties also referred to national documents and statistics, such as sector activity reports; national development plans and/or strategies; economic development projections; national climate change plans; energy master plans; national statistics on economy, energy and/or trade; waste

management strategies; national resource plans; energy road maps; national forest reports; and socioeconomic forecasts.

85. Many Parties presented information on the circumstances in which they may update the values of their reference indicators, such as owing to significant changes in specific financial, economic, technological and/or political conditions, or to impacts due to extreme natural disasters; or depending on scale of access to support and other means of implementation, expected improvements or modifications to activity data, variables or methodologies used in estimating national emissions, baselines or projections, or the results of the ongoing negotiations on common metrics; or to reflect the actual situation during the implementation period.

E. Assumptions and methodological approaches, including for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals

1. Intergovernmental Panel on Climate Change methodologies and metrics

86. Most Parties communicated information on the IPCC methodologies they used for estimating emissions and removals. Many referred to the 2006 IPCC Guidelines and some to the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, while a few others mentioned that they used both sets of guidelines to cover different sectors.

87. Many Parties provided information on the metrics they used for estimating emissions and removals. Many of them used GWP values over a 100-year time-horizon from the AR5, while some used such values from the AR2 and some those from the AR4. A few Parties used GWP values as well as global temperature potential values from the AR5 for estimating their mitigation targets.

88. Most Parties also communicated information on the assumptions and methodological approaches to be used for accounting anthropogenic GHG emissions and, as appropriate, removals, corresponding to their NDCs. Most of them referred to the 2006 IPCC Guidelines, while some others referred to the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* or the *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Some also mentioned the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* and/or the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*.

89. In addition, some Parties also referred to the standard methods and procedures contained in the *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol* and the *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*.

2. Assumptions and methodological approaches

90. Many Parties expressed mitigation targets as a deviation from a ‘business as usual’ level, with most presenting quantitative baselines and mitigation scenarios and most providing updated information on the assumptions and approaches used to develop ‘business as usual’ scenarios, baselines or projections, such as baselines and projections being based on historical data and trends in emissions and economic parameters. Most of those Parties referred to key parameters and variables such as GDP and population and growth thereof, and cost–benefit analysis. They also provided sector-specific parameters, including energy consumption, energy demand and production, electricity grid capacity, urbanization rate, transportation network changes and vehicle numbers, forest growth rate, livestock trends, per capita waste generation, and energy and waste statistics per tourist.

91. A few Parties communicated additional information on other approaches used for estimating sector- or activity-specific emissions or baselines, including using regional data sources for downscaling data or generating data at the national level, and calculation tools or approaches for estimating short-lived climate pollutants or precursor emissions. Some Parties mentioned using specific modelling tools for estimating their emissions or baselines, such as The Integrated Market Allocation-Energy Flow Optimization Model System, Long-range

Energy Alternatives Planning, the Greenhouse Gas Abatement Cost *Model*, Green Economy Modelling, the PROSPECTS+ emissions scenario tool and the Ex-Ante Carbon-balance Tool.

92. Of the Parties that submitted new or updated NDCs, almost all provided more detailed information than previously on the assumptions, methodological approaches and procedures used for developing their baselines or mitigation scenarios.

3. Land use, land-use change and forestry

93. Some Parties consider addressing emissions and subsequent removals due to natural disturbances on managed land if such events occur. Almost all of them mentioned that they may use a statistical approach to identifying natural disturbances following relevant IPCC guidance.

94. Some Parties stated that emissions and removals from harvested wood products will be accounted for as part of their NDCs, with almost all indicating that they will use the production approach.

95. Some Parties mentioned that the effects of age-class structure in forests will be taken into account when estimating the mitigation contribution of forests by using a projected forward-looking forest reference level taking into account current management practices.

4. Voluntary cooperation under Article 6 of the Paris Agreement

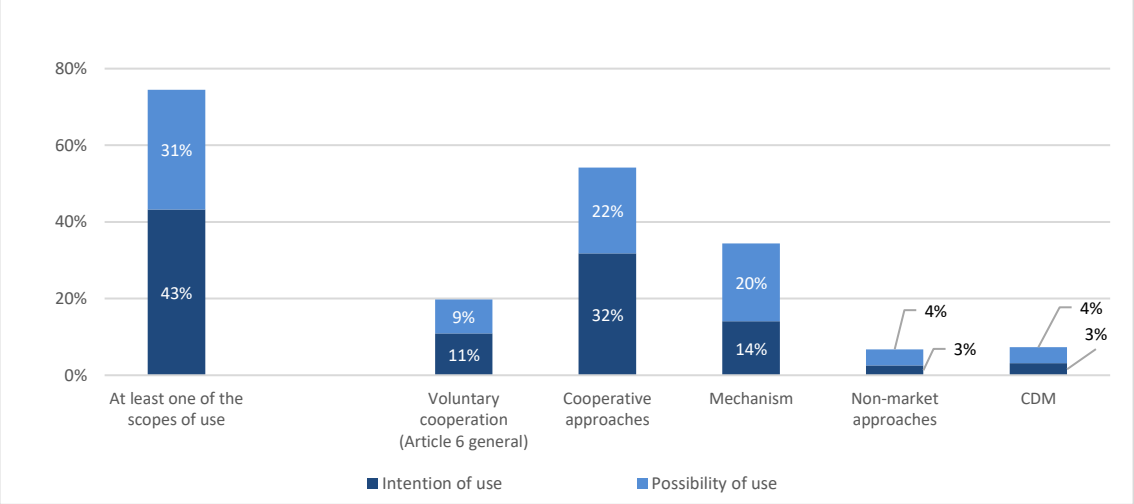
96. Most Parties provided information relating to voluntary cooperation. Almost all of them communicated that they plan to or will possibly use voluntary cooperation in at least one of its scopes in implementing their NDCs (see figure 5) by directly or indirectly[39] referring to the scopes in their NDCs: general use of voluntary cooperation under Article 6; use of cooperative approaches under Article 6, paragraph 2; use of the mechanism under Article 6, paragraph 4; use of non-market approaches under Article 6, paragraph 8; and use of the CDM.[40] The share of Parties that indicated that they plan or will possibly use voluntary cooperation in at least one of its scopes has increased from 46 to 85 per cent in the new or updated NDCs compared with those Parties' previous NDCs.

97. Many Parties communicated planned or possible use of cooperative approaches, followed by planned or possible use of the mechanism. Some mentioned that they plan to or will possibly make general use of voluntary cooperation, a few Parties indicated that they plan to or will possibly use the CDM, and a few referred to non-market approaches.

[39] In this report, indirect references include international cooperation under Article 6, market-based mechanisms and non-market mechanisms.

[40] Only direct references to use of the CDM were considered: an indirect reference to the CDM such as "international market-based mechanisms" was not considered a reference to the CDM.

Figure 5
Share of Parties indicating in nationally determined contributions the intention to use or possibility of using specific scopes of voluntary cooperation



98. Some Parties communicated the use of voluntary cooperation as a condition for achieving their mitigation targets.

99. On the other hand, some Parties have set limits on their use of voluntary cooperation: a few have limited their use of voluntary cooperation to achieving their conditional mitigation targets only; a few have set quantitative limits on their use of voluntary cooperation for achieving their mitigation targets, such as achieving unconditional targets primarily through domestic efforts but partially through voluntary cooperation; and some have set qualitative limits on their use of voluntary cooperation for achieving their mitigation targets, such as using units that adhere to standards and guidelines to ensure additionality, permanence or avoidance of double counting of emission reductions. The share of Parties that have set qualitative limits on their use of voluntary cooperation has increased, from 20 to 36 per cent, in the new or updated NDCs compared with those Parties' previous NDCs.

F. Planning and implementation processes

100. Almost all Parties provided information on their NDC planning processes and most also referred to their implementation plans, communicating information on their institutional arrangements, stakeholder engagement processes and policy instruments, including legislation, strategies, plans and policies.

1. Domestic institutional arrangements

101. Most Parties indicated that domestic institutional arrangements are a key element of coordinating, planning and implementing climate change policy and action at the national and international level and fostering public participation. Most of them referred to specific arrangements in place for NDC preparation, such as inter-institutional commissions, councils and committees, led by a designated entity with a coordination role and including members from public entities, the private sector, non-governmental organizations and/or academia. A few other Parties communicated that such arrangements are under development.

102. Most Parties referred to formal arrangements in place for consulting various stakeholders, including the general public, local communities, indigenous peoples, private entities, business and trade associations, civil society organizations, youth associations, women's associations, regional development partners, academia and research communities. Almost all of those Parties indicated that they conducted such consultation and engagement processes in an inclusive and participatory manner. Some of these Parties specifically referenced gender-sensitive consultations, referring to specific guidelines for ensuring gender sensitivity, such as during public consultations, and highlighting the inclusion of national gender machineries, gender and women's groups, or non-governmental organizations in the process.

103. A few Parties mentioned the Marrakech Partnership for Global Climate Action,[41] which, under the leadership of the high-level champions, supports implementation of the Paris Agreement by strengthening collaboration between national Governments and cities, subnational regions, businesses, investors and civil society to accelerate action on climate change. In this context, some of those Parties also highlighted the voluntary commitments announced or pledged in collaboration with non-Party stakeholders.[42]

104. Many Parties mentioned specific policy instruments in place to facilitate NDC implementation in addition to institutional arrangements, and some others mentioned instruments being under development. Such policy instruments include energy and/or climate strategies, low-emission development strategies, NDC implementation road maps, NDC action plans, laws and regulations on climate change, sectoral national mitigation and adaptation plans and NDC investment plans.

105. Some Parties included information on their domestic measurement, reporting and verification systems, while many others indicated that such systems are under development. Those Parties acknowledged the important role of such systems in continuously monitoring and tracking the status and progress of their NDCs and mitigation efforts, and highlighted that the results will be reflected in national inventory reports and/or biennial transparency reports, ensuring national and international transparency. A few Parties also highlighted that the feedback from such systems will be used to guide the preparation of their subsequent NDCs.

2. Gender

106. Most Parties provided information related to gender in their NDCs and some affirmed that they will take gender into account in implementing them.[43]

107. Of the Parties that provided gender-related information, most referred to relevant policies and legislation or affirmed a general commitment to gender equality, while some included information on how gender had been or was planned to be mainstreamed in NDC implementation, and some on specific tools and methods, such as gender analyses or assessments, gender indicators, gender-disaggregated data, and gender-responsive budgeting, and a few included gender as a criterion for prioritizing activities.

108. Many Parties that referred to gender in their NDCs treated it as a cross-cutting issue to be addressed across adaptation and mitigation, with some focusing on adaptation. Some Parties considered gender exclusively in the context of adaptation. Some Parties mentioned taking gender into account in formulating and implementing their NAPs.

