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الدورة الحادية والعشرون

باريس، ٣٠ تشرين الثاني/نوفمبر – ١١ كانون الأول/ديسمبر ٢٠١٥

البند ٤(أ) من جدول الأعمال المؤقت

منهاج ديربان للعمل المعزز (المقرر ١/م أ–١٧)

تقرير الفريق العامل المخصص المعني بمنهاج ديربان للعمل المعزز

تقرير توليفي عن الأثر الإجمالي للمساهمات المعتزمة المحددة وطنياً

مذكرة من الأمانة

موجز

تقدم هذه الوثيقة تقريراً توليفياً عن الأثر الإجمالي للمساهمات المعتزمة المحددة وطنياً (المساهمات المعتزمة)، وعددها ١١٩ مساهمة أبلغ عنها ١٤٧ طرفاً حتى ١ تشرين الأول/أكتوبر ٢٠١٥. ويقدم التقرير تقديراً لإجمالي مستويات انبعاثات غازات الدفيئة في عامي ٢٠٢٥ و٢٠٣٠ نتيجة تنفيذ هذه المساهمات المعتزمة، ويقارنها بمستويات الانبعاثات في الأعوام ١٩٩٠ و٢٠٠٠ و٢٠١٠ وبمسارات الانبعاثات، بما يتسق مع: (١) الإجراءات التي أبلغت عنها الأطراف للفترة ما قبل عام ٢٠٢٠؛ و(٢) شرط الإبقاء على ارتفاع متوسط درجات الحرارة العالمية دون درجتين مئويتين فوق مستويات ما قبل العصر الصناعي. ويحدد هذا التقرير الاتجاهات التي تنطوي على فرص لتعزيز العمل على التصدي لتغير المناخ في الأمد الطويل ويناقشها. كما يقدم توليفاً للمعلومات المتعلقة بعنصر التكيف في المساهمات المعتزمة الواردة من ١٠٠ طرف.

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المحتويات

أولاً- موجز

ألف- الولاية والنهج

١- تشكل هذه الوثيقة تقريراً توليفياً عن الأثر الإجمالي للمساهمات المعتزمة المحددة وطنياً (المساهمات المعتزمة) المقدمة من الأطراف استجابة للدعوة التي وجهها مؤتمر الأطراف في المقرر ١/م أ-١٩ والمقرر ١/م أ-٢٠.

٢- وكان مؤتمر الأطراف قد طلب إلى الأمانة، بموجب الفقرة ١٦(ب) من المقرر ١/م أ-٢٠، أن تعد بحلول ١ تشرين الثاني/نوفمبر ٢٠١٥ تقريراً توليفياً عن الأثر الإجمالي للمساهمات المعتزمة التي ستقدمها الأطراف بحلول ١ تشرين الأول/أكتوبر ٢٠١٥. ويضم هذا التقرير معلومات مجمعة ومؤلفة من المساهمات المعتزمة وعددها ١١٩ مساهمة وردت من ١٤٧ طرفاً حتى تاريخه. ويتضمن مرفق تقني منشور على الشبكة المزيد من المعلومات التفصيلية عن المنهجية المستخدمة في التقييم الكمي الوارد في هذا التقرير[(١)].

٣- واستجابة للولاية التي كلفت بها الأمانة، يقدم هذا التقرير تقديراً للمستوى الإجمالي لانبعاثات غازات الدفيئة في عامي ٢٠٢٥ و٢٠٣٠ نتيجة تنفيذ المساهمات المعتزمة. وقد حُسبت هذه التقديرات سنوياً وتراكمياً على السواء. ويتضمن التقرير أيضاً توليفاً للمعلومات المتعلقة بعنصر التكيف في المساهمات المعتزمة التي أبلغت عنها الأطراف.

٤- وحيث لم تبلغ جميع الأطراف عن مساهماتها المعتزمة بحلول ١ تشرين الأول/أكتوبر ٢٠١٥، ولم تغط كل المساهمات المعتزمة الواردة جميع الغازات والقطاعات، فإن الإجمالي المقدر لمستوى الانبعاثات المشمولة بهذه المساهمات يعد مجموعة فرعية من مجموع الانبعاثات العالمية[(٢)]. ولحساب تقديرات الانبعاثات العالمية في سنة بعينها، تُستخدم السيناريوهات المرجعية للهيئة الحكومية الدولية المعنية بتغير المناخ (هيئة المناخ) لتقدير الانبعاثات غير المشمولة بالمساهمات المعتزمة حتى عام ٢٠٣٠. وتعكس السيناريوهات المرجعية المختارة الإجراءات التي أبلغت عنها الأطراف لفترة ما قبل عام ٢٠٢٠ وتبقي على السياسات المتعلقة بالمناخ ثابتة بعد ذلك (يُشار إليها أدناه بمسارات ما قبل المساهمات المعتزمة). ومن ثم، حُسبت مستويات الانبعاث العالمية في عامي ٢٠٢٥ و٢٠٣٠، المستندة إلى المساهمات المعتزمة، بجمع إجمالي الانبعاثات الناتجة عن المساهمات المعتزمة

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(١) متاح على الرابط: <http://unfccc.int/focus/indc_portal/items/9240.php>.

(٢) لا تتضمن المساهمات المعتزمة أيضاً الانبعاثات الناجمة عن الطيران الدولي والنقل البحري. ويستند هذا التقرير إلى افتراضات هدف النمو المتعادل الأثر الكربوني في فترة ما بعد عام ٢٠٢٠، الذي حددته منظمة الطيران المدني الدولي (انظر <http://www.icao.int/Meetings/a38/Documents/WP/wp430_en.pdf>)، ومجموعة سيناريوهات توقعات انبعاثات ثاني أكسيد الكربون التي عرضتها المنظمة البحرية الدولية في *دراستها الثالثة لانبعاثات غازات الدفيئة* لعام ٢٠١٤ (انظر: <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Greenhouse-Gas-Studies-2014.aspx>).

والانبعاثات المتبقية المستقاة من السيناريوهات المرجعية لهيئة المناخ[٣]. وتُعرض التقديرات على شكل قيم متوسطة وما يرتبط بها من نطاقات، نظراً للافتراضات والشروط المتنوعة التي حددتها الأطراف في تقاريرها وتعبيراً عن أوجه عدم اليقين المرتبطة بالثغرات في المعلومات.

٥- وتُناقش كذلك المستويات التقديرية للانبعاثات العالمية في عامي ٢٠٢٥ و٢٠٣٠ فيما يتصل باتجاهات الانبعاثات الماضية والمتوقعة مستقبلاً، على النحو التالي:

(أ) مستويات الانبعاثات العالمية لغازات الدفيئة في الأعوام ١٩٩٠ و٢٠٠٠ و٢٠١٠؛

(ب) مستويات الانبعاثات العالمية لغازات الدفيئة في عامي ٢٠٢٥ و٢٠٣٠ الموازية لمسارات ما قبل المساهمات المعتزمة والمتسقة مع الإجراءات التي أبلغت عنها الأطراف لعام ٢٠٢٠ أو قبله؛

(ج) مستويات الانبعاثات العالمية لغازات الدفيئة في عامي ٢٠٢٥ و٢٠٣٠ الموازية للسيناريوهات الأقل التكلفة والمتسقة مع الإبقاء على ارتفاع درجات الحرارة دون درجتين مئويتين فوق مستويات ما قبل العصر الصناعي (ويشار إليها أدناه بسيناريوهات الدرجتين المئويتين).

٦- وأخيراً، يناقش هذا التقرير عدداً من الاتجاهات المحددة التي تنطوي على فرص للعمل المعزز في الأجل الطويل، بهدف توفير معلومات عن الأثر الإجمالي للمساهمات المعتزمة بعد عام ٢٠٣٠. واستناداً إلى المعلومات الواردة في المساهمات المعتزمة، تناقَش هذه الاتجاهات من نواحي المشاركة، والسياسات والمؤسسات، والتعاون، والظروف الوطنية، والطموح.

٧- ووفقاً لمقتضيات الولاية، لا يقدم هذا التقرير أو يحلل المساهمات المعتزمة لأي طرف على حدة وإنما يركز على الأثر الإجمالي لمساهمات الأطراف كافة كمجموعة. كما أنه يشكل دراسة منفردة عن هذه المساهمات لا نظرة عامة أو تقييماً لدراسات متنوعة أجرتها أطراف ثالثة.

باء- استعراض عام للمساهمات المعتزمة المحددة وطنياً

٨- في ١ تشرين الأول/أكتوبر ٢٠١٥، **كانت قد وردت ١١٩ مساهمة من المساهمات المعتزمة المحددة وطنياً، تشمل ١٤٧ طرفاً في الاتفاقية**[٤]، من بينها منظمة تكامل اقتصادي إقليمي واحدة[٥]، **وتمثل ٧٥ في المائة من الأطراف و٨٦ في المائة من الانبعاثات العالمية في عام ٢٠١٠**. وبما أن المساهمات المعتزمة المقدمة لا تغطي بعض القطاعات والغازات، فهي

(٣) للمزيد من المعلومات عن النهج، انظر الفصل ثانياً-جيم.

(٤) ترِد في الحاشية ٢٨ قائمة كاملة بالأطراف التي قدمت مساهمات معتزمة حتى ١ تشرين الأول/أكتوبر ٢٠١٥.

(٥) احتُسبت المساهمة المعتزمة للاتحاد الأوروبي ودوله الأعضاء على أنها مساهمة واحدة تمثل ٢٩ طرفاً (الاتحاد الأوروبي ودوله الأعضاء الـ ٢٨).

تشمل ٨٠ في المائة من الانبعاثات العالمية. وقد أدرجت جميع الأطراف معلومات عن مساهماتها في مجال التخفيف. كما أُدرج عنصر التكيف في مساهمات ١٠٠ من الأطراف بما يمثل ٨٤ في المائة من المساهمات المعتزمة.

٩- وفيما يتفاوت هيكل ومحتوى المساهمات المعتزمة المقدمة، **فإن غالبية الأطراف**[٦] **تناولت صراحة عناصر المعلومات المدرجة في الفقرة ١٤ من المقرر ١/م أ-٢٠**. وقدمت أطراف عديدة معلومات إضافية عن أمور مثل الآليات القائمة على السوق واحتياجات الدعم لتنفيذ مساهماتها المعتزمة، بما في ذلك التمويل المحلي والدولي، ونقل التكنولوجيا وتطويرها، ودعم بناء القدرات.

١٠- ويضم الفصل أولاً - جيم أدناه توليفاً للمعلومات الواردة من الأطراف عن مساهماتها المعتزمة، بما في ذلك معلومات عن النقاط المرجعية، والأطر الزمنية، والنطاق والتغطية. ويقدم الفصل أولاً - دال عرضاً عاماً عن الأثر الإجمالي للمساهمات المعتزمة، بما في ذلك ما تنطوي عليه المساهمات المعتزمة من فرص لمواجهة تغير المناخ في الأمدين المتوسط والطويل. وأخيراً، يقدم الفصل أولاً - هاء معلومات عن عنصر التكيف في المساهمات المعتزمة.

جيم- توليف المعلومات في المساهمات المعتزمة المحددة وطنياً المقدمة

١١- **تتسم غالبية المساهمات المعتزمة بنطاقها الوطني، وتتناول جميع الانبعاثات الوطنية الرئيسية من غازات الدفيئة أو على الأقل أهم مصادرها. ويتضمن العديد منها أهدافاً محددة كمياً للحد من الانبعاثات، تتخذ أشكالاً متعددة** (انظر الشكل ١):

(أ) يضم بعض المساهمات المعتزمة أهداف تخفيف على نطاق الاقتصاد ككل، تنطوي على أهداف مطلقة للحد من الانبعاثات يُعبّر عنها بخفض الانبعاثات إلى دون مستواها في سنة أساس محددة، وتتراوح نسبة الخفض بين ٩,٨ إلى ٩٠ في المائة. وتضمنت بضع مساهمات معتزمة أهدافاً مطلقة لا ترتبط بسنة أساس محددة وإنما تقتضي حداً أقصى مطلقاً إجمالياً من الانبعاثات (تعادل الأثر الكربوني بحلول موعد معين مثلاً)؛

(ب) تتضمن نصف المساهمات المعتزمة أهدافاً نسبية للحد من الانبعاثات دون مستوى سيناريو 'بقاء الأمور على حالها'، إما للاقتصاد ككل أو لقطاعات معينة، بنسبة تتراوح بين ١,٥ و٨٩ في المائة؛

(٦) في هذا التقرير، تُطبق النعوت التالية لتحديد نسبة المساهمات المعتزمة المقدمة التي تتناول مسألة ما: "بضعة" لنسبة تقل عن١٠ في المائة من المساهمات؛ و"بعض" لنسبة تتراوح بين ١٠ و٤٠ في المائة؛ و"عدة" لنسبة تتراوح بين ٤٠ و٧٠ في المائة؛ و"عديدة" لنسبة تتراوح بين ٧٠ و٩٠ في المائة؛ و"غالبية" لنسبة ٩٠ في المائة فما فوقها. ويستخدم الفصل أولاً - هاء أدناه هذه النعوت للإشارة إلى نطاق نسبة المساهمات المعتزمة التي تتناول مسألة معينة تُعنى بالتكيف.

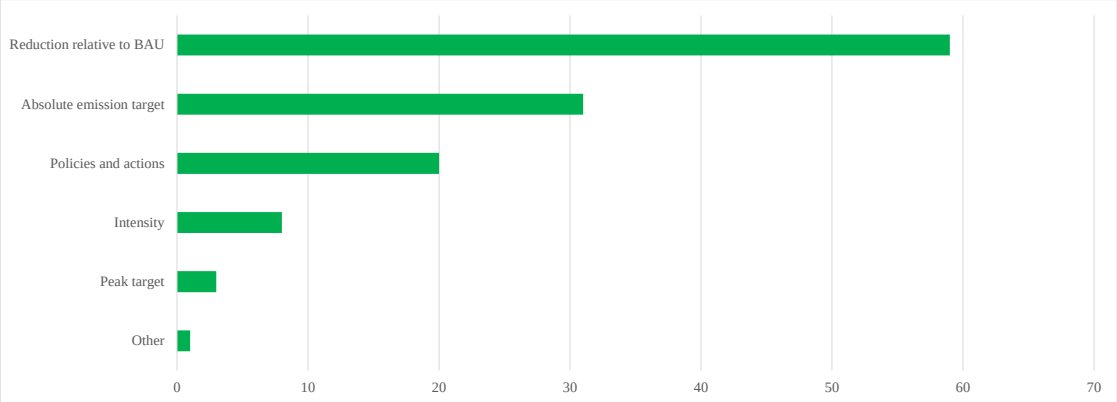
(ج) تتضمن بضع مساهمات معتزمة أهدافاً تتعلق بالكثافة، حيث تتراوح الانخفاضات في انبعاثات غازات الدفيئة لكل وحدة من الناتج المحلي الإجمالي أو للفرد بين ١٣ و٦٥ في المائة بالنسبة لمستواها في سنة أساس محددة (مثلاً ٢٠٠٥ أو ٢٠١٠) أو بالنسبة لمستوى الانبعاثات المطلق للفرد بحلول عام ٢٠٢٥ أو ٢٠٣٠؛

(د) حددت بضع مساهمات معتزمة السنة أو الإطار الزمني الذي يتوقع أن تصل فيه انبعاثات الطرف المعني إلى ذروتها (بحلول عام ٢٠٣٠ أو قبله مثلاً)؛

(هـ) تضمنت بعض المساهمات المعتزمة استراتيجيات وخططاً وإجراءات تتعلق بالتنمية الخفيضة الانبعاثات من غازات الدفيئة بما يعكس الظروف الخاصة للأطراف المعنية، وفقاً لما ورد في الفقرة ١١ من المقرر ١/م أ-٢٠.