109. Many Parties referred to their planned gender-sensitive or gender-responsive climate action or generally elaborated on gender aspects in the context of specific sectors, including in the context of agriculture, energy, disaster, water, health, land use and forestry, fisheries, waste and education.

110. Some Parties highlighted the importance of providing capacity-building, finance and technology for gender-specific action and of these means of implementation being gender-responsive.

111. Some Parties implicitly or explicitly considered gender as it intersects with other social factors. Some Parties explicitly considered specific genders in the context of their differentiated needs and perspectives and the gender-differentiated impacts of and contributions to climate change and climate action. Most of them framed women as being vulnerable and some framed women as stakeholders or agents of change. A few Parties explicitly considered other genders.

[41] See https://unfccc.int/climate-action/marrakech-partnership-for-global-climate-action.

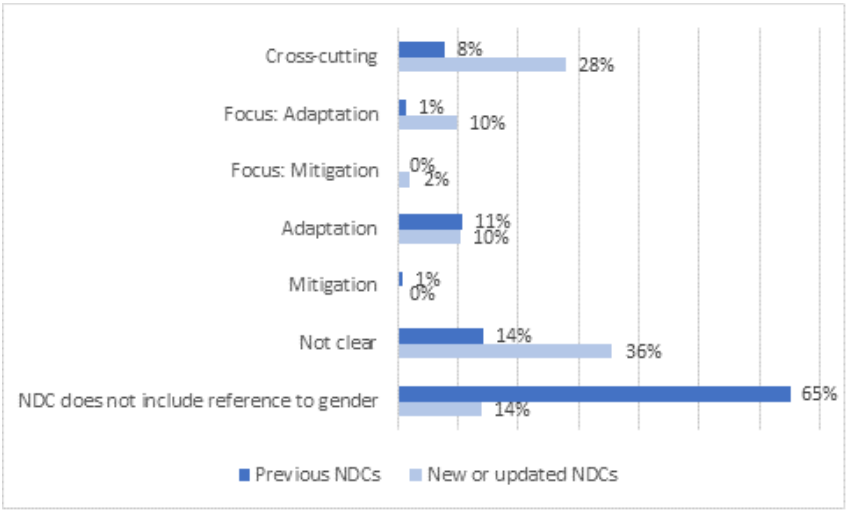
[42] Voluntary commitments by Parties and non-Party stakeholders are reported and tracked in order to capture the extent of climate action taken globally on the global climate action portal (https://climateaction.unfccc.int/) and in the Yearbook of Global Climate Action (see, e.g., https://unfccc.int/sites/default/files/resource/2020_Yearbook_final_0.pdf).

[43] For more information on gender under the UNFCCC, see https://unfccc.int/topics/gender/workstreams/chronology-of-gender-in-the-intergovernmental-process.

112. Parties are increasingly considering gender in their NDCs and recognizing gender integration as a means of increasing the ambition and effectiveness of their climate action. The share of Parties referring to gender in the new or updated NDCs compared with their previous NDCs has increased significantly and the share of Parties considering gender as a cross-cutting issue has also risen (see figure 6).

113. Most Parties referenced gender in their first NDCs or for the first time in their new or updated NDCs, and many elaborated more on gender than in their previous NDCs, while a few considered gender to a similar or decreased extent.

Figure 6
Reference to gender in nationally determined contributions



3. Indigenous peoples and local communities

114. Some Parties described the role of indigenous peoples and local communities in the context of their NDCs, including the situation and consideration of the rights of indigenous peoples at the national level, such as legal and consultative arrangements for protecting their rights. They emphasized the vulnerabilities of indigenous peoples relating to their intrinsic relationship with forests and ecosystems and conditions of poverty. The benefits of drawing on indigenous knowledge and expertise, in particular for adaptation, were highlighted, as was the importance of combining traditional and modern practices and of ensuring the participation and leadership of indigenous peoples in climate efforts. Parties outlined how indigenous peoples were engaged in NDC preparation, including through consultations on sectoral proposals, risk assessment and analysis of indigenous knowledge.

115. In addition, some of those Parties elaborated on how actions identified in the NDC aim to benefit indigenous peoples by, for example, enhancing access to finance and technology; building capacities for reducing vulnerabilities as well as for leadership, negotiations and indigenous-led climate action; generating payments for ecosystems services; providing development opportunities; enhancing market access to indigenous products; and diversifying livelihoods. A few Parties specifically elaborated on the role of local communities in climate action, highlighting the importance of empowering such communities, building their capacity to adapt and ensuring their participation in related activities, such as through community-based adaptation plans, decentralization strategies and livelihood improvements, as well as through adaptation measures, such as mangrove restoration, that enhance the resilience of local communities to climate change.

4. Action for Climate Empowerment[44]

116. Almost all Parties provided information on using one or more ACE elements to promote implementation of mitigation and adaptation activities. Some Parties indicated their

[44] ACE denotes work under Article 12 of the Paris Agreement; its objective is to empower all members of society to engage in climate action through education, training, public awareness, public

intention, and the support needed, to systematically address ACE by developing national ACE strategies, incorporating ACE and its elements into general climate policies and plans, upholding ACE as a guiding principle and cross-cutting priority for climate action, and setting specific ACE-related targets.

117. Many Parties elaborated on climate education measures such as updating formal, informal and non-formal education curricula and programmes, establishing laws and policies to ensure provision of climate education, mainstreaming climate change in national education strategies and plans, and providing training and resources for teachers and educators. Many Parties included information on training measures, including integrating climate change into training programmes for civil servants and other stakeholders.[45] The need for training was also highlighted in the context of achieving just transition and accessing green jobs.

118. Many Parties provided information on measures for raising public awareness, such as developing communication strategies, disseminating knowledge through traditional and new media, and implementing awareness-raising campaigns for specific sectors, such as health, biodiversity and energy efficiency. Most Parties mentioned public participation, including information on institutional arrangements (see paras. 101–105 above). Some Parties included information on public access to information, providing details on developing regulations and systems to guarantee and facilitate access to climate information and data.

119. In the new or updated NDCs, Parties generally communicated more clearly, and in more detail, than previously on general principles, past achievements, future commitments, and needs and gaps in relation to ACE. More Parties are explicitly referring to ACE as a necessary means of mobilizing and empowering society to deliver the mitigation and adaptation objectives outlined in their NDCs.

5. Best practices and other contextual matters

120. Many Parties communicated best practices for NDC preparation, such as institutionalizing climate policy development within joint planning frameworks; strengthening stakeholder capacity to participate more substantively in NDC preparation and implementation; designing planning and reporting systems for transparency and public scrutiny; incorporating experience and lessons learned from INDC preparation and implementation efforts; conducting extensive stakeholder consultation and peer review to enhance their understanding of the NDC; conducting a preliminary assessment of pre-2020 efforts to identify gaps and needs and develop an NDC road map; mainstreaming NDC goals in existing strategies, plans and policies to obtain political support and benefit from existing arrangements; partnering with regional and international organizations to develop a robust NDC; and establishing a scientific and quantitative system for analysing and assessing progress of implementation.

121. Although the first global stocktake will not be conducted until 2023, on the basis of their national circumstances and development pathways, many Parties highlighted other contextual aspirations and priority areas, such as maximizing synergies between short- and long-term climate commitments and the SDGs; adaptation and climate-resilient development; collaboration and support by developed country Parties and international organizations; deploying low-emission technologies to drive emission reduction, safeguarding food security and eradicating poverty; involving youth, local governments and communities and/or indigenous groups in a gender-responsive manner; just transition of the workforce; social and climate justice; circular economy; integrated resource management; oceans or blue carbon; disaster risk reduction; human health; energy production from renewable sources and/or energy efficiency; and reducing risks caused by loss and damage.

122. Of the Parties that submitted new or updated NDCs, some provided information on how their NDC preparation was informed by activities or events relevant to the collective assessment of progress in addressing climate change, such as the United Nations Secretary-

participation, public access to information, and international cooperation on these issues (the six ACE elements).

[45] See paras. 202–205 below for more information on training measures in the context of capacity-building.

General's calls to strengthen climate action and ambition during the 2018 high-level event on climate change, the recommendations from the Talanoa Call for Action, and/or the best available science, such as the SR1.5.[46]

G. Mitigation co-benefits resulting from adaptation action and/or economic diversification plans

123. Some Parties considered mitigation co-benefits resulting from their adaptation action and/or economic diversification plans and a few mentioned that such co-benefits have been taken into account in their mitigation efforts. Many of those Parties considered social and economic consequences of response measures and included an economic diversification plan and/or a just transition or social pillar for designing climate policies that foster a just and equitable transition, and managing changes arising in relevant sectors due to the implementation of climate policies. Some other Parties considered positive and/or negative economic and social consequences of response measures without linking them to the mitigation co-benefits of their adaptation action and/or economic diversification plans. Some Parties presented their sectoral mitigation and adaptation plans in agriculture, energy, forestry, tourism and transport sector as transition or diversification plans.

124. The Parties highlighted unequal impacts on different groups of society or the workforce as consequences of response measures, with impacts on the workforce[47] being the most frequently mentioned. Some plan to address such impacts by including the concept of just transition in their overall NDC implementation, such as a just transition mechanism and just transition funds; laws and strategies for protecting workers; a social mechanism for job creation, skills development and employment policies; and a consultation process for social protection. A few Parties paid special attention to addressing impacts of response measures on vulnerable groups and communities in relation to poverty, job opportunities and inequality during transition.

125. Some Parties considered economic diversification as part of their national development plans and climate policies to boost the country's resilience to climate change and response measures. A few of them linked such plans to an existing poorly diversified economy and the impact of response measures on sectors of high economic importance, such as extraction of fossil fuels. Those Parties specifically mentioned economic diversification plans or actions focused on high-emitting sectors and sectors of economic importance. Such plans include enhancing education; increasing the share of energy generation using renewable sources; improving energy efficiency through regulatory measures, pricing signals and technology deployment in the fisheries, industry and buildings sectors; carbon dioxide capture and storage in the oil and gas industry; implementing fuel switch and fuel price reforms in the transport sector; moving to circular economy for better waste management; and adopting sustainable tourism practices to build the tourism sector.

126. Some Parties described how their adaptation action contributes to emission reduction, including their intention to consider mitigation co-benefits in NAP formulation. In terms of sectors, some described the potential co-benefits of various agricultural adaptation measures, including climate-smart agriculture, reducing food waste and vertical farming. Adaptation of coastal ecosystems was highlighted as another source of co-benefits, in particular planting mangroves and seagrass beds. Other sectors with potential co-benefits mentioned were forestry, natural resources and the environment, energy and waste.

127. Most Parties identified agriculture as a high priority for adaptation, either explicitly or as part of cross-sectoral adaptation efforts, and most are aiming to use mitigation

[46] IPCC. 2018. *IPCC Special Report on the Impacts of Global Warming of 1.5 °C above Preindustrial Levels and Related Global Greenhouse Gas Emission Pathways in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty.* V Masson-Delmotte, P Zhai, H-O Pörtner, et al. (eds.). Geneva: World Meteorological Organization. Available at https://www.ipcc.ch/sr15/.

[47] Such as low-income groups, women, young people, indigenous peoples and people with disabilities.

opportunities in the sector. Many Parties highlighted the need to focus on activities that have positive effects on mitigation and adaptation while ensuring food security.

H. Fairness and ambition in the light of national circumstances

128. Almost all Parties explained, using different metrics, how they consider their NDCs to be fair and ambitious in the light of their national circumstances.[48]

129. Those Parties included qualitative and/or quantitative information on how their NDCs represent progression[49] and highest possible ambition, such as through increased estimated level of emission reductions; earlier projected peaking of emissions; enhancing mitigation efforts; increasing unconditional elements; including long-term targets; introducing and/or enhancing policies; elaborating on adaptation action; integrating climate goals into national policy instruments; enhanced linkages with the SDGs; using more accurate data and moving to higher-tier estimation; establishing arrangements for monitoring and/or tracking progress of implementation; enhancing the stakeholder consultation process; developing sector-based action plans for implementation; and presenting additional information to facilitate clarity, transparency and understanding.

130. Many Parties framed fairness consideration within their past, current and future share in global and/or per capita emissions compared with global averages, or in relation to the trends in one or several metrics. Of the Parties that communicated new or updated NDCs, some indicated that, despite COVID-19 and its impacts on their economies, they are committed to implementing their NDCs to address climate change.

131. Many Parties provided information on ambition by linking their NDCs to their commitment to transition to a sustainable and/or low-carbon and resilient economy; some expressed that they have incorporated their NDC goals and policies into national legislative, regulatory and planning processes as a means of ensuring implementation; some addressed ambition in the context of the inclusive design of their NDCs, considering various cross-cutting aspects, such as investment plans, gender-responsiveness, education and just transition.

132. Many Parties expressed that their NDCs are in line with the long-term goals of the Paris Agreement or with the mitigation pathways for limiting global warming to well below 2 or 1.5 °C above pre-industrial levels. Of the Parties that communicated new or updated NDCs, most highlighted that they have enhanced their mitigation and/or adaptation contributions.

133. Total global GHG emission levels (without LULUCF) taking into account implementation of the latest NDCs of all Parties to the Paris Agreement are estimated to be around 1.4 Gt CO_2 eq, or on average 2.6 per cent, by 2025 and 3.6 Gt CO_2 eq, or on average 6.2 per cent, by 2030 below the levels indicated in the INDCs as at 4 April 2016.

134. When compared with implementation of the previous NDCs of Parties that had submitted new or updated NDCs as at 12 October 2021, implementation of their new or updated NDCs is estimated to result in a lower level of emissions by 3.7 (3.3–4.1) per cent in 2025 and 11.0 (10.1–12.0) per cent in 2030.

[48] Metrics include capabilities; historic and current responsibility; climate justice; share in global emissions; level of per capita emissions; vulnerability to the adverse impacts of climate change; development and/or technological capacity; mitigation potential; cost of mitigation actions; degree of progression or progression beyond the current level of effort; and link to objectives of the Paris Agreement and its long-term global goals.

[49] In this report, the term "progression" is used to refer to the difference between the estimated emission levels associated with implementation of Parties' INDCs communicated to the secretariat as at 4 April 2016 and those according to the NDCs available in the interim NDC registry as at 12 October 2021. In the figures in this report the progression is shown from INDCs as at 4 April 2016 (grey shading), covered in document FCCC/CP/2016/2, to NDCs as at 12 October 2021 (blue shading), aggregated in this report.

I. Contribution towards achieving the objective of the Convention as set out in its Article 2, and towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement[50]

135. The information necessary to facilitate clarity, transparency and understanding of NDCs includes information on:[51]

(a) How the NDC contributes towards achieving the objective of the Convention as set out in its Article 2;

(b) How the NDC contributes towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement.

136. Almost all Parties communicated information on the contribution of their NDCs towards achieving the objective of the Convention as set out in its Article 2, and towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement.

137. Many Parties indicated that their level of emissions in the future is expected to fall within the scope of a global emission pathway that is consistent with the goal of keeping the global average temperature increase below 2 or 1.5 °C.

138. In that context, Parties highlighted their national mitigation and/or adaptation efforts, NDC targets, LT-LEDS, development pathways for decoupling emissions from economic growth, and mobilization of domestic and international support.

139. The projected total GHG emission level in 2025 is 58.1 per cent higher than in 1990 (34.6 Gt CO_2 eq), 45.2 per cent higher than in 2000 (37.7 Gt CO_2 eq), 27.2 per cent higher than in 2005 (43.0 Gt CO_2 eq), 15.5 per cent higher than in 2010 (47.4 Gt CO_2 eq), 7.5 per cent higher than in 2015 (50.9 Gt CO_2 eq) and 4.3 per cent higher than in 2019 (52.4 Gt CO_2 eq) (see figure 7).

140. For 2030, the projected total GHG emission level is 58.7 per cent higher than in 1990, 45.7 per cent higher than in 2000, 27.7 per cent higher than in 2005, 15.9 per cent higher than in 2010, 7.9 per cent higher than in 2015 and 4.7 per cent higher than 2019 (see figure 7).

141. In comparison, the estimated total GHG emission levels for 2030 associated with implementation of Parties' INDCs implied stronger emission increases above historical levels: 69.2 (59.3–79.1) per cent above the 1990 level, 23.6 (16.4–30.9) per cent above the 2010 level and 11.6 (5.1–18.2) per cent above the 2019 level (see figure 7).

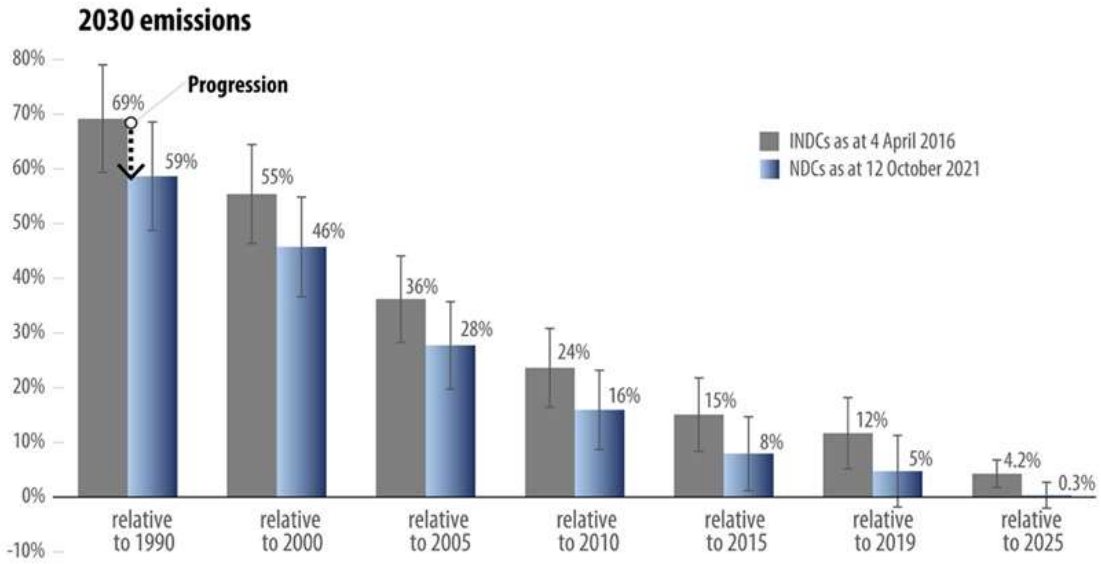
142. For Parties that communicated new or updated NDCs, their total GHG emissions are estimated to be 26.3 Gt CO_2 eq in 2019, and total GHG emission levels resulting from implementation of their NDCs are estimated to be around 25.6 (24.7–26.4) Gt CO_2 eq in 2025 and 23.6 (22.2–25.0) Gt CO_2 eq in 2030, which is about 1.5 (+1.8 to –4.8) per cent lower by 2025 and 9.0 (3.6–14.5) per cent lower by 2030 than in 2010 and 2.8 (+0.4 to –6.0) per cent lower by 2025 and 10.3 (4.9-15.6) per cent lower by 2030 than in 2019.

[50] See document FCCC/PA/CMA/2021/8/Add.3for additional information, including on estimation methods and assumptions used.

[51] Decision 4/CMA.1, annex I, para. 7.

Figure 7

Projected total emission levels in 2030 compared with historical levels and the estimated 2025 level

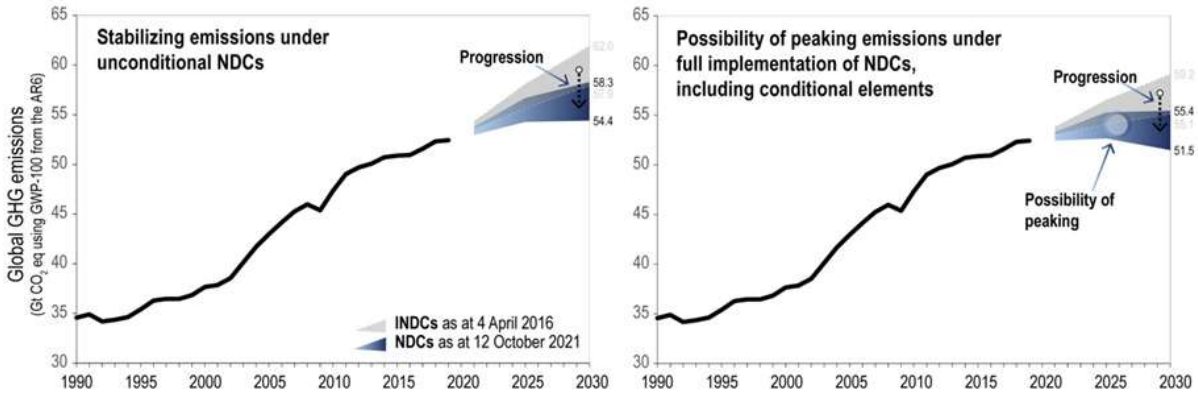


143. The total GHG emission level resulting from implementation of the unconditional elements of the NDCs is projected to be 7.5 (3.8–11.2) per cent higher in 2030 than in 2019; whereas the total GHG emission level resulting from implementation of the NDCs including conditional elements is projected to be only 2.0 per cent (–1.8 to +5.7) higher in 2030 than in 2019, indicating, if all NDCs (including their conditional elements) are fully implemented, the possibility of peaking of global emissions before 2030, with the lower bound of the 2030 emission level (51.5 Gt CO_2 eq) estimated to be up to 1.8 per cent below the 2019 level (52.4 Gt CO_2 eq) and 2.2 per cent below the lower bound of the estimated 2025 level (52.7 Gt CO_2 eq) (see figure 8).