الشكل ١

أنواع أهداف التخفيف الواردة في المساهمات المعتزمة المحددة وطنياً



مختصر: BAU= سيناريو بقاء الأمور على حالها.

١٢- **وأدرجت بعض الأطراف في مساهماتها المعتزمة أهدافاً كمية قطاعية أو قطاعية فرعية.** وأدرجت بضعة أطراف أهدافاً تتعلق بقطاعي الطاقة واستخدام الأراضي وتغيير استخدام الأراضي والحراجة ضمن أهدافها المرتبطة بالاقتصاد ككل، فيما حددت بعض الأطراف أهدافاً للطاقة المتجددة ضمن المعلومات الرامية إلى تيسير وضوح مساهماتها المعتزمة وشفافيتها وفهمها. وأُدرجت الأهداف المتعلقة بالطاقة المتجددة باستخدام مؤشرات مختلفة، منها التعبير عنها كحصة من مصفوفة الطاقة، والقدرات المنشأة، والتوليد والانتشار، وتراوحت نسبتها بين ٣,٥ و١٠٠ في المائة من هذه المؤشرات.

١٣- **وحددت أطراف عديدة شروطاً لتنفيذ مساهماتها المعتزمة بالكامل**، مثل التوقعات المتعلقة بنتائج عملية الفريق العامل المخصص المعني بمنهاج ديربان للعمل المعزز (فريق منهاج ديربان)؛ ومستوى الجهد الذي تبذله الأطراف الأخرى؛ ومدى توفر الآليات القائمة على السوق؛

وإمكانية الاستفادة من تعزيز الموارد المالية ونقل التكنولوجيا والتعاون التقني، بالإضافة إلى تعزيز دعم بناء القدرات. ولم تحدد بعض الأطراف شروطاً لمساهماتها المعتزمة.

١٤- **وتتضمن بعض المساهمات المعتزمة عنصر تخفيف غير مشروط إلى جانب عنصر تخفيف معزز مشروط.** وتتعلق معظم العناصر المشروطة بتقديم الدعم المالي أو التكنولوجي أو دعم بناء القدرات تقابله زيادة في النسبة المئوية لمستوى الجهد المرتبط بالعنصر غير المشروط ذي الصلة. وترتبط زيادة النسبة المئوية بنوع الهدف الذي اختاره الطرف (كخفض نسبة الانبعاثات قياساً بسنة أساس معينة أو بسيناريو بقاء الأمور على حالها أو بكثافة الانبعاثات مثلاً) وتتراوح بين ٢ و٥٣ نحو نسبة مئوية من خفض الانبعاثات الإضافي.

١٥- إضافة إلى ذلك، أشارت بضعة أطراف في مساهماتها المعتزمة إلى توقعاتها بأن تتمخض المفاوضات الجارية في إطار فريق منهاج ديربان عما يلزم من وضوح لاستيفاء بعض الشروط المذكورة أعلاه. **وأشارت بضعة أطراف أيضاً إلى احتفاظها بالحق في تنقيح مساهماتها المعتزمة في ضوء النتائج الذي ستفضي إليها عملية الفريق.**

١٦- وبالإضافة إلى تحديد أهداف التخفيف لعام ٢٠٢٥ أو عام ٢٠٣٠، **أدرجت بعض الأطراف رؤية أبعد أمداً للتنمية الخفيضة الانبعاثات، جُعلت، في بعض الحالات، غايةً لبلوغ هدف الانبعاثات الصفرية.** وتتراوح الأهداف ذات الصلة بين تخفيض انبعاث غازات الدفيئة بحلول عام ٢٠٥٠ بنسبة ٢٥ في المائة عن مستواها بالنسبة لسيناريو بقاء الأمور على حالها أو بالنسبة لسنة أساس معينة (مثلاً ١٩٩٠ أو ٢٠٠٠) وتخفيض مستويات نصيب الفرد من الانبعاث في المستقبل أو تحقيق تعادل الأثر الكربوني بحلول عام ٢٠٥٠ أو ٢٠٨٥.

١٧- ولتحديد النقطة المرجعية، اختارت بعض الأطراف عام ١٩٩٠، واختارت بضعة منها عام ٢٠٠٥، فيما أشارت أطراف أخرى في مساهماتها إلى الأعوام ٢٠٠٠ أو ٢٠١٠ أو ٢٠١٣ أو ٢٠١٤ أو ٢٠١٥. وحددت بعض الأطراف مستوى انبعاثاتها في سنة أساس معينة أو قدمت معلومات عن السيناريوهات المرجعية لبقاء الأمور على حالها، فيما يتصل بأهداف التخفيف المعبر عنها وفقاً لسيناريو بقاء الأمور على حالها. **وأشارت غالبية الأطراف إلى فترة مدتها إما خمس أو عشر سنوات لتنفيذ مساهماتها المعتزمة.** ويشير العديد من المساهمات المعتزمة إلى إطار زمني للتنفيذ يمتد حتى عام ٢٠٣٠، فيما تشير بضعة منها إلى إطار زمني للتنفيذ يمتد حتى عام ٢٠٢٥. وحددت بضع مساهمات أهدافاً للعامين ٢٠٢٥ و٢٠٣٠ معاً، بحيث يشكل أحدهما نقطة مرجعية اسمية أو مؤقتة. وأشارت بعض الأطراف إلى إطار زمني يمتد حتى عام ٢٠٣٥ أو ٢٠٤٠ أو ٢٠٥٠، مقترناً بسنة مستهدفة أخرى في معظم الأحيان. إضافة إلى ذلك، أبلغت بضعة أطراف عن فترة تنفيذ تبدأ قبل عام ٢٠٢٠.

١٨- وقد تنوعت أهداف التخفيف في نطاقها وتغطيتها للقطاعات وغازات الدفيئة. **ويغطي العديد منها معظم القطاعات التي حددتها هيئة المناخ** أو **كلها**، بما في ذلك الطاقة،

والعمليات الصناعية، واستخدام المنتجات، والزراعة، واستخدام الأراضي وتغيير استخدام الأراضي والحراجة، والمخلفات. وأبرزت بضعة أطراف قطاعي النقل والمباني تحديداً، بينما أدرجت أطراف أخرى أيضاً النقل البحري والطيران، والإشعال المرتبط بصناعة النفط، والمذيبات، والطاقة الكهربائية. واتساقاً مع ما تبلغ عنه الأطراف حالياً في إطار الاتفاقية، **تغطي غالبية المساهمات المعتزمة انبعاثات ثاني أكسيد الكربون (CO_2) ويغطي العديد منها انبعاثات الميثان (CH_4) وأكسيد النيتروز (N_2O)، فيما يغطي بعضها أيضاً انبعاثات سادس فلوريد الكبريت (SF_6)**، والهيدروفلوروكربون (HFCs) والهيدروكربون المشبع بالفلور (PFCs) وثلاثي فلوريد النيتروجين (NF_3)؛ وتشمل بضع مساهمات معتزمة غازات أو انبعاثات إضافية، منها المؤثرات المناخية القصيرة الأجل.

١٩- وقدمت غالبية الأطراف بعض المعلومات عن الافتراضات والأساليب المنهجية المستخدمة في تقدير وحساب الانبعاثات وعمليات الإزالة، بتفاوت في مستوى التفاصيل. كما قدمت غالبية الأطراف معلومات عن استخدامها للمبادئ التوجيهية لهيئة المناخ. وبينما تختلف المبادئ التوجيهية المطبقة، **فإن العديد من الأطراف إما انتقلت أو تعتزم الانتقال إلى مبادئ توجيهية أحدث، كما تعمل على توسيع نطاق تغطية القطاعات وغازات الدفيئة في قوائم جردها**. وقدمت عدة أطراف أيضاً معلومات عن قيم إمكانات الاحترار العالمي التي استخدمتها. وأشارت غالبية هذه الأطراف إلى استخدامها القيم الواردة في تقرير التقييم الثاني وتقرير التقييم الرابع الصادرين عن هيئة المناخ (بما يشمل المساهمات المعتزمة التي تشير إلى المقرر ٢٤/م أ-١٩)، فيما استخدمت بضعة أطراف القيم الواردة في تقرير التقييم الخامس للهيئة. وأبلغ طرف واحد عن استخدامه إمكانات الاحترار العالمي.

٢٠- **وأدرجت غالبية الأطراف الانبعاثات وعمليات الإزالة من قطاع استخدام الأراضي وتغيير استخدام الأراضي والحراجة**. واستحسنت بضعة أطراف وجود إطار موحد لحساب انبعاثات هذا القطاع، حيث يمكن أن يستند إلى ما هو قائم من توجيهات وخبرات في إطار الاتفاقية وبروتوكول كيوتو الملحق بها. ولكن العديد من المساهمات المعتزمة لا تقدم معلومات شاملة عن الافتراضات والأساليب المطبقة فيما يتعلق باستخدام الأراضي وتغيير استخدام الأراضي والحراجة، ما يمثل تحدياً كبيراً أمام التقييم الكمي لإجمالي أثر المساهمات المعتزمة.

٢١- وفيما يخص مستويات انبعاثات غازات الدفيئة في المستقبل، أدرجت بضعة أطراف خط أساس أو سيناريو بقاء الأمور على حالها أو توقعات. وأشار بعضها إلى افتراضات تتعلق بالمتغيرات الاقتصادية الكلية، مثل الناتج المحلي الإجمالي أو السكان، أو بمعدلات نمو هذين المتغيرين، أو بمتغيرات خاصة بقطاعات معينة، لا سيما قطاع الطاقة. وقدمت بضعة أطراف فقط قيماً رقمية وأشار بعضها إلى مصادر البيانات، مثل الإحصاءات الوطنية أو قواعد البيانات الدولية.

٢٢- وقدمت **غالبية الأطراف معلومات تتعلق بعمليات التخطيط**، بما يشمل جوانب محددة مثل العملية الوطنية لإعداد المساهمات المعتزمة وإقرارها؛ والترتيبات المؤسسية؛ ومشاركة أصحاب المصلحة؛ والمسائل السياساتية والتشريعية؛ ومجالات التنفيذ ذات الأولوية. واتخذت غالبية الأطراف بالفعل عدداً من الخطوات لإرساء قاعدة محلية قوية لتخطيط مساهماتها المعتزمة وتنفيذها، وهي تتوقع مواصلة هذه الجهود في المستقبل. ويحظى العديد من المساهمات المعتزمة بسند مباشر من التشريعات أو السياسات الوطنية القائمة بالفعل. وقدمت مساهمات معتزمة عديدة معلومات عن عمليات استحداث التشريعات والسياسات التي نجمت عن إعداد المساهمات. وبينما يتفاوت مستوى الطموح ودرجة التقدم في السياسات الوطنية المتعلقة بالمناخ، فقد ذكرت جميع الأطراف أن مساهماتها المعتزمة تستند، في جملة أمور، إلى سياسات قائمة أو عمليات وطنية جارية، فضلاً عن تجاربها في تنفيذ الاتفاقية وبروتوكول كيوتو الملحق بها.

٢٣- وتشير المعلومات المقدمة في العديد من المساهمات المعتزمة إلى **مجالات ملموسة لاتخاذ إجراءات للتصدي لتغير المناخ تركز، في جملة أمور، على الطاقة المتجددة وكفاءة الطاقة، والنقل المستدام، واحتجاز الكربون وتخزينه، وحفظ الغابات وإدارتها المستدامة، وخفض الغازات الأخرى غير ثاني أكسيد الكربون**. وأشارت الأطراف إلى تدابير منها تحديث شبكات توزيع الطاقة، وأهداف تتعلق بالطاقة المتجددة، ومخططات مالية لتعزيز الاستثمارات النظيفة، والضرائب البيئية، وإصلاحات نُظُم الدعم، والاقتصاد في استهلاك الوقود ومعايير حفظ الطاقة، وبرامج لتشجيع الزراعة الخفيضة الانبعاثات وإدارة النفايات، وتدابير لتعزيز حفظ الغابات والحد من إزالتها.

٢٤- وقدمت أطراف عديدة معلومات تؤكد أن مساهماتها المعتزمة قد خضعت لعملية تشاور مع أصحاب المصلحة الوطنيين، بهدف توعيتهم وكسب تأييدهم فيما يتعلق بالمساهمات المعتزمة وخطط التنمية طويلة الأجل ذات الصلة. **وأكدت الأطراف ما للدعم المقدم من الجهات الفاعلة مثل القطاع الخاص والأوساط الأكاديمية والمجتمع المدني، فضلاً عن الوزارات القطاعية والحكومات الإقليمية والمحلية ذات الصلة، من أهمية حاسمة في تحديد أهداف واقعية**. وشملت أمثلة العمليات الرامية إلى إشراك أصحاب المصلحة إنشاء أفرقة خبراء وأفرقة عاملة، وعقد جلسات برلمانية، وإجراء مشاورات عامة واسعة النطاق، بما يشمل تنظيم حلقات عمل واجتماعات محددة الأهداف والدعوة إلى تقديم مساهمات مكتوبة، فضلاً عن تنظيم حملات للتوعية. وأشارت بضعة أطراف إلى أنها لا تزال تخطط لعقد مشاورات عن السياسة الوطنية العامة للمناخ التي تستند إليها مساهماتها المعتزمة.

٢٥- **وسلطت عدة مساهمات معتزمة الضوء على الصلة بين الإجراءات المنشودة للتصدي لتغير المناخ وأولويات التنمية، بما في ذلك التنمية الاقتصادية والاجتماعية والقضاء على الفقر**. وأبرزت بعض الأطراف أوجه التآزر بين التنمية والعمل المناخي، فيما أشارت بضع مساهمات كذلك إلى منافع مشتركة محددة للإجراءات الرامية إلى التصدي لتغير

المناخ، بما في ذلك تحسين نوعية الهواء، والصحة البشرية، وخلق فرص العمل وغيرها، فضلاً عن تعزيز أوجه التآزر بين إجراءات التكيف والتخفيف، وبخاصة في قطاعي الزراعة والحراجة.