144. In comparison, considering the full implementation of INDCs (including their conditional elements), a continuously increasing trend in emissions was estimated up to 2030, resulting in a global emission level of approximately 9.0 (5.1–12.8) per cent above the 2019 level. Implementation of only the unconditional elements of the INDCs was estimated to result in a global emission level in 2030 of approximately 14.3 (10.5–18.2) per cent above the 2019 level (see figure 8).

Figure 8

Historical and projected total global emissions according to nationally determined contributions



Note: Emissions with LULUCF in 2030 resulting from implementation of the new or updated NDCs are estimated to be 58.9 (57.0–60.8) Gt CO_2 eq considering unconditional elements and 56.0 (54.0–58.0) Gt CO_2 eq assuming full implementation.

145. According to the latest NDCs, per capita emissions will equal 6.7 (6.5–7.0) t CO_2 eq in 2025 and, slightly lower, 6.5 (6.1–6.9) t CO_2 eq in 2030, which is, on average, 1.7 per cent lower in 2025 and 5.5 per cent lower in 2030 than in 2019.

146. Some Parties provided quantifiable information on their long-term mitigation visions, strategies and targets for up to and beyond 2050, many of which communicated LT-LEDS in response to Article 4, paragraph 19, of the Paris Agreement.[52] The total GHG emission level of those Parties is estimated to be 14.3 (13.6–14.9) Gt CO_2 eq in 2030, which is 26 (22–29) per cent below their emission level in 2010.

147. On the basis of the information provided on long-term mitigation visions, strategies and targets in the NDCs, the total emissions in 2050 of the Parties with long-term targets are estimated at 2.2–3.2 Gt CO_2 eq. Mindful of the inherent uncertainty of such long-term estimates, the information indicates that these Parties' total GHG emission level could be 83–88 per cent lower in 2050 than in 2019, with annual per capita emissions estimated at 1.0–1.4 t CO_2 eq. Global per capita emission levels by 2050 under the well-below 2 °C ("lower 2 °C") and 1.5 °C scenarios ("1.5 °C with limited overshoot") are very similar at 1.6–2.4 t CO_2 eq and 0.6–1.2 t CO_2 eq, respectively.

148. The COVID-19 pandemic was mentioned by some Parties in the new or updated NDCs, but most have not reflected the potential impacts of the pandemic in their NDCs. The longer-term effects of the related changes in national and global GHG emissions will depend on the duration of the pandemic and the nature and scale of recovery measures.

Comparison with scenarios considered by the Intergovernmental Panel on Climate Change

149. According to the SR1.5, net anthropogenic CO_2 emissions need to decline by about 45 per cent from the 2010 level by 2030 (40–60 per cent interquartile range), reaching net zero around 2050 (2045–2055 interquartile range), in order to be consistent with global emission pathways that feature no or limited temporary overshoot of the 1.5 °C warming level. The contribution of Working Group I to the AR6[53] conveyed a similar message in that the "very low GHG emissions" scenario considered is the only scenario in which warming is limited to around 1.5 °C and features net zero global CO_2 emissions around 2050. For limiting global warming to below 2 °C, CO_2 emissions need to decline by about 25 per cent from the 2010 level by 2030 on most pathways (10–30 per cent interquartile range) and reach net zero around 2070 (2065–2080 interquartile range). Deep reductions are required for non-CO_2 emissions as well.[54]

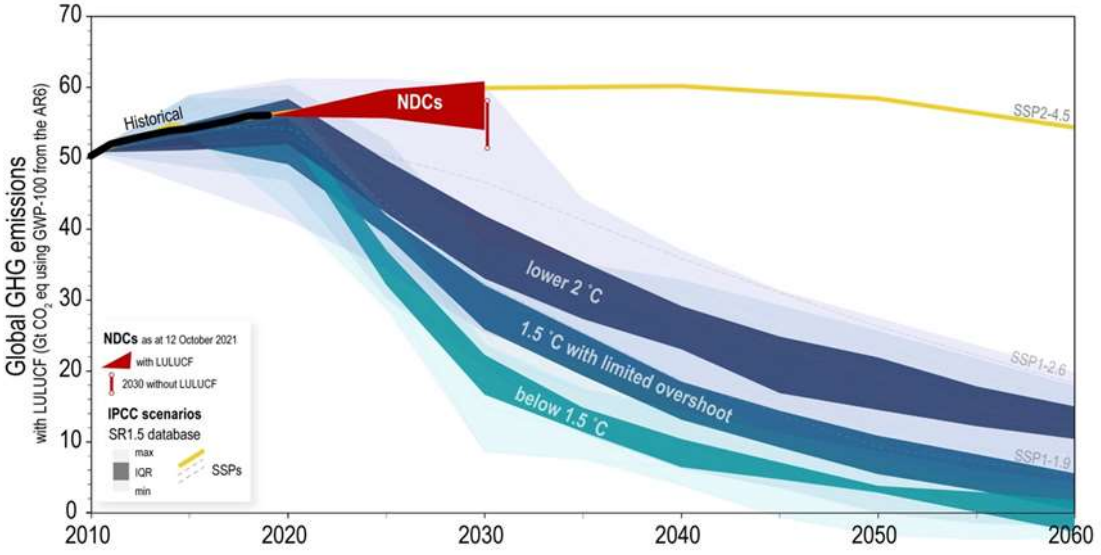
[52] As at 12 October 2021, 33 Parties had communicated LT-LEDS, 32 of which had communicated a new or updated NDC; see https://unfccc.int/process/the-paris-agreement/long-term-strategies.

[53] IPCC. 2021. *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. V Masson-Delmotte, P Zhai, A Pirani, et al. (eds.). Cambridge: Cambridge University Press. Available at https://www.ipcc.ch/report/ar6/wg1/.

[54] Further information on all IPCC scenarios is available at https://data.ene.iiasa.ac.at/iamc-1.5c-explorer/.

Figure 9

Comparison of global emissions under scenarios assessed in the Intergovernmental Panel on Climate Change Special Report on Global Warming of 1.5 °C with total global emissions according to nationally determined contributions



Note: The assessed global emission ranges (including LULUCF) for the IPCC scenarios provided in the SR1.5 (table 2.4) are shown with interquartile ranges. The illustrative SSP scenarios considered in the contribution of Working Group I to the AR6 are indicated (SSP2-4.5 by a yellow solid line, with an estimated end-of-century temperature of 2.7 (2.1–3.5) °C). The total GHG emission level resulting from implementation of the latest NDCs is compared with the emission levels for three of the scenario groups in the SR1.5 scenario database: a group of scenarios in which global mean temperature rise is kept at all times below 1.5 °C relative to the 1850–1900 ("below 1.5 °C"); a group of scenarios in which warming is kept at around 1.5 °C with a potential limited overshoot and then decrease of global mean temperature rise below 1.5 °C by the end of the century ("1.5 °C with limited overshoot"); and a third group that implies warming of well below 2 °C, that is above 1.5 °C by 2100 but with a likely chance of it being below 2 °C at all times ("lower 2 °C"). The latter group features scenarios with strong emission reductions in the 2020s or only after 2030.

150. The total global GHG emission level in 2030 taking into account implementation of the latest NDCs is expected to be 15.9 per cent above the 2010 level. Taken together with the information in figure 9 and paragraph 149 above, this implies an urgent need for either a significant increase in the level of ambition of NDCs between now and 2030 or a significant overachievement of the latest NDCs, or a combination of both, in order to attain cost-optimal emission levels suggested in many of the scenarios considered by the IPCC. If emissions are not reduced by 2030, they will need to be substantially reduced thereafter to compensate for the slow start on the path to net zero emissions. the SR1.5 identifies net zero CO_2 emissions as a prerequisite for halting warming at any level.

151. On the basis of the latest NDCs, cumulative CO_2 emissions in 2020–2030 are estimated to be around 444 (431–458) Gt.

152. In the context of the carbon budget consistent with 50 per cent likelihood of limiting warming to 1.5 °C, cumulative CO_2 emissions in 2020–2030 based on the latest NDCs would likely use up 89 per cent of the remaining carbon budget, leaving a post-2030 carbon budget of around 56 Gt CO_2, which is equivalent to the average annual CO_2 emissions in 2020–2030. Similarly, in the context of the carbon budget consistent with a likely chance of keeping warming below 2 °C, cumulative CO_2 emissions in 2020–2030 based on the latest NDCs would likely use up 39 per cent of the remaining carbon budget.

J. Adaptation

153. Adaptation involves responding to climate change by assessing impacts, vulnerability and risk; planning and implementing adaptation; making contingency arrangements for when impacts occur; addressing losses; and monitoring and evaluating adaptation efforts.

Arrangements have been developed under the Convention to facilitate adaptation, in particular NAPs, institutions such as the Adaptation Committee and the Least Developed Countries Expert Group, partnership structures for closing knowledge gaps, and provisions to facilitate support for, and transparency of, adaptation. Under the Paris Agreement, Parties may include an adaptation component in their NDCs.

1. Scope

154. Most Parties included an adaptation component in their NDCs, a few of which were designated as adaptation communications. In particular, they provided information on vulnerability and national circumstances; efforts to enhance adaptation-related research; adaptation measures, in particular NAPs and sectoral actions; contingency measures; synergies between adaptation and mitigation as well as with other global frameworks; and monitoring and evaluation of adaptation.

155. The information provided illustrates how Parties have advanced adaptation since the INDCs. For example:

(a) An increasing number of Parties provided information on adaptation, indicating the importance attached to adaptation by Parties from all regions and groups;

(b) Many Parties described the status of their process to formulate and implement NAPs, demonstrating how the NAP has been established as the main national instrument for adaptation and a key source of information for the NDCs.

156. Compared with their previous NDCs, Parties that communicated new or updated NDCs provided more detailed information on, in particular:

(a) Their national frameworks, thereby describing more integrated frameworks, in contrast to the multiple frameworks and individual projects described previously;

(b) Quantitative time-bound targets,[55] in contrast to the qualitative and open-ended adaptation objectives provided previously, with a few highlighting the indicator frameworks that they intend to use for monitoring progress;

(c) Mitigation and sustainable development co-benefits of adaptation, as well as on other synergies between mitigation and adaptation.

157. Some Parties identified the adaptation component as their adaptation communication, a few provided information organized around the elements identified in the annex to decision 9/CMA.1 and a few announced their intention to prepare an adaptation communication.

2. Impacts, risk and vulnerability

158. Almost all of the adaptation components described key climatic changes, referring in particular to temperature increase, extreme temperatures, precipitation changes and sea level rise. These were identified as triggering various climate impacts, in particular extreme events (including rainfall events, storms and cyclones), flooding, drought, heatwaves, saltwater intrusion, ocean acidification, coral bleaching, erosion, landslides, fires and thawing ice and permafrost. Parties described how impacts affect vulnerable areas. Of particular concern are agriculture and other aspects of food security, water, biodiversity and ecosystems, health systems, infrastructure (in particular energy, transportation and tourism) and loss of territory, livelihoods and habitats. Parties highlighted groups and areas that are particularly vulnerable. As factors of vulnerability, they highlighted, for example, dependence on climate-sensitive sectors, status as a small island developing State, having complex and vulnerable ecosystems, location of population and infrastructure on coasts, and economic factors, in particular poverty and lack of other institutional, financial and technical capacities. Vulnerability has also increased as a result of COVID-19.

[55] See document FCCC/PA/CMA/2021/8/Add.1 for more details on quantitative targets.

3. Enhancing adaptation-related research for policymaking

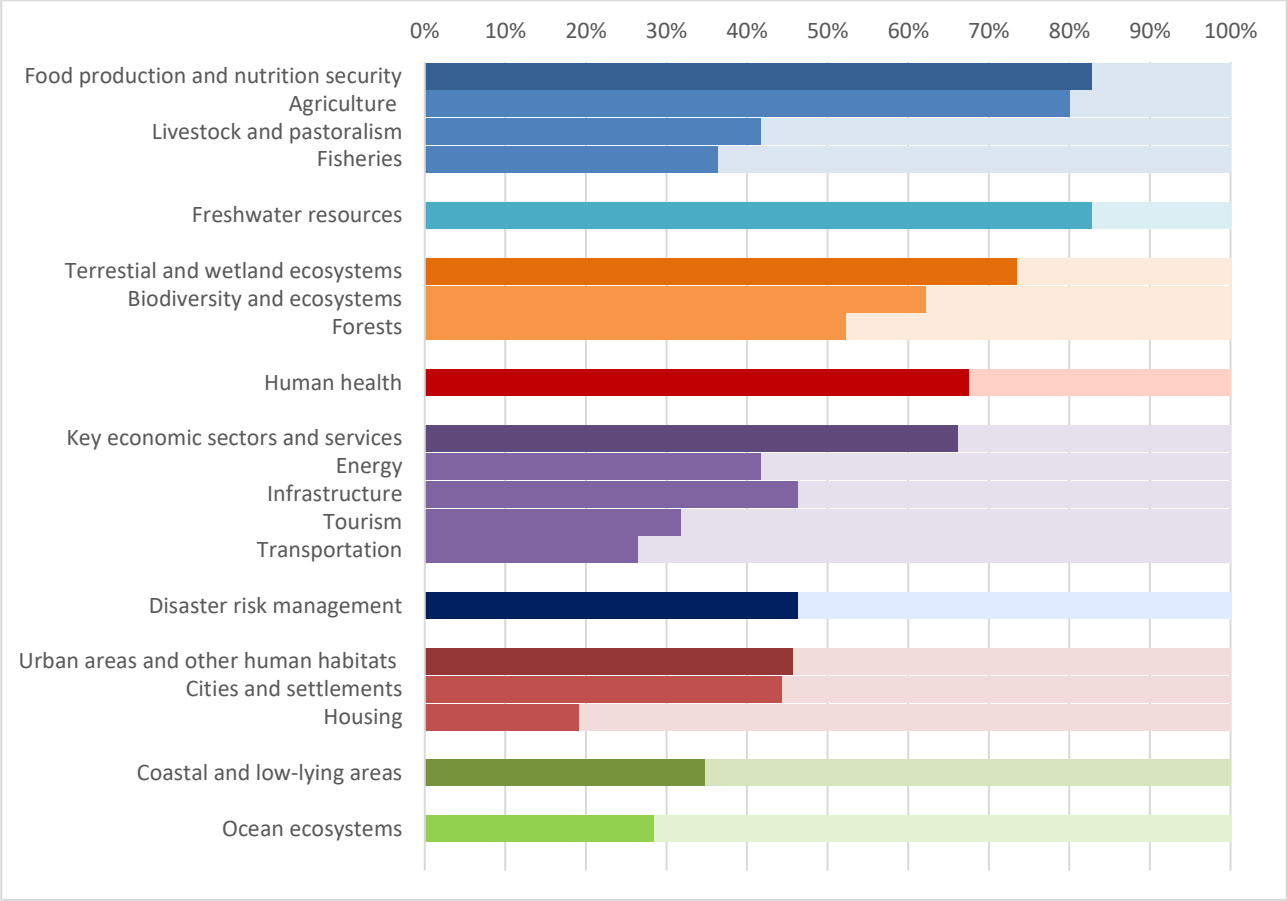
159. Most of the Parties that included an adaptation component considered how to enhance adaptation-relevant research, data, information and monitoring, and ensure that adaptation efforts are informed by science. Some of the adaptation components described efforts to enhance research through, for example, data collection programmes, national census on impacts, monitoring systems, observation networks, research centres, strengthened weather services, climate and risk modelling, risk maps with climate data and scenarios, and international cooperation. Research efforts focus in particular on oceans, coastal areas, land use and ecosystems. Research related to specific impacts includes development of flood or multi-hazard monitoring systems, sea level research programmes and remote sensing monitoring of hydrometeorological extremes. To ensure that adaptation is guided by robust science and projections, Parties are aiming to develop, for example, integrated climate information systems, open-source data, data pooling and sharing platforms for accessing information, and forecasting tools and scenarios.

4. Pre-emptive adaptation

160. Many Parties that provided an adaptation component described the process for formulating and implementing their NAP and its status. Some indicated that they have developed a NAP, while others identified their intention to do so, including a timeline for completion or update and/or implementation. Some Parties outlined links between their NAP and NDC, including how the NAP provided the basis for the adaptation component, how both build on the same vulnerability assessment, and how the NAP and NDC can be aligned. Some Parties described the scope of their NAP, including in relation to enabling risk and vulnerability analysis; integrating adaptation into development planning; enhancing climate information; strengthening adaptive, institutional, policy and technical capacities; outlining and prioritizing adaptation needs, objectives, milestones and actions as well as costs of adaptation; providing a framework for planning, implementation and coordination; integrating adaptation across frameworks and sectors; enhancing financing, engagement and gender-responsiveness; strengthening monitoring and evaluation (including by defining quantifiable goals and indicators for priority sectors); and enabling consideration of co-benefits between mitigation and adaptation.

161. Parties also described other policy frameworks relevant to adaptation, including information on how such frameworks provide a basis for adaptation efforts and how adaptation is integrated into and strengthened under other frameworks, such as adaptation-specific frameworks, national climate plans, local government or community-level plans, sectoral plans relevant to adaptation priorities, disaster risk reduction policies, national and regional development frameworks and UNFCCC frameworks (e.g. national adaptation programmes of action, technology needs assessments and the economic diversification initiative). A few Parties highlighted the inclusion of adaptation considerations in their national constitution.

Figure 10
Share of adaptation components of nationally determined contributions referring to specific adaptation priority areas and sectors



162. Parties provided a wide range of information on adaptation in various priority areas (see figure 10). The key efforts in those priority areas are described below.[56]

163. Climate impacts pose multiple risks to food security, including reduced production of major crops (wheat, rice and maize) and redistribution of marine fisheries.[57] In most adaptation components, measures for adapting food production systems and ensuring food security were prioritized, encompassing adaptation efforts in the areas of agriculture, livestock and fisheries. In agriculture, adaptation is being pursued via sectoral vulnerability analysis research, planning, diversification, financial mechanisms and insurance, systems for agroclimatic information and improvements to post-harvest processing. As technical solutions, Parties are focusing on, for example, temperature-, pest-, disease-, flood- and/or drought-resistant crops, seed banks, enhanced pest and disease control, enhanced irrigation and water use, and sustainable, climate-smart and integrated land-use and cultivation methods. Many adaptation components highlighted measures for enhancing resilience, sustainability and productivity of livestock and pastoralism, including research, disease control, rangeland management, more resilient breeds and feeds, insurance and diversification. The measures for enhancing sustainability of fisheries involve research, diversification, capacity-building, sustainable management, habitat protection and financial instruments (e.g. insurance).

[56] See document FCCC/PA/CMA/2021/8/Add.1 for information on specific measures and quantitative targets in each priority area.

[57] See pp.17–18 of IPCC. 2014. Summary for Policymakers. *In*: CB Field, VR Barros, DJ Dokken, et al. (eds.). *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge and New York: Cambridge University Press. Available at https://www.ipcc.ch/report/ar5/wg2/.

164. Climate change is expected to have negative impacts on human health up to 2050, including increased likelihood of undernutrition from diminished food production; injury, disease and death from more intense heatwaves and fires; and higher risks from food-, water- and vector-borne diseases.[58] Health was identified as an adaptation priority in many of the adaptation components, with relevant policy frameworks and plans described. The importance of building the capacity of health institutions and enhancing information and awareness was highlighted. Enhancing the climate resilience of public health systems was a recurring theme, with Parties aiming to build or improve related infrastructure. Parties are focusing on enhancing impact and disease surveillance and monitoring, providing training and education to healthcare professionals and communities, and performing vulnerability assessment and mapping. Measures tend to focus on improving sanitation and hygiene practices, as well as responding to climate-sensitive vector- or water-borne diseases, respiratory impacts and heatwaves.

165. According to current climate change projections, a large fraction of terrestrial species face an increased risk of extinction, with many regions projected to experience increased tree mortality and forest dieback owing to increased temperatures and drought.[59] Most adaptation components described adaptation efforts to protect terrestrial ecosystems and forests, with Parties aiming in particular to increase protected areas and connectivity, enhance urban biodiversity and forest areas, conserve vulnerable or threatened species, restore degraded lands and ecosystems and implement sustainable forest management and reforestation.