٢٦- **وأدرجت كل الأطراف سرداً عن كيف ترى أن مساهماتها المعتزمة منصفة وطموحة، وكيف ستساهم في تحقيق هدف الاتفاقية**. وعلقت أطراف عديدة على المبادئ التي يتعين أن تنظم العمل على الصعيد العالمي وعلى الظروف الوطنية ذات الصلة، وأدرجت معايير محددة للإنصاف والطموح. وتضمنت **مبادئ العمل**، في جملة أمور: الجهد العالمي المشترك المبذول بأسلوب منصف وعادل بمشاركة كل الأطراف؛ والإنصاف؛ والمسؤوليات المشتركة وإن كانت متباينة والقدرات الخاصة بكل منها؛ والاعتراف بالظروف الوطنية؛ وتطبيق نفس القواعد على جميع الأطراف واستخدام كل الأطراف لشكل الالتزام القانوني نفسه؛ والاعتراف بأن ما من مؤشر وحيد بإمكانه التعبير عن الإنصاف أو التوزيع العادل للجهود عالمياً. وأشارت بضعة أطراف إلى الحاجة لاحترام حقوق الإنسان والمساواة بين الجنسين. وفيما يتعلق **بالظروف الوطنية**، كعنصر مؤثر في مستوى الطموح، أبرزت الأطراف مزيجاً من الاعتبارات المتعلقة بحجم البلد وظروفه المناخية، والتوازن بين الموارد الطبيعية المتوفرة والطاقة؛ والاتجاهات والتبعيات الاقتصادية والاجتماعية الرئيسية؛ والقابلية للتأثر بتغير المناخ.

٢٧- وفي هذا السياق، تضم **المعايير المحددة لتقييم الإنصاف: المسؤولية، والقدرة، وإمكانية التخفيف وتكلفته، ودرجة التقدم/التوسع بما يتجاوز المستوى الحالي من الجهد المبذول، والصلة بالغايات وبالأهداف العالمية**. وتتناول غالبية الأطراف المسؤولية، في مساهماتها المعتزمة، بشكل مباشر أو غير مباشر من منظور نصيبها من الانبعاثات العالمية في الماضي والحاضر والمستقبل ونصيب الفرد من الانبعاثات مقارنة بالمتوسطات العالمية. وفيما يتعلق بالقدرة على المساهمة، تشمل الاعتبارات المدرجة مستوى التنمية، ونصيب الفرد من الناتج المحلي الإجمالي، والقدرة على الاستثمار في مجال التخفيف، والدعم الدولي المقدَّم. وأدرجت بعض الأطراف ضمن معايير الإنصاف إمكانيةَ التخفيف الفعال من حيث التكلفة والجهود التي بُذلت في الماضي.

٢٨- وقدمت غالبية الأطراف، لشرح ما تتسم به مساهماتها المعتزمة من طموح، **توضيحاً لما تمثله مساهماتها من تطور هام يتجاوز تعهداتها الحالية**. وهكذا، أظهرت بعض الأطراف أن مساهماتها المعتزمة تنطوي على تسارع في معدل إزالة الكربون من اقتصاداتها، وإزالة الاقتران بين انبعاثات الكربون والنمو الاقتصادي، وتخفيض الانبعاثات إلى ما دون مستوى بقاء الأمور على حالها. كما أشارت الأطراف، في عرض طموحها، إلى انخفاض نصيب الفرد من الانبعاثات، وتحديد سنوات ذروة الانبعاثات، وتحويل الغايات التطلعية في السابق إلى أهداف ملزمة قانوناً على الصعيد المحلي. وأبرزت بضعة أطراف أيضاً مساهمتها في تقديم الدعم لمجالات منها تطوير التكنولوجيات الخفيضة الانبعاثات ونشرها، وأشارت إلى أدائها في الماضي على صعيد خفض الانبعاثات.

٢٩- وأشارت عدة أطراف، **في سياق مناقشة كيف تسهم مساهماتها المعتزمة في تحقيق هدف الاتفاقية**، إلى أن مستوى انبعاثاتها المتوقع في المستقبل سيقع في مسار انبعاث عالمي يتسق مع هدف الإبقاء على معدل ارتفاع درجات الحرارة عالمياً دون الدرجتين المئويتين، في حين أشارت بضعة أطراف إلى هدف إبقائها دون ١,٥ درجة مئوية. وفي هذا السياق، أشار البعض إلى خفض الانبعاثات بنسبة ٨٠-٩٥ في المائة بحلول عام ٢٠٥٠ مقارنة بمستوى عام ١٩٩٠ للبلدان المتقدمة، أو إلى خفض الانبعاثات العالمية بمقدار النصف على الأقل بحلول عام ٢٠٥٠ مقارنة بمستوى عام ١٩٩٠، وفقاً لاستنتاجات هيئة المناخ. وأشارت أطراف أخرى إلى الجهود الوطنية والعالمية في سبيل إزالة الكربون، فيما ذكرت بضعة أطراف أن عنصر التكيف في مساهماتها يرمي إلى تحقيق هدف الاتفاقية بالحد من القابلية للتأثر على الصعيدين الوطني والعالمي.

٣٠- ويشير أكثر من نصف المساهمات المعتزمة الواردة إلى أن **الأطراف تخطط لاستخدام أدوات السوق أو تنظر في استخدام تلك الأدوات** المنبثقة من برامج دولية أو إقليمية أو محلية، بما في ذلك آلية التنمية النظيفة. وأشارت غالبية تلك الأطراف إلى أنها ستستخدم أدوات السوق للوفاء بجزء من أهدافها فقط. وشددت عدة أطراف على أهمية استخدام آليات السوق لضمان فعالية جهود التخفيف من حيث التكلفة وللنهوض بمستوى الطموح. ويستند تقييم الأثر الإجمالي للمساهمات المعتزمة الوارد في هذا التقرير إلى افتراض عدم حدوث حساب مزدوج لنتائج الإجراءات الرامية إلى خفض الانبعاثات.

٣١- **وسلطت عدة أطراف الضوء على احتياجات الدعم لتنفيذ المساهمات المعتزمة.** وحددت هذه الأطراف في مساهماتها المعتزمة احتياجاتها من الاستثمار والتمويل الموجهين، وبناء القدرات والتكنولوجيا، وأدرج بعضها تقديرات كمية للدعم المطلوب من أجل تنفيذ مساهماتها المعتزمة وبلوغ سياق المستوى الأعلى من مساهماتها في مجال التخفيف. وحددت بعض الأطراف التدابير المحلية اللازمة لدعم تنفيذ مساهماتها المعتزمة، بما يشمل استخدام أدوات السوق، وزيادة مخصصات الميزانية، والشراكات بين القطاعين العام والخاص، وبرامج الشراء المراعية للبيئة، وإصلاح أنظمة التسعير والضرائب، وتحسين آليات الائتمان الأخضر، وإنشاء صناديق وطنية متخصصة. وأشارت بضعة أطراف إلى أهمية إشراك القطاع الخاص في هذا السياق.

٣٢- **وأشارت عدة أطراف إلى أهمية تعزيز الدعم الدولي في سياق الاتفاق العالمي الجديد**، بما يشمل رفع مستواه، وتعزيز دور الكيانات التشغيلية القائمة للآلية المالية وتوطيد الصلات بينها، بما يشمل الصندوق الأخضر للمناخ ومرفق البيئة العالمية والآلية التكنولوجية المنشأة في إطار الاتفاقية.

دال- الأثر الإجمالي للمساهمات المعتزمة المحددة وطنياً المقدمة

١- الأثر الإجمالي للمساهمات المعتزمة المحددة وطنياً حتى عام ٢٠٣٠

٣٣- يُقدّر أن يؤدي تنفيذ المساهمات المعتزمة الواردة إلى **مستويات تقديرية إجمالية للانبعاثات العالمية[٧] تعادل ٥٥,٢ (٥٢ إلى ٥٦,٩)[٨] غيغاطن من مكافئ ثاني أكسيد الكربون في عام ٢٠٢٥ و٥٦,٧ (٥٣,١ إلى ٥٨,٦) غيغاطن من مكافئ ثاني أكسيد الكربون في عام ٢٠٣٠**. وقد حُسبت مستويات الانبعاثات العالمية في عامي ٢٠٢٥ و٢٠٣٠ بإضافة المستويات التقديرية الإجمالية للانبعاثات الناتجة عن تنفيذ المساهمات المعتزمة الواردة (٤١,٧ (٣٦,٧ إلى ٤٧) غيغاطن من مكافئ ثاني أكسيد الكربون في عام ٢٠٢٥ و٤٢,٩ (٣٧,٤ إلى ٤٨,٧) غيغاطن من مكافئ ثاني أكسيد الكربون في عام ٢٠٣٠) إلى مستويات الانبعاثات غير المشمولة في المساهمات المعتزمة[٩]. وإضافة إلى مختلف أوجه عدم اليقين التي تكتنف تجميع المساهمات المعتزمة، فإن هذه النطاقات تعكس الأهداف المشروطة وغير المشروطة معاً. ومن المتوقع أن تبلغ الانبعاثات التراكمية العالمية من غاز ثاني أكسيد الكربون بعد عام ٢٠١١[١٠] ما مقداره ٥٤١,٧ (٥٢٣,٦ إلى ٥٥٥,٨) غيغاطن من ثاني أكسيد الكربون في عام ٢٠٢٥، و٧٤٨,٢ (٧٢٢,٨-٧٧١,٧) غيغاطن من ثاني أكسيد الكربون في عام ٢٠٣٠.

٣٤- **ومقارنة بالانبعاثات العالمية في الأعوام ١٩٩٠ و٢٠٠٠ و٢٠١٠[١١]، يتوقع أن يكون إجمالي مستويات الانبعاثات العالمية الناتجة عن المساهمات المعتزمة أعلى** بنسبة ٣٤-٤٦ في المائة في عام ٢٠٢٥ و٣٧-٥٢ في المائة في عام ٢٠٣٠ بالنسبة إلى مستوى

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(٧) تتضمن مستويات الانبعاثات الواردة في هذا التقرير، ما لم يُذكر خلاف ذلك، الانبعاثات الناتجة عن تغير استخدام الأراضي وتستخدم القيم المترية لإمكانات الاحترار العالمي المستقاة من تقرير التقييم الرابع بأفق زمني مدته ١٠٠ عام.

(٨) تتضمن النطاقات الرقمية نسباً تتراوح بين ٢٠ و٨٠ في المائة وتشير القيم الفردية إلى المتوسط، ما لم يُذكر خلاف ذلك.

(٩) استُمدت تقديرات الانبعاثات في عامي ٢٠٢٥ و٢٠٣٠ غير المشمولة في المساهمات المعتزمة بطرح معدلات نمو الانبعاثات في البلدان والأقاليم والقطاعات و/أو انبعاثات غازات الدفيئة ذات الصلة من سيناريوهات تقرير التقييم الخامس لهيئة المناخ (التي تعكس تعهدات عام ٢٠٢٠ المقدمة في إطار اتفاقات كانكون).

(١٠) مجموع كل الانبعاثات العالمية الأحفورية والصناعية والناتجة عن تغير استخدام الأراضي للأعوام ٢٠١٢-٢٠٢٥ أو ٢٠١٢-٢٠٣٠، ضمناً.

(١١) تستقى المستويات التاريخية للانبعاثات العالمية من مصادر البيانات المتعلقة بفرادى الغازات لإتاحة التعامل مع المقاييس على نحو متسق، مثل إمكانات الاحترار العالمي من تقرير التقييم الرابع. ويجري الإبلاغ عن البيانات المتعلقة بفرادى الغازات في إطار بيانات الجرد للأطراف المدرجة في المرفق الأول للاتفاقية، وبيانات الإبلاغ الوطني المتاحة أو البيانات المحدثة مرتين سنوياً، وتُستكمل بمصادر البيانات العالمية المرجعية كتلك التي استخدمها الفريق العامل الثالث في إعداد تقرير التقييم الخامس لتقدير بيانات الانبعاثات التاريخية، بما في ذلك الوكالة الدولية للطاقة وقاعدة بيانات الانبعاثات للبرنامج العالمي لأبحاث الغلاف الجوي.

الانبعاثات العالمية في عام ١٩٩٠؛ وبنسبة ٢٩-٤٠ في المائة في عام ٢٠٢٥ و٣٢-٤٥ في المائة في عام ٢٠٣٠ بالنسبة إلى مستوى الانبعاثات العالمية في عام ٢٠٠٠؛ وبنسبة ٨-١٨ في المائة في عام ٢٠٢٥ و١١-٢٢ في المائة في عام ٢٠٣٠ بالنسبة إلى مستوى الانبعاثات العالمية في عام ٢٠١٠. وبينما تبين هذه الأرقام أن من المتوقع استمرار الانبعاثات العالمية في الارتفاع حتى عامي ٢٠٢٥ و٢٠٣٠، فإن من المنتظر أن يسجل معدل نموها تراجعاً كبيراً ليصل إلى ١١-٢٣ في المائة في الفترة ٢٠١٠-٢٠٣٠ مقارنةً بنسبة ٢٤ في المائة في الفترة ١٩٩٠-٢٠١٠. **ومن المتوقع أن يكون معدل النمو النسبي في الانبعاثات في الفترة ٢٠١٠-٢٠٣٠ أقل بما نسبته ١٠-٥٧ في المائة منه في الفترة ١٩٩٠-٢٠١٠، بما يعكس أثر المساهمات المعتزمة**[١٢].

٣٥- **ومن المتوقع أن ينخفض المعدل العالمي لنصيب الفرد من الانبعاثات بنسبة ٨ و٤ في المائة بحلول عام ٢٠٢٥ وبنسبة ٩ و٥ في المائة بحلول عام ٢٠٣٠، قياساً بمستويات عامي ١٩٩٠ و٢٠١٠، على التوالي**. وتستند هذه التوقعات إلى تقديرات المعدل العالمي لنصيب الفرد من الانبعاثات، مع أخذ المساهمات المعتزمة في الاعتبار، من ٦,٨ (٦,٥-٧,١) طن من مكافئ ثاني أكسيد الكربون/للفرد في عام ٢٠٢٥، و٦,٧ (٦,٤-٧,٢) طن من مكافئ ثاني أكسيد الكربون/للفرد في عام ٢٠٣٠[١٣]. وكان مستوى الانبعاثات في عام ٢٠٠٠ مساوياً تقريباً للمستوى المتوقع من نصيب الفرد من الانبعاثات في عام ٢٠٣٠ (النطاق: -٥ إلى +٦ في المائة) وأعلى بنسبة مئوية واحدة من المستويات المتوقعة لعام ٢٠٢٥ (النطاق: -٣ إلى +٥ في المائة).

٣٦- **وسيؤدي تنفيذ المساهمات المعتزمة إلى انخفاض إجمالي مستويات الانبعاثات العالمية عن مسارات ما قبل المساهمات المعتزمة**[١٤]. ومن المتوقع أن يكون مستوى الانبعاثات العالمية من غازات الدفيئة المرتبطة بالمساهمات المعتزمة أقل من مستوى الانبعاثات في مسارات ما قبل المساهمات المعتزمة بمقدار ٢,٨ (٠,٢-٥,٥) غيغاطن من مكافئ ثاني أكسيد الكربون في عام ٢٠٢٥ و٣,٦ (٠,٠-٧,٥) غيغاطن من مكافئ ثاني أكسيد الكربون في

(١٢) يتوقع أن يكون النمو المطلق في مستوى الانبعاثات العالمية خلال الفترة ٢٠١٠-٢٠٣٠، مقارنةً بالفترة ١٩٩٠-٢٠١٠، أقل بنسبة ١٠ في المائة (في المتوسط)، مع نطاق يتراوح من أعلى بنسبة ١٢ في المائة إلى أقل بنسبة ٤٦ في المائة.

(١٣) تستند التوقعات إلى سيناريوهات الأمم المتحدة المنخفضة والمتوسطة والمرتفعة بشأن عدد سكان العالم لعام ٢٠١٥ مقترنة بأوجه عدم اليقين الأخرى. ففي سيناريو النمو السكاني المتوسط، يتوقع أن يبلغ عدد سكان العالم ٨,٠٤ مليار نسمة في عام ٢٠٢٥ و٨,٤٠ مليار نسمة في عام ٢٠٣٠ (المصدر: 2015 revision of United Nations 2012 population projections، متاح على الموقع التالي: <http://esa.un.org/unpd/wpp/>).

(١٤) تعد هذه المسارات مجموعة فرعية من قاعدة بيانات السيناريوهات الواردة في تقرير التقييم الخامس لهيئة تغير المناخ، ولا سيما سيناريوهات الـ ٤٥٠ جزء في المليون وعمليات تنفيذ هدفها الأعلى القصير الأمد مع التأخر في بدء التنفيذ المقرر عام ٢٠٣٠ لانخفاضات الانبعاثات المنسقة على النحو المصمم في مشروع أمبير (AMPERE).

عام ٢٠٣٠[١٥]. وإذا أُخذت العناصر المشروطة من المساهمات المعتزمة في الحسبان يكون المستوى الأعلى لهذا النطاق المتراوح بين ١ و١,٩ غيغاطن من مكافئ ثاني أكسيد الكربون، أدنى من العناصر غير المشروطة وحدها[١٦]. وتتيح هذه الأرقام تقديراً للأثر الإجمالي للمساهمات المعتزمة الناجم عن الإجراءات الرامية إلى الحد من الانبعاثات وتعزيز البواليع مقارنة بسيناريوهات الانبعاثات المتسقة مع الإجراءات التي اتخذتها الأطراف لفترة ما قبل عام ٢٠٢٠.

٣٧- ومقارنةً بمستويات الانبعاثات المحددة وفقاً لسيناريوهات الدرجتين المئويتين الأقل تكلفة[١٧]، يتوقع أن يكون إجمالي مستويات انبعاثات غازات الدفيئة الناتجة عن المساهمات المعتزمة أعلى بنسبة ٨,٧ (٤,٧-١٣) غيغاطن من مكافئ ثاني أكسيد الكربون (١٩ في المائة، بنطاق ١٠-٢٩ في المائة) في عام ٢٠٢٥، وبنسبة ١٥,١ (١١,١-٢١,٧) غيغاطن من مكافئ ثاني أكسيد الكربون (٣٥ في المائة، بنطاق ٢٦-٥٩ في المائة) في عام ٢٠٣٠.

٣٨- ويقارن الشكل ٢ مستويات الانبعاثات العالمية الناتجة عن تنفيذ المساهمات المعتزمة في عامي ٢٠٢٥ و٢٠٣٠ بمستويات السيناريوهات المرجعية ما قبل المساهمات المعتزمة وسيناريوهات الدرجتين المئويتين. والسيناريوهات المرجعية لغازات الدفيئة مستقاة من مساهمات الفريق العامل الثالث في تقرير التقييم الخامس، المتسقة مع الإجراءات التي أبلغت عنها الأطراف للفترة ما قبل عام ٢٠٢٠ (باللون الأحمر). وتُظهر الانبعاثات الكلية التي يتوقع أن تنتج من تنفيذ المساهمات المعتزمة نطاقاً واسعاً جراء تنوع الافتراضات والشروط التي حددتها الأطراف في بلاغاتها وأوجه عدم

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(١٥) خلافاً لمعدل تخفيض ما، يبلغ متوسط التخفيض الناتج عن تنفيذ المساهمات المعتزمة إلى دون السيناريوهات المرجعية ٣ غيغاطن من مكافئ ثاني أكسيد الكربون في عام ٢٠٢٥ و٣ غيغاطن من مكافئ ثاني أكسيد الكربون في عام ٢٠٣٠.

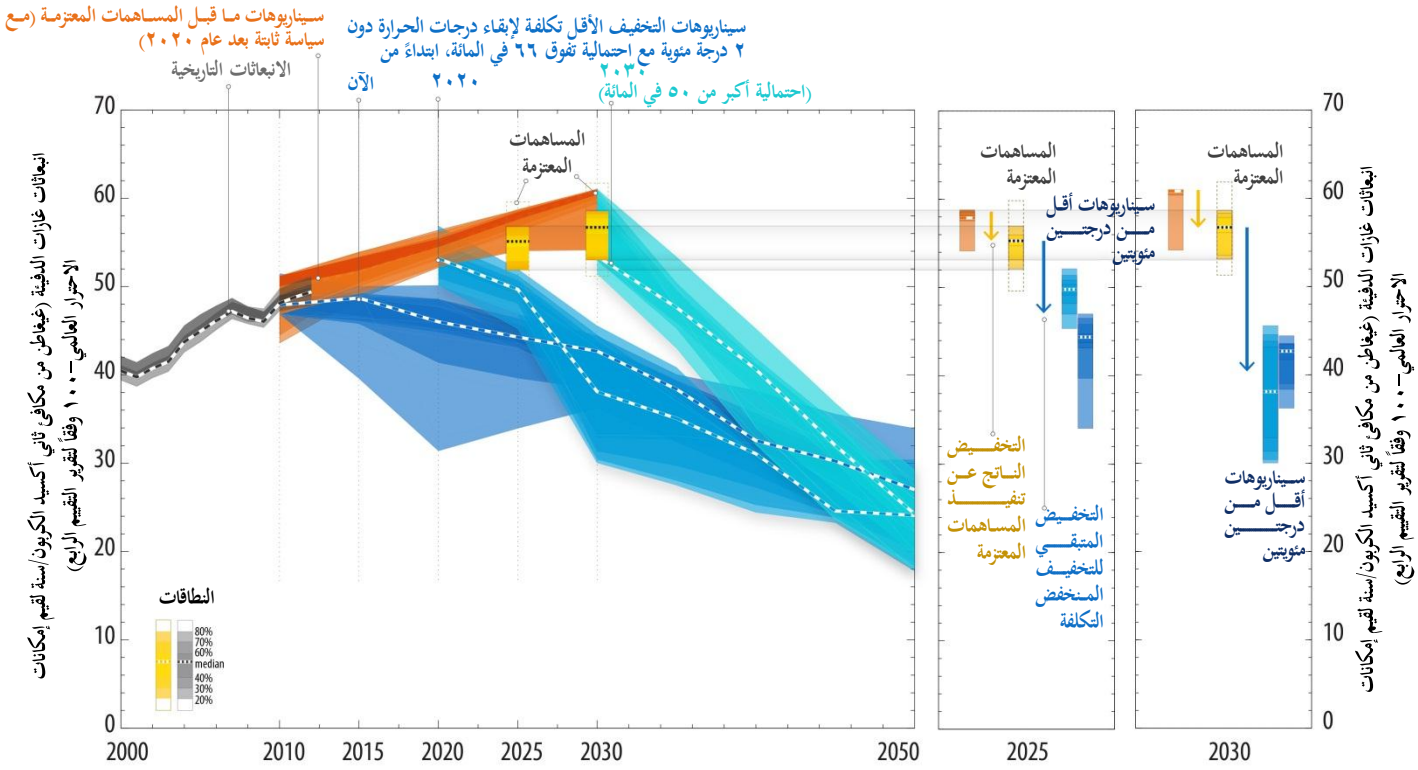
(١٦) لا يتضمن هذا السيناريو تقييم الظروف المتعلقة باستخدام الأراضي وتغيير استخدام الأراضي والحراجة ولا التقييم اللازم في حالة عدم التيقن من نطاق العنصر المشروط للمساهمة المعتزمة المعنية.

(١٧) أُخذت السيناريوهات المتسقة مع هدف الإبقاء على ارتفاع درجات الحرارة دون الدرجتين المئويتين فوق مستويات ما قبل العصر الصناعي من قاعدة بيانات السيناريوهات الواردة في تقرير التقييم الخامس. والسيناريوهات التي تتبع مسار الانبعاثات الأقل تكلفة اعتباراً من عام ٢٠١٠ فصاعداً (تُسمى سيناريوهات P1) وتنطوي على احتمالية تفوق ٦٦ في المائة ببقاء الانبعاثات دون الدرجتين المئويتين تعادل ٤٤,٣ (٣٨,٢-٤٦,٦) غيغاطن من انبعاثات مكافئ ثاني أكسيد الكربون في عام ٢٠٢٥ و٤٢,٧ (٣٨,٣-٤٣,٦) غيغاطن من انبعاثات مكافئ ثاني أكسيد الكربون في عام ٢٠٣٠. والسيناريوهات التي تتبع مسار الانبعاثات الأمثل من الناحية الاقتصادية اعتباراً من عام ٢٠٢٠ فصاعداً (تُسمى سيناريوهات P2) وتنطوي على احتمالية تفوق ٦٦ في المائة ببقاء الانبعاثات دون الدرجتين المئويتين تعادل ٤٩,٧ (٤٦,٢-٥١,٦) غيغاطن من انبعاثات مكافئ ثاني أكسيد الكربون في عام ٢٠٢٥ و٣٨,١ (٣٠,٣-٤٥) غيغاطن من انبعاثات مكافئ ثاني أكسيد الكربون في عام ٢٠٣٠. ونظراً إلى تشابه الانبعاثات في إطار سيناريوهات P1 مع مستوى الانبعاثات في عام ٢٠١٥، وتشابه سيناريوهات P1 وP2 بحلول عام ٢٠٣٠، يشير هذا التقرير إلى الفرق بين مستويات انبعاثات المساهمات المعتزمة ومستوى الانبعاثات المشترك لسيناريوهات P1 وP2. ولدى المقارنة بسيناريوهات P2 وحدها، يكون الفرق أقل في عام ٢٠٢٥، أي ٤,٨ (٢-٧,٩) غيغاطن من مكافئ ثاني أكسيد الكربون، وأعلى في عام ٢٠٣٠، أي ١٧ (١٠,٦-٢٦) غيغاطن من مكافئ ثاني أكسيد الكربون

اليقين المرتبطة بثغرات المعلومات (الأعمدة الصفراء). وتُعرض سيناريوهات التخفيف للمسار الأقل تكلفة للإبقاء على متوسط ارتفاع درجات الحرارة العالمية دون الدرجتين المئويتين باللون الأزرق، مع توضيح إجراءات التخفيف العالمية المعززة التي بدأت فعلاً (بالأزرق الداكن) والتي ستُتخذ بحلول عام ٢٠٢٠ (بالأزرق المتوسط) أو التي يُفترض تأجيلها لما بعد عام ٢٠٣٠ (بالفيروزي). وتظهر معدلات خفض الانبعاثات اللاحقة، في إطار هذه السيناريوهات، أعلى خلال الفترة ٢٠٣٠-٢٠٥٠ إذا كان هناك تأجيل في تعزيز إجراءات التخفيف العالمية.

الشكل ٢

مقارنة مستويات الانبعاثات العالمية الناتجة عن المساهمات المعتزمة المحددة وطنياً في عامي ٢٠٢٥ و٢٠٣٠ بالمسارات الأخرى



سيناريوهات ما قبل المساهمات المعتزمة (سيناريوهات تعهدات كانكون العليا) حتى ٢٠٣٠ (ن=٣١؛ أمبير، هدف أعلى قصير الأجل لسيناريو P3، قاعدة بيانات سيناريوهات تقرير التقييم الخامس لهيئة المناخ)

نطاقات المساهمات المعتزمة المشروطة وغير المشروطة، مجمعة عالمياً

سيناريوهات التأجيل – ٢٠٣٠ (P3) مع احتمالية تفوق ٥٠ في المائة بإبقاء الانبعاثات دون درجتين مئويتين (ن=٢١، من قاعدة بيانات سيناريوهات تقرير التقييم الخامس لهيئة المناخ)

سيناريوهات التأجيل – ٢٠٢٠ (P3) مع احتمالية تفوق ٦٦ في المائة بإبقاء الانبعاثات دون درجتين مئويتين (ن=٦، من قاعدة بيانات سيناريوهات تقرير التقييم الخامس لهيئة المناخ)

سيناريوهات بدء إجراءات التخفيف "فوراً" (P1) مع احتمالية تفوق ٦٦ في المائة بإبقاء الانبعاثات دون درجتين مئويتين (ن=١٤، من قاعدة بيانات سيناريوهات تقرير التقييم الخامس لهيئة المناخ)

المصدر: قاعدة بيانات سيناريوهات تقرير التقييم الخامس، وقاعدة بيانات الانبعاثات التاريخية لهيئة المناخ، والتقديرات الكمية للمساهمات المعتزمة.

٣٩- **ولا يندرج المستوى التقديري الإجمالي للانبعاثات العالمية السنوية الناتجة عن تنفيذ المساهمات المعتزمة ضمن سيناريوهات الدرجتين المئويتين الأقل تكلفة بحلول عامي ٢٠٢٥ و٢٠٣٠.** ويتوقف ارتفاع درجات الحرارة العالمية بحلول نهاية هذا القرن على مستوى الانبعاثات حتى عام ٢٠٣٠، الذي يتوقف بدوره على مستوى الجهد المبذول في المساهمات المعتزمة وعلى أي زيادة تطرأ عليه، وعلى مستوى الانبعاثات في فترة ما بعد عام ٢٠٣٠. وتسهم المساهمات المعتزمة، عن طريق خفض الانبعاثات إلى ما دون مسارات ما قبل المساهمات المعتزمة، في خفض الارتفاع المتوقع في درجات الحرارة حتى عام ٢١٠٠ وما بعده. **غير أن معدلات الحرارة بحلول نهاية القرن تتوقف بشدة على الافتراضات المتعلقة بالعوامل الاقتصادية الاجتماعية، والتطور التكنولوجي والإجراءات التي ستتخذها الأطراف بعد الأطر الزمنية المحددة في مساهماتها المعتزمة (أي بعد عامي ٢٠٢٥ و٢٠٣٠ مثلاً).** ولا يدخل وضع هذه الافتراضات ضمن نطاق هذا التقرير.