166. Global populations experiencing water scarcity and affected by major river floods are projected to increase, and climate change is expected to reduce raw water quality and pose risks to drinking water quality.[60] In most adaptation components, freshwater resources were identified as a priority area and measures for enhancing availability, efficiency and quality of water supplies were presented, including enhancing or building water infrastructure and water resource plans, strategies and systems. Parties are aiming to strengthen watershed management, efficiency of water use and irrigation. Integrated water resources management, protection and restoration of water-related ecosystems such as forests, wetlands and rivers, and supply diversification were highlighted measures. Efforts to promote transboundary water management and cooperation were also included.

167. Low-lying coastal areas are increasingly exposed to the risks associated with sea level rise as a result of increasing warming, which include saltwater intrusion, flooding, and infrastructure damage.[61] Many adaptation components included measures for protecting coastal and low-lying areas, including river deltas, and addressing sea level rise, erosion and saltwater intrusion. A few identified preventing loss of land as a main adaptation objective, with efforts including assessing and monitoring impacts on and vulnerability of coasts and national plans for coastal protection and management, implementing nature-based solutions for coastal restoration and protection and defining standards, regulations and guidelines for construction and flood protection. Parties also described efforts to adopt integrated coastal zone management approaches.

168. Coastal ecosystems are being affected by ocean warming, sea level rise, oxygen loss, acidification, intensified marine heatwaves, and salinity intrusion. Sea level rise is impacting coastal ecosystems through habitat contraction, geographical species shift, and loss of ecosystem functionality and biodiversity.[62] Some adaptation components outlined efforts to adapt ocean ecosystems to promote sustainable development while safeguarding oceans. Measures are focused on investing in ocean and the ‘blue’ economy and protecting marine and coastal ecosystems, with a focus on coral reefs, and seagrass and mangrove restoration and conservation. To support these measures, Parties identified steps to establish or strengthen related monitoring, surveillance and assessment systems and programmes.

[58] As footnote 57 above, pp.19–20.
[59] As footnote 57 above, pp.14–15.
[60] As footnote 57 above, p.14.
[61] See p.8 of the SR1.5.
[62] See p.13 of IPCC. 2019. Summary for Policymakers. *In*: H-O Pörtner, DC Roberts, V Masson-Delmotte, et al. (eds.). *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*. Available at https://www.ipcc.ch/srocc/chapter/summary-for-policymakers/.

169. Climate change is expected to impact key economic sectors. For instance, patterns of energy demand will change in particular in terms of heating and cooling needs, and supply will be affected depending on sources, technologies and regions.[63] Many adaptation components described efforts to adapt key economic sectors and services, in particular energy, infrastructure, transportation and tourism. Efforts in the energy sector include impact analysis and planning, protection of hydropower resources and installations, diversification (e.g. by expanding clean energy), energy efficiency, energy conservation (through standards, labels and awareness) and storage. A few Parties outlined adaptation plans for the mining sector, which include tools for ensuring operability of hydrocarbon facilities. Parties are aiming to ensure resilience of infrastructure through, for example, risk assessments for critical infrastructure, building codes and resilience standards, associated education, elevation and nature-based solutions. Transportation was a focus area in some adaptation components, with adaptation measures including enhancing risk evaluation, such as by using geographic information systems, and developing green road infrastructure. Tourism is to be addressed through, for example, mainstreaming climate risk in sectoral policies; financial instruments and insurance; diversification towards, for example, green tourism; and protecting key locations (e.g. winter resorts, coasts and heritage sites). In some adaptation components, the industrial sector was considered in adaptation planning.

170. Climate change is projected to slow down economic growth and make poverty reduction more difficult.[64] Some adaptation components identified livelihoods as an adaptation priority area. Innovative livelihood strategies, social safeguards for vulnerable, financial assistance economic diversification were identified as being helpful in responding to loss of livelihoods.

171. Many key climate risks will impact urban areas,[65] and major impacts are projected in rural areas on water supply, food security and agricultural income.[66] Human habitats and settlements, including urban areas, were identified as priority areas in many adaptation components. Efforts in this area are aimed at adapting and enhancing the resilience of both rural and urban settlements, responding to human mobility needs and addressing forced displacement. Measures include conducting research to understand the links between climate and migration; improving housing and other infrastructure; establishing temporary resettlement and shelter programmes to support displaced people; creating migration opportunities and arrangements for relocation, while ensuring the right to remain. Some efforts are focused on adaptation of cities and urban areas, including through planning, vulnerability and risk assessment, upgrading informal settlements and creating urban greening and nature-based solutions.

172. Many adaptation components described measures for enhancing disaster risk management and early warning systems. Policy and institutional measures include enhancing risk assessment and monitoring, integrating disaster risk management into adaptation efforts, and establishing early warning systems, including a national multi-hazard early warning system, community-based systems, or systems specific to particular areas or sectors (e.g. coasts and rivers, forestry and ecosystems, water, agriculture, transportation, infrastructure, health and tourism) or hazards (e.g. for sea level rise, extreme events, disease outbreaks, drought and floods).

5. Contingency measures

173. Contingency measures for dealing with emergencies and impacts that occur regardless of adaptation efforts were highlighted in some adaptation components, such as strengthening resilience to impacts beyond the limits of adaptation through NAPs; search and rescue, contingency or emergency plans and systems; emergency shelters; humanitarian assistance

[63] As footnote 57 above, p.19.
[64] As footnote 57 above, p.20.
[65] See p.538 of IPCC. 2014. *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. CB Field, VR Barros, DJ Dokken, et al. (eds.). Cambridge and New York: Cambridge University Press. Available at http://www.ipcc.ch/report/ar5/wg2.
[66] As footnote 65 above, p.616.

civil defence; evacuation procedures; emergency or contingency funding; food reserves; disaster insurance schemes; livelihood protection policies; and support for displaced persons. For the agriculture and livestock sectors, Parties referred to insurance and risk management mechanisms, as well as post-disaster relief. In the fisheries sector, measures include using financial instruments such as insurance against extreme events and establishing a minimum income for fishers. Measures were also suggested for health, infrastructure, coasts and tourism.

6. Monitoring and evaluation, and understanding progress

174. Many Parties described in their adaptation components their efforts to enhance monitoring and evaluation of adaptation, such as by focusing on tracking progress, reducing vulnerability, improving efficiency and effectiveness of actions, NAP implementation and support. Approaches included using systems for integrating climate and adaptation information, sectoral monitoring tools (e.g. in agriculture and tourism) and a platform for integrating tools for monitoring climate risk and low-emission development. Some of those Parties identified and described their intention to apply global, national or sectoral quantitative indicators for monitoring the development of specific climate parameters and impacts, and monitoring progress of specific measures and/or sectoral performance, including towards targets linked to a specific baseline. Quantified targets were identified in particular for the water, agriculture, forestry, sanitation, livestock, health, energy, transportation, hygiene, infrastructure and biodiversity sectors. See document FCCC/PA/CMA/2021/8/Add.2 for an overview of more specific targets defined for key adaptation areas.

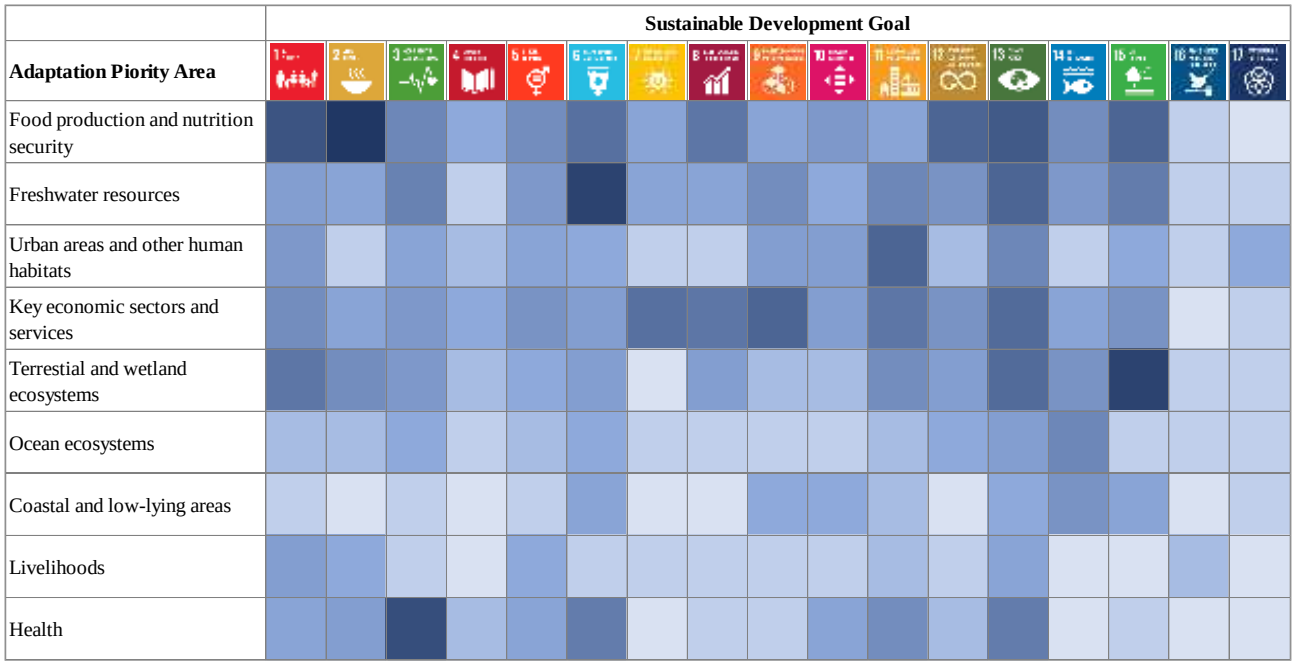
7. Synergies with mitigation and sustainable development

175. Some Parties elaborated on synergies between adaptation and mitigation (mitigation co-benefits of adaptation action are covered in chap. IV.G above). A few Parties identified how their mitigation action can generate adaptation co-benefits. For example, in the energy sector, using renewable energy can also enhance energy security and access to water and reduce pollution. Other mitigation measures, such as fuel switching, increasing efficiency, and forest preservation, afforestation and reforestation, were described as having adaptation co-benefits (e.g. mangrove forests protect coastlines). The health co-benefits of emission reductions were also highlighted.

176. Some Parties described how their adaptation actions relate to sustainable development frameworks, describing the overall linkages and synergies between their adaptation efforts and efforts towards the SDGs; identifying the essential role of adaptation in the achievement of SDGs, as well as the role of sustainable development in successful adaptation; and emphasizing the importance and benefits of integrating implementation of climate and SDG-related efforts. Further, some Parties specified how adaptation in specific priority areas contributes to achieving individual SDGs. Figure 11 provides an overview of the specific synergies identified between adaptation efforts and efforts towards SDGs.

Figure 11

Synergies between efforts in adaptation priority areas and efforts towards Sustainable Development Goals identified in nationally determined contributions



Note: The shading reflects how frequently linkages were identified by Parties: the darker the shading, the more frequently linkages were identified.

K. Domestic mitigation measures

177. Under Article 4, paragraph 2, of the Paris Agreement, Parties shall pursue domestic mitigation measures with the aim of achieving the objectives of their NDCs.

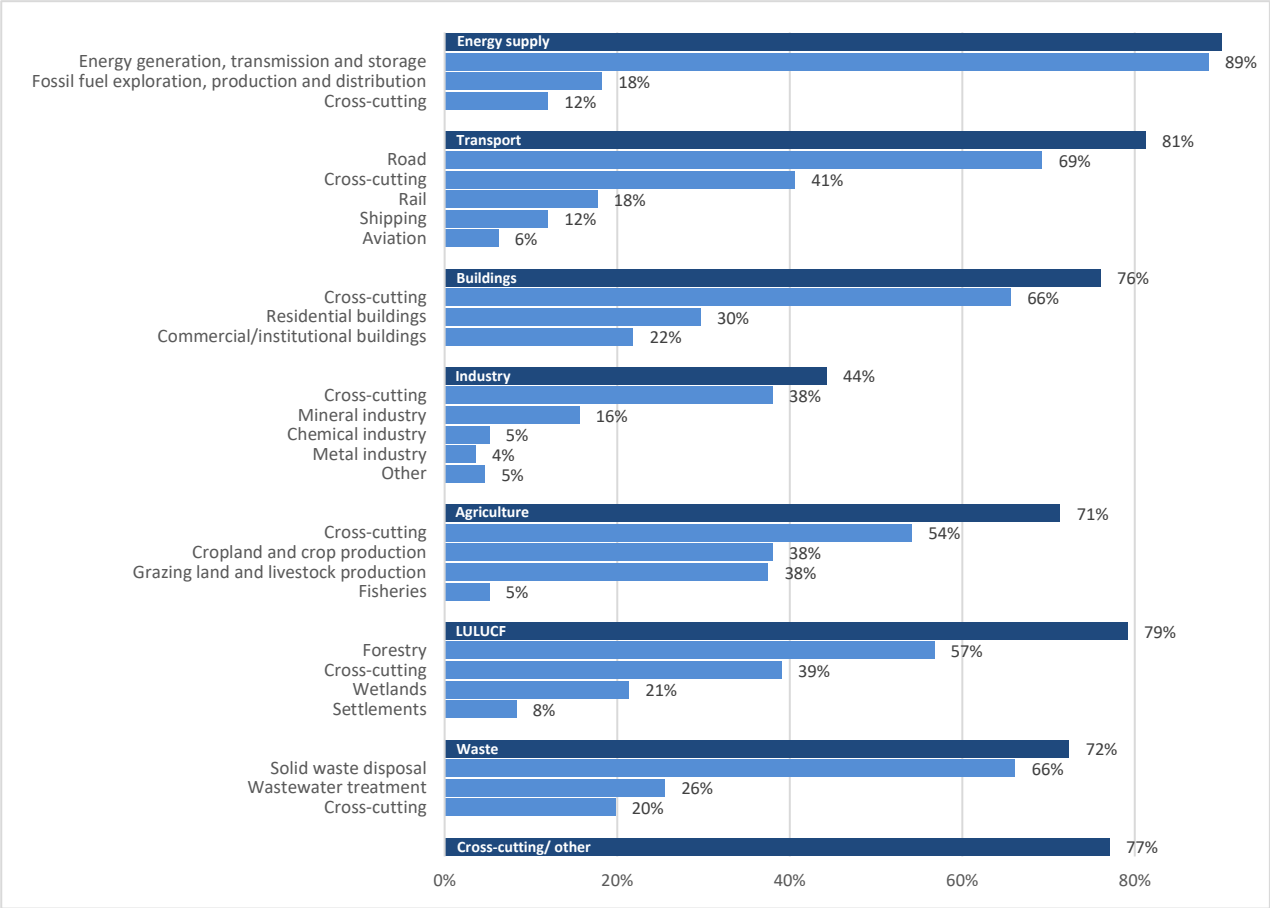
178. Almost all Parties outlined such measures in their NDCs as key instruments for achieving mitigation targets of their NDCs and/or specific priority areas of national importance, which are often a subset of one or more IPCC sectors, including energy supply, transport, buildings, industry,[67] agriculture, LULUCF and waste. Most Parties communicated measures in the priority areas of energy supply, transport, LULUCF, buildings, agriculture and waste, while much fewer indicated measures in industry (see figure 12).

179. Many Parties communicated one or more quantitative mitigation targets specific to priority areas or sub-areas, which support and underpin their overall mitigation targets. Such quantitative mitigation targets were provided most frequently for energy supply by many Parties, followed by LULUCF and cross-cutting or other.

[67] Covers measures targeting emissions from fuel use in industry, industrial process emissions and emissions from product use. For the scopes of the other priority areas, including cross-cutting or other, see document FCCC/PA/CMA/2021/8/Add.2.

Figure 12

Share of Parties referring to specific priority areas and sub-areas for domestic mitigation measures in nationally determined contributions



Note: If a Party communicated more than one measure for a specific priority area or sub-area, it was counted as one Party communicating measures for that area.

1. Sub-areas and mitigation options under priority areas

180. Of the sub-areas under priority areas communicated, energy generation, transmission and storage was most frequently identified by most Parties, followed by road transport; cross-cutting sub-area[68] under buildings; solid waste disposal; forestry; and cross-cutting sub-area under agriculture(see figure 12), which together cover the most frequently indicated mitigation options[69] (see figure 13).

181. Renewable energy generation was the most frequently indicated mitigation option, followed by improving energy efficiency of buildings; afforestation, reforestation and revegetation; multisector energy efficiency improvement; cross-cutting mitigation option under agriculture; and improving energy efficiency of transport (see figure 13). Some Parties communicated quantitative targets for renewable energy share (ranging from 15 to 100 per

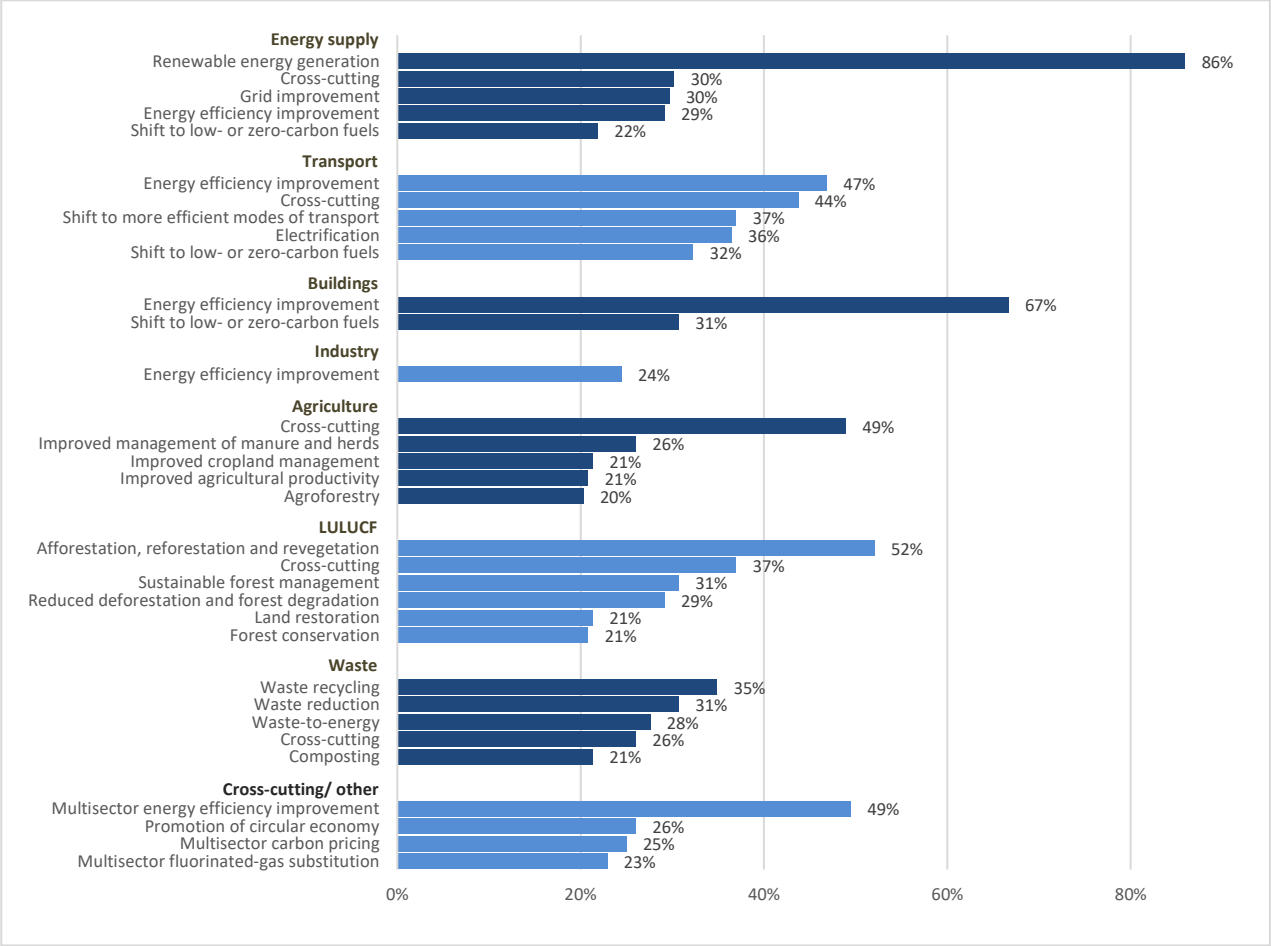
[68] Covers measures applicable to more than one sub-area under a priority area. For example, the cross-cutting sub-area under buildings covers measures applicable to both residential buildings and commercial or institutional buildings, and the cross-cutting sub-area of energy supply covers measures applicable to both energy generation, transmission and storage, and fossil fuel exploration, production, transport and distribution.

[69] Refers in this report to expected key mitigation effects or categories of domestic mitigation measures, which were identified by analysing the trend in the measures set out in the new or updated NDCs and by referring to those identified in the previous NDC synthesis report and relevant IPCC reports, including the SR1.5.

cent) in electricity generation by 2030; and many of those target shares fall within or above the IPCC range of 47–65 per cent consistent with 1.5 ºC pathways.[70]

182. For the Parties that communicated new or updated NDCs, renewable energy generation continued, as in their previous NDCs, to be the most frequently indicated mitigation option and focus of quantitative mitigation targets, with the share of Parties indicating this option and target sharply increasing from 55 to 87 per cent and from 34 to 59 per cent, respectively, since their previous NDCs.