٤٠- وإذا لم تقم الأطراف بتعزيز إجراءاتها في مجال التخفيف حتى عام ٢٠٣٠ لتتجاوز الإجراءات المتوخاة في المساهمات المعتزمة، فإن إمكانية الإبقاء على ارتفاع درجات الحرارة دون درجتين مئويتين تظل قائمة. غير أن السيناريوهات المدرجة في تقرير التقييم الخامس لهيئة المناخ تشير إلى أن ذلك لا يمكن أن يتحقق إلا بمعدلات وتكاليف سنوية لخفض الانبعاثات أعلى بكثير مقارنة بالسيناريوهات الأقل تكلفة التي تبدأ الآن أو في عام ٢٠٢٠. لذا، سيتعين بذل جهد أكبر بكثير لخفض الانبعاثات عما هو متوخى في إطار المساهمات المعتزمة في الفترة بعد عامي ٢٠٢٥ و٢٠٣٠ للإبقاء على ارتفاع درجات الحرارة دون درجتين مئويتين فوق مستويات ما قبل العصر الصناعي.

٤١- ويُقدّر بنسبة ٣,٣ (٢,٧-٣,٩) في المائة المتوسط السنوي لخفض الانبعاثات للفترة بين عامي ٢٠٣٠ و٢٠٥٠ للسيناريوهات الأقل تكلفة التي تبدأ في عام ٢٠٣٠ من مستويات انبعاثات تتسق مع المساهمات المعتزمة وتعيد الانبعاثات إلى سيناريوهات الدرجتين المئويتين. وهو ما يساوي ضعف المعدل تقريباً مقارنة بالسيناريوهات الأقل تكلفة التي تفترض عملاً معززاً في مجال التخفيف بحلول عام ٢٠١٠ أو عام ٢٠٢٠، والتي تقتضي تخفيضات سنوية للانبعاثات بنسبة ١,٦ (٠,٧-٢) في المائة فقط في الفترة نفسها.

٤٢- ونظراً إلى أن انبعاثات غازات الدفيئة تعمر طويلاً في الغلاف الجوي وبالتالي فإن الانبعاثات التراكمية تحدد الأثر المترتب على النظام المناخي، فإن مستوى عالياً من الانبعاثات في السنوات المبكرة (مقارنة بالمسارات الفعالة من حيث التكلفة) سيتطلب تخفيضات أكبر وأكثر تكلفة لاحقاً من أجل الإبقاء على متوسط ارتفاع درجات الحرارة العالمية دون نفس المستويات بنفس الأرجحية. ووفقاً لتقرير التقييم الخامس، فإن مجموع الانبعاثات التراكمية العالمية منذ عام ٢٠١١ المتسقة مع متوسط ارتفاع درجات الحرارة العالمية بأقل من درجتين مئويتين فوق مستويات ما قبل العصر الصناعي باحتمالية مرجحة (تفوق ٦٦ في المائة) يبلغ ١ ٠٠٠ غيغاطن

من مكافئ ثاني أكسيد الكربون. وبالنظر إلى الأثر الإجمالي للمساهمات المعتزمة، يُتوقع أن تبلغ الانبعاثات التراكمية العالمية من غاز ثاني أكسيد الكربون ٥٤ (٥٢-٥٦) في المائة بحلول عام ٢٠٢٥ و٧٥ (٧٢-٧٧) في المائة بحلول عام ٢٠٣٠ من مجموع ٠٠٠ ١ غيغاطن من ثاني أكسيد الكربون[١٨].

٢- الفرص الناشئة عن المساهمات المعتزمة المحددة وطنياً في الأجلين المتوسط والطويل

٤٣- إن مدى كفاية الجهود المبذولة لتقليل الانبعاثات في الحد من ارتفاع متوسط درجات الحرارة العالمية بأقل من درجتين مئويتين فوق مستويات ما قبل العصر الصناعي يتوقف بشدة على التغيرات الطويلة الأجل في المحركات الاقتصادية الأساسية التي سيحفزها تنفيذ المساهمات المعتزمة الحالية، ومدى عزم الأطراف على زيادة مستوى الطموح قبل عام ٢٠٣٠ وبعده. وتقدم الفقرات ٤٤-٥٤ معلومات عامة بشأن الاتجاهات الناشئة عن المساهمات المعتزمة التي يمكن أن تتيح فرصاً لزيادة الطموح في المستقبل.

المشاركة

٤٤- **تشير المساهمات المعتزمة إلى زيادة كبيرة في عدد البلدان المنخرطة في العمل المناخي، الذي يتسم بنطاق وطني عادة ويشمل عدداً كبيراً من القطاعات وغازات الدفيئة.** وهناك أهمية خاصة لازدياد عدد الأطراف التي انتقلت من الإجراءات القائمة على المشاريع أو البرامج أو القطاعات إلى الأهداف والسياسات الشاملة للاقتصاد ككل. وفي حين بلغ مجموع الأطراف التي قدمت أهدافاً كمية مطلقة أو تستند إلى سيناريو بقاء الأمور على حالها أو إلى الكثافة أو سنة الذروة ٦١ طرفاً للفترة السابقة لعام ٢٠٢٠، فإن ١٢٧ طرفاً أدرجت مثل هذه الأهداف في مساهماتها المعتزمة.

٤٥- وعلاوة على ذلك، قدمت جميع الأطراف معلومات تيسّر وضوح مساهماتها المعتزمة وشفافيتها وفهمها. ومع أن المعلومات المقدمة تعكس الظروف والقدرات الوطنية، فإن اتساق البيانات واكتمال المعلومات وجودتها في المساهمات المعتزمة تشكل خطوة هامة إلى الأمام مقارنةً بالمعلومات التي قُدمت في سياق الإجراءات المعتزمة للفترة ما قبل عام ٢٠٢٠.

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(١٨) لتحقيق احتمال إبقاء درجات الحرارة دون درجتين مئويتين بنسبة ٥٠ في المائة، يشير تقرير التقييم الخامس (انظر الجدول ٢-٢ من التقرير التوليفي المتاح على الرابط:
<http://ar5-syr.ipcc.ch/ipcc/ipcc/resources/pdf/IPCC_SynthesisReport.pdf>، إلى انبعاثات تراكمية لثاني أكسيد الكربون بمقدار ٣٠٠ ١ غيغاطن من ثاني أكسيد الكربون بعد عام ٢٠١١. ونظراً إلى الأثر الإجمالي للمساهمات المعتزمة، يتوقع أن تبلغ الانبعاثات التراكمية العالمية من ثاني أكسيد الكربون ما يعادل ٤٢ (٤٠-٤٣) في المائة بحلول عام ٢٠٢٥ و٥٨ (٥٦-٥٩) في المائة بحلول عام ٢٠٣٠ من هذا المجموع البالغ ١٣٠٠ غيغاطن من ثاني أكسيد الكربون.

٤٦- **ويتجلى بوضوح العزم المتزايد للبلدان على اتخاذ إجراءات وطنية طموحة لمكافحة تغير المناخ وتزايد القدرة الوطنية على القيام بذلك، من خلال العدد الكبير من الأطراف التي قدمت مساهمات معتزمة والنطاق المعزز لإجراءاتها.** غير أنه لا تزال ثمة صعوبات فيما يتصل بثغرات البيانات ونوعية المعلومات المقدمة في المساهمات المعتزمة، ما يدل على الحاجة إلى بذل المزيد من الجهد لتعزيز قدرة العديد من البلدان على تخطيط إجراءاتها المتعلقة بالمناخ وتنفيذها ورصدها.

السياسات والمؤسسات

٤٧- **تكشف المعلومات الواردة في المساهمات المعتزمة عن اتجاه واضح ومطرد نحو استحداث سياسات وطنية وما يتعلق بها من صكوك لتعزيز التنمية الخفيضة الانبعاثات والقادرة على التأقلم مناخياً.** وتحظى مساهمات معتزمة عديدة بدعم التشريعات أو السياسات الوطنية القائمة بالفعل، وقد استتبعت عدة مساهمات منها عمليات وطنية لوضع الأطر السياساتية ذات الصلة. وإضافة إلى ذلك، انطوت مساهمات معتزمة عديدة على مشاورات عامة وأشركت طائفة واسعة من أصحاب المصلحة لإثبات المنافع الإنمائية للعمل من أجل مكافحة تغير المناخ وتأمين الإقبال على هذا العمل.

٤٨- وتبرز المعلومات التي قدمتها الأطراف الاتجاه نحو **تزايد أهمية تغير المناخ في جداول الأعمال السياسية الوطنية،** مدفوعاً في كثير من الأحيان بترتيبات التنسيق بين الوزارات، فضلاً عن الاتجاه المتزايد نحو إدماج قضايا تغير المناخ ضمن الأولويات الإنمائية القطاعية والوطنية. وفي الوقت ذاته، بذلت أطراف عديدة جهوداً لضمان إدراك القطاع الخاص والمجتمع المدني والجهات الفاعلة الأخرى غير الحكومية لأهمية الإجراءات الوطنية لمكافحة تغير المناخ ودعمها.

٤٩- وقد تأثرت العمليات السياسية والمؤسسية الوطنية جزئياً بدعوة الأطراف إلى الإبلاغ عن مساهماتها المعتزمة، وقد تشكل أساساً لتعزيز إجراءاتها في المستقبل. ولئن كانت المساهمات ربما أدت دوراً حافزاً في توطيد السياسات المتعلقة بالمناخ وتعزيزها في بضعة من البلدان، فقد مثلت في العديد منها حافزاً على الشروع في وضع تلك السياسات. وبشكل عام، يمكن القول إن وقائع وضع السياسات وكسب القبول الاجتماعي لها في سياق إعداد المساهمات المعتزمة يتيح أساساً لتعزيز الإجراءات في المستقبل. غير أن توقيت هذه الإجراءات المعززة ونطاقها يتوقفان على عزم الحكومات. وفي هذا السياق، أشارت أطراف عديدة في مساهماتها المعتزمة إلى ضرورة التوصل إلى اتفاق محكم في عام ٢٠١٥ يتيح إطاراً مشتركاً للعمل وسبيلاً للنهوض بقدرات البلدان الأكثر احتياجاً إلى ذلك.

التعاون والدعم

٥٠- **تُظهر المساهمات المعتزمة تزايد اهتمام الأطراف بتعزيز التعاون من أجل تحقيق الأهداف المتعلقة بتغير المناخ بصورة جماعية من خلال استجابة متعددة الأطراف**

والنهوض بمستوى الطموح في المستقبل. وعلى وجه الخصوص، شددت الأطراف على الحاجة إلى تعزيز الدعم المالي ونقل التكنولوجيا وبناء القدرات في مجال العمل المناخي بشكل عام كوسيلة لتهيئة بيئة مواتية والنهوض بالإجراءات المرتبطة بتغير المناخ. وأشارت بعض الأطراف أيضاً إلى الفرص المتاحة لوضع الأدوات السياساتية والاقتصادية وأدوات السوق وتنفيذها.

٥١- وتشير المعلومات الواردة في بعض المساهمات المعتزمة إلى ضرورة تحديد المزيد من فرص التعاون في التصدي لتغير المناخ واستطلاعها وتنفيذها. وفي هذا السياق، أشارت الأطراف إلى نتائج عملية المفاوضات الجارية في إطار فريق منهاج ديربان والحاجة إلى تعزيز التعاون وتشجيعه، بوسائل تشمل توطيد الآليات والأدوات القائمة في إطار الاتفاقية أو إنشاء آليات وأدوات جديدة.

الظروف والطموحات الوطنية

٥٢- **رفعت كل الأطراف من مستوى طموحها في مجال العمل المناخي في مساهماتها المعتزمة، مقارنةً بالجهود التي أُبلغ عنها لفترة ما قبل عام ٢٠٢٠. وهناك اعتراف قوي بالحاجة إلى تعزيز العمل عالمياً في سياق تحقيق هدف الاتفاقية والالتزام بالقيام بذلك على مستوى متعدد الأطراف**. وفي هذا السياق، أشارت أطراف عديدة إلى هدف الحد من ارتفاع درجات الحرارة دون الدرجتين المئويتين فوق مستويات ما قبل العصر الصناعي كمعيار للطموح الوطني والعالمي. وأعربت بلدان عديدة عن عزمها على تحقيق هذا الهدف معترفةً بأن ذلك لا يمكن تحقيقه إلا من خلال الجهد الجماعي.

٥٣- وكما ورد في الفقرة ٣٦ أعلاه، في حين أن الإجراءات المدرجة في المساهمات المعتزمة ستفضي إلى تخفيضات كبيرة في الانبعاثات مقارنةً بفترة ما قبل عام ٢٠٢٠، فإن المستويات الإجمالية للانبعاثات العالمية في عامي ٢٠٢٥ و٢٠٣٠ الناتجة عن المساهمات المعتزمة لا تزال خارج سيناريوهات الدرجتين المئويتين. غير أن المساهمات المعتزمة تنم عن عزم متزايد من الأطراف على اتخاذ إجراءات للحد من الانبعاثات وتعزيز قدرة اقتصاداتها على التأقلم مناخياً، في حين أشارت بضعة أطراف بالفعل إلى أن هدفها هو الحد من انبعاثاتها إلى الصفر في الأمد الطويل. وقد مكنت هذه العزيمة الوطنية الأطراف من تكييف جهودها وفقاً لظروفها الخاصة، حيث يعترف العديد منها بالفعل بما يرتبط بهذه الجهود من منافع مشتركة على مستوى التنمية المستدامة وعلى الصعيد الاقتصادي الاجتماعي. غير أن الحاجة لا تزال قائمة إلى تعزيز هذه الجهود وتسريعها قبل عام ٢٠٣٠ وبعده.

٥٤- ويعبر ما سردته الأطراف في مساهماتها المعتزمة عن رؤية مفادها أن كل بلد ينفذ استراتيجيته الخاصة، ما يوحي بالحاجة إلى عملية للتوفيق بين الجهود المبذولة في سياق مختلف الظروف الوطنية والجهود اللازمة للإبقاء على ارتفاع درجات الحرارة العالمية دون درجتين مئويتين. ويتعين معالجة هذه المسألة في سياق نظر الأطراف في الجهود الراهنة والمقبلة بشأن أي هدف متفق عليه في إطار الاتفاقية.

هاء- عنصر التكيف في المساهمات المعتزمة المحددة وطنياً

٥٥- **أدرج ١٠٠ من الأطراف عنصر تكيف في مساهماتها المعتزمة**. وتلقت الأمانة عناصر التكيف من ٤٦ دولة أفريقية، و٢٦ دولة من منطقة آسيا المحيط الهادئ، و١٩ دولة من منطقة أمريكا اللاتينية والبحر الكاريبي، و٧ دول من أوروبا الشرقية، ودولتين من أوروبا الغربية ودول أخرى.

٥٦- وأبرزت الأطراف **عزمها المشترك على تعزيز جهودها الوطنية المتعلقة بالتكيف في سياق اتفاق عام ٢٠١٥**. وشدد بعضها على أن التكيف يشكل أولويتها الرئيسية في التصدي لتغير المناخ، لا سيما أنها تعتبره ذا صلة وثيقة بالتنمية الوطنية والاستدامة والأمن.