Figure 13
Share of Parties referring to the frequently indicated mitigation options in nationally determined contributions



Note: If a Party communicated more than one measure for one of the frequently indicated mitigation options, it was counted as one Party communicating measures for that option.

183. In the priority areas related to supply and end-use of energy such as energy supply, transport, buildings and industry, renewable energy generation and shifting to low- or zero-carbon fuels were frequently or widely indicated as key mitigation options relevant to reducing the carbon intensity of electricity and other fuels (see figure 13); electrification was mentioned in relation to increasing the share of final energy supplied by electricity and switching fuel use from fossil fuels to electricity in end-use sectors such as transport and buildings, benefiting from electricity with reduced carbon intensity; and improving energy efficiency and shifting to more efficient modes of transport were often referenced in relation to reducing energy demand.

184. More broadly across all priority areas, Parties frequently indicated waste reduction, waste-to-energy, improved management of manure and herds, and fluorinated gas substitution as key mitigation options relevant to reducing non-CO_2 emissions (see figure

[70] The interquartile range of global renewable energy share in electricity generation by 2030 consistent with the emission pathways to 1.5 °C with no or limited overshoot in the SR1.5.

13). In addition, Parties often communicated mitigation options related to circular economy, including reducing and recycling waste and promoting circular economy. Measures related to multisector carbon pricing were frequently identified as efficiently incentivizing low-carbon behaviours and technologies by putting a price on GHG emissions.

185. Most Parties included mitigation measures in the area of LULUCF in their NDCs. In terms of key mitigation options relevant to enhancing carbon sequestration in soil or vegetation, afforestation, reforestation, revegetation, sustainable forest management and reduced deforestation and forest degradation were most frequently indicated (see figure 13). In this context, many developing country Parties referred to reducing deforestation as a priority with high mitigation potential, including through efforts to implement REDD+ activities. Many Parties highlighted the importance of socioeconomic and environmental non-carbon benefits resulting from these mitigation activities, including for adaptation.

186. The SR1.5 identifies mitigation options considered relevant to aligning with 1.5 °C pathways, including:

(a) Halting investment in unabated coal by 2030. A few Parties communicated corresponding measures, such as phasing out use of unabated coal to produce electricity by 2025;

(b) Phasing out of sales of fossil-fuel passenger vehicles by 2035–2050. A few Parties communicated corresponding measures, including banning new registration of diesel and gasoline vehicles after 2030;

(c) Requiring newly constructed buildings to be near zero energy by 2020. Some Parties communicated corresponding measures, such as requiring new buildings constructed after 1 January 2020 to consume almost zero energy;

(d) Expanding forest cover by 2030. Some Parties communicated quantitative targets for increasing national forest cover, such as increasing forest cover to 60 per cent of the national territory without competing for land with the agriculture sector;

(e) Reducing food waste and loss.[71] A few Parties communicated measures for reducing food waste as part of waste reduction, such as taking action through voluntary agreements with the food industry and expanding food waste collection to achieve zero food waste to landfill by 2030.

2. Coherence and synergies with development priorities

187. Many Parties highlighted policy coherence and synergies between their mitigation measures and development priorities. The share of Parties highlighting policy coherence and synergies has increased from 50 to 69 per cent in the new or updated NDCs compared with their previous NDCs.

188. Some identified domestic mitigation measures in the context of the longer-term measures and policies set out in their LT-LEDS and/or other relevant national long-term low-emission development strategies or laws; for example, by identifying domestic mitigation measures for the NDC on the basis of programmes of actions or mitigation options set out in the national LT-LEDS, by formalizing net zero emission targets by 2050 and by requiring governments to report on the implementation of measures in their NDCs at least once every five years to ensure oversight of progress towards the 2050 targets.

189. In addition, some Parties clarified the alignment between their mitigation measures and efforts towards specific SDGs, highlighting the multiple co-benefits of their measures for sustainable development and the cost-effectiveness of their measures in relation to sustainable development under their fiscal constraints, including those due to the COVID-19

[71] The SR1.5 refers to food waste as inappropriate human consumption of food that leads to food spoilage associated with inferior quality or overproduction, while it refers to food loss as the decrease in mass and nutritional value of food due to poor infrastructure, logistics and lack of storage technologies. The SR1.5 further states that decreasing food waste and loss contributes to land transition in line with 1.5 °C pathways by limiting various demands for land, including for production of food and livestock feed, that may compete with demand for land for afforestation.

pandemic. For example, some Parties communicated one or several specific SDGs in relation to which there are synergies with their priority areas or mitigation measures (see figure 14), with energy supply measures contributing to achieving SDG 7 (affordable and clean energy) and LULUCF measures contributing to achieving SDG 15 (life on land) most frequently indicated; and a few considered contribution to achieving SDGs as a criterion for identifying such measures to be included in their NDCs.

Figure 14
Synergies between efforts in mitigation priority areas and efforts towards Sustainable Development Goals identified in nationally determined contributions

Note: The shading reflects how frequently linkages were identified by Parties: the darker the shading, the more frequently linkages were identified.

190. Further, some of the Parties that communicated new or updated NDCs highlighted synergies between their mitigation measures and green recovery from the impacts of the COVID-19 pandemic, such as implementing a "Green New Deal" for accelerating implementation of the measures identified in the updated NDC.

L. Means of implementation

191. Almost all Parties provided information on some or all means of implementation in their NDCs, although the structure and depth of that information varied significantly. While some Parties included a dedicated section on means of implementation or separate sections on finance, technology and/or capacity-building, many mentioned or referred to aspects of means of implementation in other sections of their NDCs.

192. Some Parties provided information on specific climate finance, technology and capacity-building projects, including, for some, detailed information on financial and technical requirements, implementing entities and time frames.

193. Some Parties highlighted South–South, triangular or regional cooperation as support mechanisms for NDC implementation, including for specific aspects of financial assistance, capacity-building and technology development and transfer.

1. Finance

194. Almost all Parties provided information on finance as a means of NDC implementation, with most characterizing finance in terms of international support needed and some mentioning finance in relation to domestic implementation only. A few mentioned finance in the context of providing financial support for other countries' NDC implementation. Many Parties provided qualitative information on how finance will be used as a means of implementation either in general or through specific actions for financing mitigation or adaptation support, such as earmarking public expenditure, establishing climate funds or supporting financial systems. Many also included quantitative information on financial investment or expenditure to support their NDCs, such as on financing specific technology development funds, economy-wide budgetary programmes or specific projects and needs for financial support.

195. Many Parties provided quantitative estimates of financial support needs, which were often expressed as total amounts over the time frame of the NDC. Many of them provided updated quantitative estimates of financial support needs and some others provided estimates for the first time in their new or updated NDCs. Most of those Parties also made efforts to differentiate quantitative estimates for conditional actions reliant on international support from those for unconditional actions that may be financed from domestic sources.

196. Some Parties provided information on financial support needs across mitigation and adaptation themes or sectors, and a few provided total estimates. Mitigation finance is needed across renewable energy, energy efficiency, transport and forestry, while adaptation finance is needed for activities related to water, agriculture, coastal protection and resilience.

2. Technology development and transfer

197. With regard to information on technology development and transfer for NDC implementation, most Parties covered qualitative aspects and many also quantitative aspects.

198. Many Parties referred to technology development and transfer in the context of actions that inherently address both adaptation and mitigation or focus on mitigation. Many Parties also made reference to climate technology for adaptation.

199. Information provided by Parties on climate technology related matters was mainly on specific technologies to be deployed; technology needs; policy, regulatory and legal aspects; technology innovation, research and development; and support required by Parties or support provided by Parties for technology development and transfer.

200. In terms of specific technologies that Parties intend to use for achieving their adaptation and mitigation targets, the most frequently identified were cross-sectoral energy-efficient appliances and processes, enhanced utilization of renewable energy technologies such as hydropower, solar, wind and biomass, low- or zero-emission vehicles, blended fuel, waste to energy technologies and climate-smart agriculture.

201. Technology needs mentioned by Parties were mainly in the areas of energy, agriculture, water, waste, transport, climate observation and early warning. As regards technology innovation, research and development, some Parties included information on promoting collaboration between countries and promoting institutions, mechanisms, tools and business models that foster progress in this area. Actions on policy, regulatory and legal aspects commonly referred to by Parties include developing or updating policies and strategies to promote technology innovation, promoting use of renewable energy and accelerating adoption and transfer of climate technologies. A few Parties included specific information on their intended provision of support to developing country Parties, while some Parties indicated the support needed for development and deployment of clean technologies, for example in the areas of energy, energy efficiency and agriculture. Some Parties referenced technology needs assessments and technology action plans in identifying priority technology needs in adaptation and mitigation.

3. Capacity-building

202. Many Parties identified capacity-building as a prerequisite for NDC implementation. Many Parties provided a specific section containing information on capacity-building needs. Capacity-building needs were identified for formulating policies, integrating mitigation and adaptation into sectoral planning processes, accessing finance, and providing the necessary information for clarity, transparency and understanding of NDCs. Capacity-building needs were assessed in three ways: by thematic area, by sector and by category.

203. With regard to thematic areas, many Parties provided information on cross-cutting capacity-building needs, whereas many others expressed capacity-building needs for adaptation and some others for mitigation. Also, a few Parties indicated capacity-building needs for addressing loss and damage and many Parties identified their efforts or needs in relation to sectoral capacity-building. Many Parties identified capacity-building needs that

were multisectoral, followed by some others that identified needs relating to the subsector other,[72] buildings and infrastructure, energy and/or health.

204. With regard to capacity-building categories, many Parties referred to cross-cutting capacity-building needs, mainly for facilitation of training, education, peer-to-peer learning and awareness-raising. Some Parties emphasized the importance of capacity-building to support institutional strengthening in order to ensure the sustainability and retention of capacities at the national level.

205. The share of Parties that referred to capacity-building in specific sections of their new or updated NDCs increased significantly compared with their previous NDCs, with the number of Parties indicating that capacity-building needs were mostly of a multisectoral nature having risen significantly. The number of Parties expressing capacity-building needs for adaptation also increased, this being the thematic area in which most capacity-building needs were expressed. Parties continued to emphasize the importance of capacity-building to support institutional strengthening in their new and updated NDCs.

[72] Covers capacity-building needs and gaps applicable to sectors that do not fall within the sectors identified for the data analysis, such as sustainable tourism, empowerment of women, youth engagement, coastal areas, waste management, GHGs and land.