٥٧- ومع أن المساهمات الوطنية متنوعة ولكل منها خصائصها الفريدة، فقد تسنى تحديد المعطيات التالية في العديد من عناصر التكيف:

(أ) استناد عنصر التكيف إلى الظروف الوطنية؛

(ب) استرشاد عنصر التكيف بأهداف أو رؤى طويلة الأجل؛

(ج) تقييمات الأثر والقابلية للتأثر؛

(د) الأطر القانونية والتنظيمية، والاستراتيجيات، والبرامج والخطط، التي تستند إليها إجراءات التكيف أو تسترشد بها؛

(هـ) التدابير أو الإجراءات المخططة أو الجاري تنفيذها في مجالات و/أو قطاعات محددة؛

(و) الخسائر والأضرار؛

(ز) وسائل التنفيذ؛

(ح) رصد التكيف وتقييمه؛

(ط) أوجه التآزر بين إجراءات التخفيف والتكيف.

٥٨- ويقدم هذا التقرير التوليفي عرضاً عاماً لعناصر التكيف بتلخيص المعلومات الرئيسية، وتحديد الاتجاهات الناشئة، وإبراز مختلف مكونات عناصر التكيف من خلال أمثلة ملموسة. ولن يتسنى في هذه المرحلة تقييم الأثر الإجمالي لعناصر التكيف نظراً لأوجه عدم اليقين المنهجية المرتبطة بهذا التقييم.

٥٩- ويتجلى مدى تنوع الظروف الوطنية للأطراف في جميع المساهمات المعتزمة، حيث تضمنت معلومات عن الخصائص الجغرافية والديناميات السكانية والأوضاع الاقتصادية الاجتماعية. وأفادت أطراف عديدة بأن عناصر التكيف الخاصة بها تسترشد بتطلعات إنمائية

طويلة الأمد فضلاً عن الأهداف المناخية العالمية، بما في ذلك هدف الإبقاء على ارتفاع متوسط درجات الحرارة العالمية دون درجتين مئويتين أو دون ١,٥ درجة مئوية فوق مستويات ما قبل العصر الصناعي، وهي النقطة المرجعية التي استخدمتها بضعة أطراف في تحديد عناصر التكيف الخاصة بها. وفي العديد من الحالات، يشكل عام ٢٠٣٠ الأفق الزمني الذي حددته الأطراف لتنفيذ أهدافها و/أو رؤاها الوطنية الطويلة الأمد.

٦٠- **وشملت كل المساهمات المعتزمة التي تضمنت عناصر تكيف معلومات عن أهم الآثار وأوجه الضعف.** وأفادت الأطراف بوجه خاص عن التغيرات الملحوظة أو التوقعات بحدوث تغيرات في المستقبل، وعن أضعف القطاعات أو المناطق الجغرافية، وعن الآثار المرتفعة المخاطر والتكاليف المرتبطة بالظواهر المناخية القصوى. وفيما يتصل بالمخاطر المناخية، تمثلت الشواغل ذات الأولوية التي حددتها غالبية الأطراف في الفيضانات وارتفاع مستوى سطح البحر والجفاف/التصحر.

٦١- وتدل المعلومات المقدمة بوضوح على انتقال **الأطراف إلى عملية تخطيط وتنفيذ شاملة لإجراءات التكيف وتعزيز الجهود القائمة وتوسيع نطاقها. وأشارت غالبية الأطراف إلى وضع خطط واستراتيجيات للتكيف على الصعيد الوطني ككل.** وأشارت عدة أطراف إلى خوضها عملية صياغة وتنفيذ لخطط التكيف الوطنية، وتوقعت غالبيتها أن تنجز وضع خططها بحلول عام ٢٠٢٠. وكثيراً ما تترافق هذه الجهود الوطنية بسياسات وتدابير ومبادرات محددة في جميع القطاعات والمجالات الاقتصادية تقريباً، وعلى رأسها قطاعات الماء والزراعة والصحة والنُظم الإيكولوجية والغابات والهياكل الأساسية. وتعتزم بضعة أطراف تنفيذ إجراءات لها تأثيرات إقليمية وعالمية في سياق تصديها للمسائل العابرة للحدود.

٦٢- ومن المسائل التي تصدرت جدول أعمال العديد من الأطراف الاعتراف بضرورة **إشراك أصحاب المصلحة المعنيين في التخطيط لإجراءات التكيف وتنفيذها،** بما يشمل المجتمعات القابلة للتأثر. وإضافة إلى ذلك، شددت أطراف عديدة على الحاجة إلى النظر في المسائل الجنسانية في سياق وضع إجراءات التكيف.

٦٣- **وأبلغت عدة أطراف عن الخسائر والأضرار المرتبطة بالآثار الماضية والمتوقعة لتقلب المناخ وتغيره، وأدرج بعضها تقديرات كمية لهذه الخسائر والأضرار،** على شكل تكاليف مطلقة، أو مقدار الخسارة السنوية من الناتج المحلي الإجمالي، أو النسبة المئوية من خسارة الأراضي أو الإنتاج الزراعي في سنة معينة أو لدى بلوغ عتبة معينة، مثل ارتفاع مستوى سطح البحر بمقدار محدد. وقدمت بضعة أطراف تفاصيل عن التكاليف المتوقعة الناجمة عن آثار تغير المناخ وكيف يتوقع أن تحد منها تدابير التكيف المعتزمة، مع بقاء بعض الأضرار، ما يشكل حافزاً اقتصادياً قوياً للاستثمار في إجراءات التكيف والحد من أخطار الكوارث.

٦٤- **وقدمت غالبية الأطراف معلومات عن وسائل التنفيذ (كالتمويل والتكنولوجيا وبناء القدرات) اللازمة لدعم تنفيذ ما تخطط له من إجراءات التكيف**، بما في ذلك احتياجات الدعم وما يتوخى من دعم محلي ودولي. وأدرجت بعض الأطراف تقديرات كمية للاحتياجات المالية لتنفيذ إجراءات التكيف، حيث تراوحت فرادى الاحتياجات من ١٠٠ مليون دولار - أكثر من ٢٠٠ مليار دولار لفترة المساهمة المعتزمة كاملة إلى نحو ١٠ ملايين - ٣ مليارات في السنة. وقدمت بضعة أطراف تقديرات لتكاليف التكيف في مختلف سيناريوهات التخفيف، مشيرةً بوضوح إلى أن الحاجة إلى إجراءات التكيف تتوقف على الطموح في مجال التخفيف.

٦٥- وشددت بعض الأطراف على أنها تنفذ وستنفذ إجراءات التكيف بدعم محلي، في مؤشر واضح على أن **البلدان تستثمر بالفعل موارد هامة في مجال التكيف**. وأبرزت أطراف عديدة الحاجة إلى تلقي دعم دولي على شكل تمويل ونقل للتكنولوجيا وبناء للقدرات، بما يتسق مع الاتفاقية، لأن هذا الدعم هو ما سيحدد قدرة الأطراف على صون مكاسبها الإنمائية والوفاء بإجراءات التكيف غير المشروط المعتزمة واستخدام مواردها المحلية لأغراض إنمائية أخرى غير إجراءات التكيف.

٦٦- وبالإضافة إلى الجهود الوطنية والدعم الدولي، تضمنت بضعة من عناصر التكيف أشكالاً جديدة من التعاون، كالتعاون فيما بلدان الجنوب والتعاون الثلاثي، وأعلنت الأطراف عن استعدادها لدعم جهود التكيف التي تبذلها بلدان أخرى من خلال هذه الأنشطة.

٦٧- وإذ لاحظت الأطراف أن الإجراءات المتعلقة بتغير المناخ تقتضي نهجاً شمولياً، **فقد تناولت عدة أطراف أوجه التآزر بين التكيف والتخفيف في إطار استراتيجياتها الإنمائية الإجمالية الخفيضة الانبعاثات والقادرة على التأقلم مناخياً**. وتسعى الأطراف إلى إيجاد أوجه التآزر على مستوى المشاريع أو القطاعات أو المناطق، وفي التخطيط أو الأطر المؤسسية على الصعيد الوطني أو الإقليمي أو المحلي، وفي السياقات الحضرية والريفية، وعن طريق إعطاء الأولوية لتدابير التكيف التي تتيح منافع مشتركة هامة على صعيد التخفيف.

٦٨- وبما أن الطابع المعقد والطويل الأمد لتغير المناخ وآثاره يقتضي بلورة إجراءات التكيف في شكل عملية مستمرة ومرنة وخاضعة للاستعراض الدوري، فقد وصفت عدة أطراف كيف تعتزم رصد وتقييم إجراءاتها المعتزمة في مجال التكيف والدعم المقدم والمتلقى في هذا الصدد.

٦٩- وفيما يخص رصد وتقييم إجراءات التكيف، **أبرزت بعض الأطراف أنها قد وضعت أو ستضع مؤشرات كمية ونوعية للتكيف وقابلية التأثر لقياس التقدم المحرز في هذا المجال**. وفيما يتعلق برصد وتقييم الدعم المقدم والمتلقى على الصعيدين المحلي والدولي، وبخاصة التمويل، تعمل بضعة أطراف على إقامة نُظم لتمويل قضايا المناخ لتحديد النفقات اللازمة في هذا المجال وصرفها ورصدها ولتعزيز دور إجراءات التكيف لدى تخصيص الميزانيات الوطنية.

٧٠- وإجمالاً، **تقدم عناصر التكيف الواردة في المساهمات المعتزمة نظرة عامة عن كيف تعتزم الأطراف تناول مسألتي التكيف والخسائر والأضرار على الصعيد الوطني في العقود المقبلة، مستندة إلى التقدم الذي أُحرز حتى الآن**. وتعبر الطائفة المنوعة من المبادرات الرامية إلى تعزيز إجراءات التكيف التي قدمتها الأطراف عن أهمية التكيف لجميع مجالات النشاط الاقتصادي والاجتماعي، واهتمام الأطراف الشديد بمواصلة تعزيز جهودها في مجال التكيف، جنباً إلى جنب مع جهودها في مجال التخفيف.

II. Synthesis report on the aggregate effect of the intended nationally determined contributions

[English only]

A. Mandate and background

71. The COP, by decision 1/CP.17, launched a process to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties for adoption at COP 21 and to come into effect and be implemented from 2020. In accordance with that decision, the work under the process was to be undertaken by the ADP and be completed as early as possible, but no later than 2015.[19]

72. By decision 1/CP.19, the COP invited all Parties to initiate or intensify domestic preparations for their INDCs, without prejudice to the legal nature of the contributions, in the context of adopting a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties towards achieving the objective of the Convention as set out in its Article 2, and to communicate those INDCs to the secretariat well in advance of COP 21 (by the first quarter of 2015 by those Parties ready to do so) in a manner that facilitates the clarity, transparency and understanding of them.[20]

73. The COP, by decision 1/CP.20, reiterated its invitation to Parties to communicate their INDCs[21] and agreed that each Party's INDC towards achieving the objective of the Convention as set out in its Article 2 will represent a progression beyond the current undertaking of that Party.[22] It also agreed that the least developed countries (LDCs) and small island developing States may communicate information on strategies, plans and actions for low GHG emission development reflecting their special circumstances in the context of their INDCs.[23] Finally, all Parties were invited to consider communicating their undertakings in adaptation planning or to consider including an adaptation component in their INDCs.[24]

74. Also by decision 1/CP.20, the COP agreed that the information to be provided by Parties communicating their INDCs, in order to facilitate clarity, transparency and understanding, may include, as appropriate, inter alia, quantifiable information on the **reference point** (including, as appropriate, a base year), **time frames** and/or **periods for implementation**, **scope and coverage**, **planning processes**, **assumptions and methodological approaches**, including those for estimating and accounting for **anthropogenic GHG emissions and, as appropriate, removals**, as well as information on how the Party considers that its INDC 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.[25]

75. By that same decision, the COP requested the secretariat to prepare, by 1 November 2015, a synthesis report on the aggregate effect of the INDCs communicated by Parties by 1 October 2015.[26]

76. This document was prepared in response to that request and presents a synthesis of the aggregate effect of the 119 INDCs covering 147 Parties received by 1 October 2015. Chapter II.B provides an overview of the communicated INDCs, including their coverage and key

[19] Decision 1/CP.17, paragraphs 2–4.
[20] Decision 1/CP.19, paragraph 2(b).
[21] Decision 1/CP.20, paragraph 9.
[22] Decision 1/CP.20, paragraph 10.
[23] Decision 1/CP.20, paragraph 11.
[24] Decision 1/CP.20, paragraph 12.
[25] Decision 1/CP.20, paragraph 14.
[26] Decision 1/CP.20, paragraph 16(b).

components. Chapter II.C presents the approach and methods used for assessing the aggregate effect of the INDCs, as well as key challenges and assumptions adopted; chapter II.D provides a synthesis of the information contained in the INDCs; and chapter II.E presents the aggregate effect of the INDCs, with the exception of information relating to the adaptation component of the INDCs. Chapter II.F focuses on the adaptation component of the INDCs. An online technical annex contains further detailed information on the methodology used for the quantitative assessment contained in this report.[27]

B. Overview of the intended nationally determined contributions

77. As at 1 October 2015, 119 INDCs had been communicated to the secretariat, covering 147 Parties to the Convention,[28] including one regional economic integration organization,[29] representing 75 per cent of Parties and covering 86 per cent of global emissions in 2010.[30]

78. The communicated INDCs vary in their form, structure and content, reflecting different national circumstances. All Parties included information on their plans to reduce GHG emissions or enhance sinks, either in the form of mitigation targets or in the form of strategies, plans and actions for low GHG emission development. A synthesis of that information is presented in chapter II.D below. 100 Parties, accounting for 84 per cent of the INDCs, also included an adaptation component in their INDCs, an overview of which is presented in chapter II.F below.

79. Most Parties[31] explicitly addressed the information elements listed in decision 1/CP.20, paragraph 14. Some Parties provided information on all of those elements, while other Parties addressed some. Figure 3 presents a summary of Parties' provision of information in their INDCs, which is further elaborated in chapter II.D below.

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[27] Available at <http://unfccc.int/focus/indc_portal/items/9240.php>.

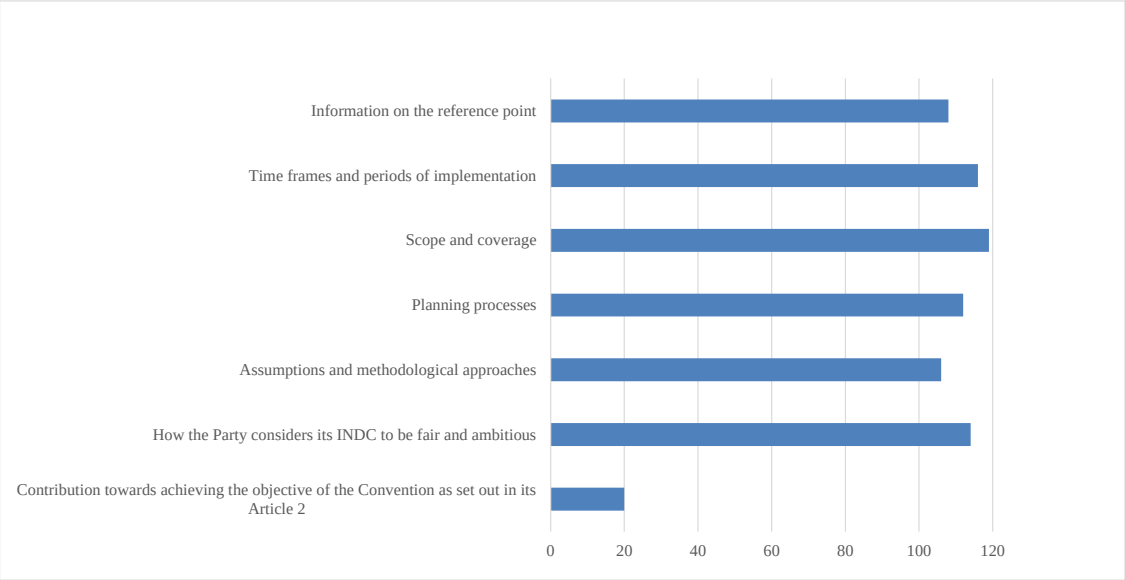
[28] Albania, Algeria, Andorra, Argentina, Armenia, Australia, Azerbaijan, Bangladesh, Barbados, Belarus, Belize, Benin, Bhutan, Botswana, Brazil, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Costa Rica, Cote d'Ivoire, Democratic Republic of the Congo, Djibouti, Dominica, Dominican Republic, Ecuador, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Georgia, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Iceland, India, Indonesia, Israel, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Lao People's Democratic Republic, Latvia and the European Commission on behalf of the European Union and its member States (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom of Great Britain and Northern Ireland) acting jointly, Lebanon, Lesotho, Liberia, Liechtenstein, Madagascar, Malawi, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Mexico, Monaco, Mongolia, Montenegro, Mozambique, Myanmar, Namibia, New Zealand, Niger, Norway, Papua New Guinea, Paraguay, Peru, Philippines, Republic of Korea, Republic of Moldova, Russian Federation, Rwanda, Samoa, San Marino, Sao Tome and Principe, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Solomon Islands, South Africa, Swaziland, Switzerland, Tajikistan, Thailand, the former Yugoslav Republic of Macedonia, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Ukraine, United Republic of Tanzania, United Stated of America, Uruguay, Vanuatu, Viet Nam, Zambia and Zimbabwe.

[29] The INDC of the European Union and its member States is counted as one INDC representing 29 Parties (the European Union and its 28 member States).

[30] Source: database developed for the preparation of this synthesis report.

[31] In this report, the following qualifiers are applied depending on the percentage of the submitted INDCs that mention the issue: "a few" for less than 10 per cent; "some" for 10–40 per cent; "several" for 40–70 per cent; "many" for 70–90 per cent; and "most" for 90 per cent and above. Chapter II.F below uses these qualifiers to indicate the percentage range of the submitted INDCs that elaborate on a certain adaptation issue.

Figure 3
Information provided by Parties communicating their intended nationally determined contributions in accordance with decision 1/CP.20, paragraph 14



Note: Most Parties communicated in their INDCs information on how they consider that their respective INDC is fair and ambitious in the light of their national circumstances together with information on how their INDC contributes towards achieving the objective of the Convention as set out in its Article 2. Some INDCs addressed these issues separately.

Abbreviation: INDC = intended nationally determined contribution.

80. In addition to providing the information outlined in decision 1/CP.20, several INDCs contain information relating to the use of market mechanisms and many contain information on means of implementation necessary for the implementation of their INDCs, including domestic and international finance, technology transfer and development, and capacity-building (see paras. 179-186 below).

C. Approach and methods

81. This chapter provides a brief overview of the approach, methods, challenges and assumptions in relation to the preparation of this report, with the exception of those related to the adaptation component of the INDCs, which are discussed in chapter II.F below. Further information and details on methodology and related assumptions have been compiled in the web-based technical annex.

1. Approach

82. In responding to the mandate referred to in paragraph 75 above, this report provides a synthesis of the information submitted by Parties in their INDCs, which has been structured following the information elements identified in paragraph 14 of decision 1/CP.20, as outlined in paragraph 74 above.

83. With a view to evaluating the aggregate effect of the communicated INDCs, this report provides estimates of the aggregate emission levels in 2025 and 2030 for the sectors and gases covered by the INDCs resulting from the achievement of the contributions. The emission levels were calculated both in annual and cumulative terms (i.e. cumulative emissions from 2011 to 2025 and from 2011 to 2030). The estimates are presented as median values and associated

ranges owing to the various assumptions and conditions specified by Parties in their submissions and uncertainties associated with gaps in information.

84. It should be noted that the estimates of aggregate effect depend on, among other things, the share of emissions that is covered by the INDCs. As noted in chapter II.B above, the INDCs communicated to date do not cover all Parties and not all Parties that have communicated an INDC have included all gases and sectors. Therefore, the aggregate emission levels of the Parties, gases and sectors covered by the INDCs cover approximately 80 per cent of global emissions.[32]

85. The estimates of the global level of emissions in 2025 and 2030 resulting from the implementation of the communicated INDCs were calculated using IPCC scenarios. Those scenarios were also used to obtain estimates of emissions in 2025 and 2030 not covered by the INDCs by extracting from them the emission growth rates of relevant countries, regions, sectors and gases. The global levels of emissions in 2025 and 2030 were estimated by adding the estimated aggregate emission levels of the sectors and gases covered by the INDCs that result from the implementation of the communicated INDCs in 2025 and 2030 to the levels of emissions not covered by the INDCs from IPCC scenarios for the same years. The method used to estimate the global levels of emissions in 2025 and 2030 resulting from the implementation of the communicated INDCs is further explained in paragraphs 90-98 below.

86. The estimated global levels of emissions in 2025 and 2030 associated with the INDCs are further discussed in relation to:

(a) The global levels of emissions in 1990, 2000 and 2010;

(b) The global emission levels in 2025 and 2030 corresponding to pre-INDC trajectories consistent with action communicated by Parties for 2020 or earlier;

(c) The global emission levels in 2025 and 2030 corresponding to least-cost scenarios consistent with holding the global average temperature rise below 2 °C above pre-industrial levels (hereinafter referred to as 2 °C scenarios).

87. Finally, with a view to providing information on the aggregate effect of the INDCs beyond 2030, this report discusses identified trends that could provide opportunities for enhanced action in the longer term. Using the information contained in the INDCs, such trends are discussed with regard to participation, policies and institutions, cooperation, national circumstances and ambition.

88. In accordance with the mandate for its preparation, this report does not present or analyse any individual INDC. It focuses on the effect of the INDCs in aggregate. Furthermore, it represents a single study of the INDCs rather than an overview of the outcomes of multiple studies by other institutions. For the purpose of this report, the following ground rules have been applied:

(a) The report is based on information communicated by Parties in their INDCs. The use of additional information is described in paragraph 94 below;

(b) The analysis is focused on the sectors and gases covered by the INDCs. GHG emissions that do not fall within the scope of the INDCs were only assessed at the aggregate global level using scenarios from the IPCC scenario database, as explained in paragraphs 95 and 96 below;

(c) Likewise, the report does not include in its analysis the effect of any other policy or target not communicated by Parties as part of their INDCs;

(d) Information is aggregated and not presented at any national or regional level;

[32] Eighty per cent refers to the share of global emissions in 2010 related to the sectors and gases covered by the communicated INDCs.

(e) No assumptions have been made on the likelihood of the INDCs being fully implemented or exceeded. In preparing the report, the secretariat assumed that Parties will achieve in full the level of emissions implied in their INDCs.

2. Methods

89. As noted in paragraph 85 above, the estimates of global emissions in 2025 and 2030 associated with the communicated INDCs were derived by adding the estimated aggregate emissions resulting from the implementation of those INDCs to the estimated global aggregate emissions not covered by the INDCs. In the context of this report, methods were used to:

(a) Estimate the aggregate levels of emissions resulting from the implementation of the communicated INDCs in 2025 and 2030;

(b) Estimate the levels of the emissions not covered by the INDCs in 2025 and 2030 using IPCC reference scenarios.[33]

90. The aggregate levels of emissions in 2025 and 2030 resulting from the implementation of the communicated INDCs were estimated by adding up the expected levels of emissions in the same year communicated in each individual INDC. The resulting emission level is expressed as a median value with an associated range (20^{th} to 80^{th} percentile) owing to the uncertainties underlying the aggregation of the INDCs as well as the conditions expressed by Parties in their submissions.

91. Whenever a Party included in its INDC the expected level of emissions in 2025 or 2030, that figure was used in the calculation of the aggregate level. In the absence of such a figure, the method used for quantifying that level differed depending on the type of INDC, as follows:

(a) For absolute economy-wide emission reduction targets relative to a base year, the estimated level of emissions in the target year (2025 or 2030) was calculated directly by subtracting from the level of emissions in the base year the percentage specified by the Party for that target year;

(b) For emission reductions below BAU level, the estimated level of emissions in the target year was calculated by subtracting from the expected level of emissions in the target year the percentage reduction specified by the Party for that year;

(c) For intensity targets (e.g. targets expressed as a percentage reduction in the relationship between emissions and GDP), the estimated level of emissions in the target year was calculated by, firstly, subtracting from the intensity in the reference year the percentage specified by the Party for that target year and, secondly, by multiplying the resulting intensity by the expected level of GDP in the target year, as communicated by the Party, if available;

(d) For emission peaking targets, historical emission growth rates were projected linearly towards zero in the year of peaking to obtain an estimate of maximum emissions;[34]

(e) For Parties that used a combination of any of the above and for which sectors and gases may overlap, expected levels of emissions in 2025 and 2030 were estimated individually. The target that resulted in the lowest emission levels was used in the calculation of the aggregate emissions;

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[33] This estimate is based on global emission figures for 2025 and 2030 for the countries, sectors and gases not covered by the communicated INDCs derived from scenarios in the IPCC AR5 scenario database that reflect the 2020 pledges under the Cancun Agreements. The specific scenarios used for the sector-, gas-, country- and region-specific growth rates of emissions until 2025 and 2030 are those from the so-called P3 set of scenarios, specifically the AMPERE 'HST' subset (n=22) that investigated climate policies to meet the 2020 pledges under the Cancun Agreements and kept climate policies constant thereafter until 2030.

[34] Whenever necessary, multiple initial growth rates were used. The secretariat ensured that the estimates were consistent with national expert assessments.

(f) For other types of INDCs, including policies and measures, this report does not contain a quantification of their effect unless official estimates for emissions in 2025 and 2030 were provided by the Party in question.

92. Most Parties indicated a time frame of up to either 2025 or 2030 in their INDCs. For Parties that used a time frame of up to 2030, the level of emissions in 2025 was estimated using linear interpolation between the latest available emission level and the estimated level of emissions in 2030 resulting from the implementation of their INDC. If the Party in question had previously communicated a target with a time frame of up to 2020 (e.g. action communicated in the context of the pre-2020 period), the level of expected emissions in 2020 pursuant to that target was used in the interpolation alongside the current level of emissions. In that case, both emission levels for 2025 were aggregated to achieve the global emission level in order to reflect the inherent uncertainty in the quantification.

93. For Parties that used a time frame ending in 2025, their estimated level of emissions in 2030 resulting from the implementation of their INDC was calculated as follows:

(a) If the Party provided a long-term trajectory or target, that information was used to interpolate emissions from the expected emission levels in 2025 resulting from the implementation of its INDC to the level specified by the long-term trajectory or target;

(b) If the Party did not provide a long-term trajectory, linear extrapolation from the estimated emission level in 2025 was used to estimate the emission level in 2030 using an average change in emissions until 2025, on the basis of available historical data and, if available, of actions communicated for 2020 or earlier period.

94. In applying the methods specified above, the targets communicated by each Party as part of its INDC took precedence. That information was complemented, as necessary, by data contained in the latest official inventories, national communications, biennial update reports and biennial reports. Any remaining data gaps were addressed by using a set of scientific global data sets.[35]

95. As noted in paragraph 84 above, the estimated level of emissions communicated in each INDC for the target years (2025 and 2030) includes only those sectors and gases specified by each Party in its INDC. As a result, the aggregate level of emissions resulting from the implementation of the communicated INDCs is a partial estimate that excludes Parties that did not communicate an INDC as well as the sectors and gases that each Party chose not to include in its INDC. In order to discuss that partial estimate in the global context, total global emissions in 2025 and 2030 were estimated in accordance with paragraph 85 above.

96. To derive the level of the emissions not covered by the communicated INDCs, global emission scenarios[36] were adjusted to remove the reference emissions strictly associated with the INDCs by extracting any relevant gas-, sector-, country- or region-specific growth rate. Additional details are available in the technical web-based annex.

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[35] For a consistent aggregation of emissions, a gas-by-gas data basis was necessary, in order to allow the conversion from different metrics, such as GWP SAR or GWP AR5 metrics into GWP AR4, which was used consistently for the aggregation in this report. This is part of the reason why, in some cases, complementary data sets were necessary in order to arrive at an estimate for the aggregate effect of the INDCs. The primary complementary source of gas-by-gas data on the emissions of Parties not included in Annex I to the Convention was the IPCC AR5 historical emission database (as shown in figure SPM.1 of the contribution of Working Group II to the AR5), which is a composite database including sources such as IEA, EDGAR and Houghton et al. (Houghton RA, van der Werf GR, DeFries RS, Hansen MC, House JI, Le Quéré C, Pongratz J and Ramankutty N. 2012. Chapter G2 Carbon emissions from land use and land-cover change. *Biogeosciences*. 9: pp.5125–5142.), in combination with data from the Food and Agriculture Organization of the United Nations, the Carbon Dioxide Information Analysis Center and others.

[36] The scenarios were taken from the IPCC AR5 scenario database, available at <https://secure.iiasa.ac.at/web-apps/ene/AR5DB/dsd?Action=htmlpage&page=about>.

97. Cumulative CO_2 emissions were calculated by assuming the same growth rates in CO_2 and non-CO_2 emissions as the IPCC reference scenarios projected, starting from the last available year of historical emission data in the underlying emission database. The resulting share of CO_2 emissions was then applied to the linearly estimated trajectory of GHG emissions between the last historical data point and estimated emission levels for 2020, 2025 and 2030. Consistent with the report of IPCC Working Group I,[37] future carbon emissions were then summed for the cumulative emission estimate, starting after 2011.

98. The results presented in chapter II.E correspond to a 60 per cent range from the 20th percentile to the 80th percentile across the set of a total of 304 emission estimates for 2025 and 2030, with 152 being different implementations of the 'high' and 152 being different implementations of the 'low' emission estimates. Those estimates are taken from the respective ends of any communicated INDC target ranges. The 'high' end aggregates all unconditional central INDC targets (where a Party communicated only a single target) and any upper end of ranges that were provided by a Party. The 'low' end similarly aggregates all central INDC targets as well as the lower ends of the target ranges, if applicable. The 'low' variant was calculated by including any conditional targets, if available.

3. Key challenges and assumptions

99. The approach and methods described above include a number of uncertainties linked to data availability and quality.

100. One key challenge relates to the different ways in which Parties have chosen to express their INDCs, including time frames and reference years as well as the sectors and gases covered.

101. Further challenges relate to the methodologies used for estimating and projecting GHG emissions as well as to the quality, clarity and completeness of the data used (see chapter II.D below). The latter includes, for example: missing information on metrics, such as GWP values applied; lack of gas-by-gas emission data to be able to aggregate emissions with the same consistent metrics; missing or incomplete data on the BAU scenario and expected future values for GDP or population; lack of clarity on approaches to the accounting of the LULUCF sector; missing information on the application of conditions in the target year; and lack of information on the use of international market-based mechanisms and how double counting was avoided.

102. The above-listed challenges were addressed by applying a consistent approach, as follows:

(a) Uncertainties arising from the different ways in which Parties have chosen to express their INDCs were addressed by applying the method described in paragraph 91 above;

(b) As noted in chapter II.C.1 above, the analysis is based on data included by Parties in their INDCs. Challenges related to missing data were addressed as described in paragraph 94 above;

(c) Differences in the coverage of sectors and emissions were addressed by limiting the country-level analysis to the GHG emissions covered by the INDCs;

(d) Uncertainties linked to conditions specified by Parties in their INDCs were addressed by estimating unconditional and conditional emission reduction levels and expressing the result as a range.

103. A major area of uncertainty relates to the approaches used for estimating, projecting and accounting emissions and removals from the LULUCF sector. The results presented in this report are dependent upon the high sensitivity of the methods used to estimate global emissions to how emissions and removals from that sector were considered. For example, some Parties

[37] *Climate Change 2013: The Physical Science Basis*. Available at <http://www.ipcc.ch/report/ar5/wg1/>.

intend to follow specific accounting rules, while others take a full carbon accounting approach (i.e. include LULUCF net emissions or removals like any other sector).[38]

104. This report takes those divergent treatments of the LULUCF sector into account when estimating the global emission levels. For example, a relative target below a historical base year was applied to the total national emissions including LULUCF emissions, if the country stated its intention to account for the LULUCF sector as any other sector. To the extent quantifiable with the available data sources, exceptions were taken into account, for example reported wildfire-related (and approximate estimates for insect-related) emissions were subtracted in the base year, if emissions related to natural disturbances were intended not to be counted up to 2025 or 2030. In the absence of other methods to estimate LULUCF-related accounting for some countries, this report assumes, if applicable, a (discounted) continuation of credits/debits from the first commitment period under the Kyoto Protocol (see more details in the web-based technical annex). Where available, reported projections 'with existing measures' formed the basis for LULUCF-related emission and removal estimates in the future, unless the Party specified LULUCF projections in its INDC. Alternatively, the last available historical data points were assumed constant.

105. There is a definitional difference between the UNFCCC guidance for estimating anthropogenic GHG emissions and removals from the LULUCF sector on the one side and the land-use change related emissions that are part of the global emission estimates of the IPCC[39] and scenarios within the IPCC AR5 scenario database on the other side. In order to be able to compare global emission levels to IPCC AR5 estimates and the IPCC AR5 scenarios, this report proceeds as follows: the underlying calculations take into account LULUCF emissions and removals as indicated by Parties with regard to their effect on the other sectors in the total national emissions by 2025 and 2030. In order to arrive at global total emission estimates in line with the IPCC global emissions, a range of global land-use change emission scenarios in line with the pledges under the Cancun Agreements is assumed for the timeline up to 2025 and 2030.[40] This enables the comparability of the aggregate emission estimates in this report with the emission levels provided by the IPCC.[41]

106. It should be noted that, in addition to the conditions stated by Parties in their INDCs, the uncertainty related to the accounting of LULUCF emissions and projections of LULUCF emissions and removals is a factor contributing to the need to express the estimated aggregate emissions in 2025 and 2030 as a range. The change in the aggregate LULUCF emissions and projections is within the range of the IPCC AR5 reference scenarios' change in land-use change emissions from current levels to 2025 and 2030. This qualitatively supports the chosen approach described above of how global emission estimates are made consistent with those from IPCC AR5 scenarios.

107. Emissions from international transport also have to be included in the global emission estimates in order to estimate global aggregate emissions that are comparable to emission scenarios from the IPCC AR5 scenario database. For this report, the International Civil Aviation Organization 2013 target of carbon-neutral growth from 2020 is used[42] (i.e. plateauing of

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[38] Some Parties specify also how natural disturbances and harvested wood products are to be accounted for.

[39] See, for example, figure SPM.1 contained in the contribution of Working Group III to the AR5.

[40] Specifically, global land-use change emissions in the past up to 2013 follow the Houghton et al. data set used in the contribution of Working Group III to the AR5 and are merged with the land-use change emissions that are part of the P3 AMPERE HST scenarios from the IPCC AR5 scenario database. The estimated change in LULUCF emissions between current levels and 2025 or 2030 (a change of –1.0 Gt CO_2 by 2025 compared with in 2005 and a change of –1.1 Gt CO_2 by 2030 compared with in 2005) pursuant to Parties' information in their INDCs, inventories and reference level projections is within the range spanned by the change of emissions in the applied land-use change emission scenarios, which supports the validity of this aggregation step in order to yield global emission estimates that are comparable to the IPCC AR5 scenarios.

[41] As footnote 40 above.

[42] See <http://www.icao.int/Meetings/a38/Documents/WP/wp430_en.pdf>.

international aviation CO_2 emissions from 2020). The assumed level of the plateau is 0.75 Gt CO_2, or 64 per cent above 2010 levels. For maritime transport emissions, this report used so-called "scenario 5" (1.19 Gt CO_2 emissions in 2030) from the International Maritime Organization (IMO) *Third IMO 2014 GHG study*,[43] which assumes a 2.9 per cent reduction below a high-growth baseline scenario. In order to span the range of mitigation scenarios presented by IMO, IMO "scenario 3" is used as a sensitivity case, which assumes a similar 2.9 per cent reduction, but below a low-growth baseline scenario. This sensitivity case lowers estimated global aggregate emission estimates by 0.1 Gt CO_2 for 2025 and 0.25 Gt CO_2 for 2030 compared with the default case.

108. As regards the use of international market-based mechanisms, the present analysis assumes that any international offset will lead to additional emission reductions abroad. In other words, it is assumed that emission reductions in the context of the implementation of one INDC are not counted twice in the context of implementing another one.

D. Synthesis of the information in the intended nationally determined contributions

109. This chapter provides a synthesis of the information communicated by Parties in their INDCs, except for the information related to the adaptation component.[44] It is structured in accordance with the information elements identified in paragraph 14 of decision 1/CP.20, as described in paragraph 74 above, with a slightly changed order to allow for technical information relevant to the quantitative analysis to be presented together.

110. Information that facilitates the clarity, transparency and understanding of the INDCs enables the estimation of the resulting aggregate emissions in 2025 and 2030. A lack of completeness and consistency of information increase the uncertainty of the results and necessitate the use of assumptions. The approach to using that information is described in chapter II.C above.

1. Types and targets of intended nationally determined contributions

111. All of the INDCs contain information on mitigation targets or on strategies, plans and actions for low GHG emission development within a specified time frame or implementation period (see figure 4).

112. Most of the INDCs are national in scope; they address all major national GHG emissions or at least the most significant sources. Many contain quantified emission reduction targets, which take a variety of forms:

(a) Some of the INDCs include economy-wide mitigation targets, with absolute emission reduction targets expressed as an emission reduction below the level in a specified base year and ranging from a 9.8 to 90.0 per cent emission reduction below the respective base year level. A few of the INDCs contain absolute targets that are not linked to a base year but establish an overall maximum absolute limit on emissions (e.g. carbon neutrality by a future date or a specified amount of GHGs to be emitted over a period of time);

(b) Half of the INDCs include relative targets for reducing emissions below the BAU level, either for the whole economy or for specific sectors, ranging from 1.5 to 89.0 per cent;

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[43] Available at <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Greenhouse-Gas-Studies-2014.aspx>.

[44] A synthesis of the information communicated by Parties in their adaptation components is contained in chapter II.F below.

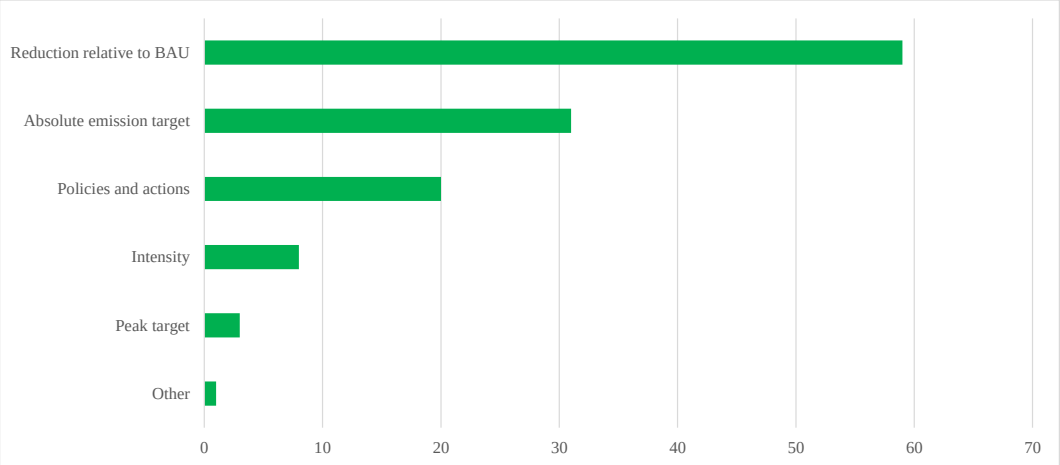
(c) A few of the INDCs contain intensity targets, with reductions in GHG emissions per unit of GDP or per capita ranging from 13 to 65 per cent relative to the level in a base year (e.g. 2005 or 2010) or to the absolute level of per capita emissions by 2025 or 2030;

(d) A few of the INDCs specify mitigation contributions through to the year or time frame in which their emissions are expected to peak (e.g. by 2030 or earlier);

(e) Some of the INDCs contain strategies, plans and actions for low GHG emission development reflecting Parties' special circumstances, in accordance with decision 1/CP.20, paragraph 11.

Figure 4

Types of mitigation target communicated in the intended nationally determined contributions



Abbreviation: BAU = 'business as usual'.

113. Some of the INDCs communicated specific mitigation targets for individual sectors or subsectors to support and/or underpin the overall mitigation target. A few Parties communicated a quantified target for renewable energy expressed as a percentage of different indicators, such as share in the energy matrix, installed capacity, penetration, generation and others. Some Parties included such targets as part of the information to facilitate the clarity, transparency and understanding of their INDCs. The targets ranged between 3.5 to 100.0 per cent of these indicators. Furthermore, a few Parties communicated quantified targets for LULUCF expressed either as hectares, cubic meters of biomass or tonnes of carbon.

114. Many Parties identified conditions for the full implementation of their INDCs, such as: expectations concerning the results of the ADP process; the level of effort undertaken by other Parties; the availability of market-based mechanisms; and access to enhanced financial resources, technology transfer and technical cooperation as well as enhanced capacity-building support. Some Parties did not specify conditions for their INDCs.

115. A few Parties provided information on specific conditions, such as: the establishment of an effective set of accounting rules and guidelines for estimating GHG emissions and removals, including from the LULUCF sector; the availability of economic instruments, including international, regional and bilateral market-based instruments; the costs of technology; and the absorbing capacity of forests.

116. Some of the INDCs include an unconditional mitigation component alongside an enhanced conditional one. Most of those conditional components relate to the provision of finance, technology or capacity-building support and translate into a percentage increase in the level of effort associated with the unconditional component. Such percentage increase is specific to the type of target selected by the Party (e.g. percentage reduction in emissions against a base

year, BAU or emission intensity) and ranges from 2 to around 53 per cent of additional emission reductions.

117. Furthermore, a few Parties stated in their INDCs the expectation that negotiations under the ADP will provide the clarity required for meeting some of the above-mentioned conditions. A few Parties also indicated they reserve the right to revise their INDCs in the light of the outcome of the ADP process.

118. Together with uncertainties related to the estimation of emission reductions associated with the communicated mitigation targets and strategies, plans and actions for low GHG emission development, conditions attached to the INDCs result in aggregate global emissions for 2025 and 2030 being expressed as ranges (see para. 83 above).

119. In addition to communicating information on mitigation targets or strategies, plans and actions for the near to medium terms, some Parties included information on long-term mitigation strategies for the period up to and beyond 2050, indicating a transition towards low-emission development and climate resilience. In many of those INDCs, the near- to medium-term mitigation contribution is embedded in the long-term development strategy, aiming at greater ambition over time. The long-term goals communicated in the INDCs range from a 25 per cent GHG emission reduction by 2050 below BAU, through emission reductions or per capita emission reductions by 2050 below a specific base year level (e.g. 1990 or 2000), to achieving carbon neutrality or the transition to a low-emission society by 2050 or 2085, respectively.

2. Information on the reference point (including, as appropriate, a base year)

120. Information on the reference point generally constitutes an indication of a specific year (base year) or time frame when the emission levels or emission intensity levels serve as reference to set a mitigation target for the future. Information on the base year rather applies to absolute emission reductions or intensity-based mitigation objectives rather than to the objectives expressed as reductions below BAU or as a peaking year.

121. All Parties provided information on the reference point. Some Parties chose 1990 as a base year, a few chose 2005 and others referred in their INDCs to 2000, 2010, 2013, 2014 or 2015. Some Parties further specified the level of their emissions for the reference point and/or the specific source of the emission data for the reference point, such as a respective national inventory or other reports submitted to the UNFCCC, such as biennial update reports. Some Parties that expressed their mitigation objectives as a reduction below BAU level provided information on the reference emission scenarios.

3. Time frames and/or periods of implementation

122. Time frames and/or periods of implementation refer to a time period into the future during which the INDCs are to be implemented and/or achieved. Depending on their national circumstances, Parties communicated a single year or a period.

123. Most Parties communicated information on time frame and/or period of implementation in their INDCs. Most Parties communicated either a 5- or 10-year time frame for the implementation of their INDC. Many of the communicated INDCs refer to periods of implementation up to 2030, while a few INDCs specify a period up to 2025. A few of the INDCs communicated targets for both 2025 and 2030, one of which is indicative or interim. A few Parties indicated a timeline ending in 2035, 2040 or 2050, mostly in conjunction with another target year. Furthermore, a few Parties communicated an implementation period starting before 2020.

4. Scope and coverage

124. Information on the scope and coverage of the INDCs generally refers to the sectors and gases that are included in the mitigation targets or strategies, plans and actions for low GHG

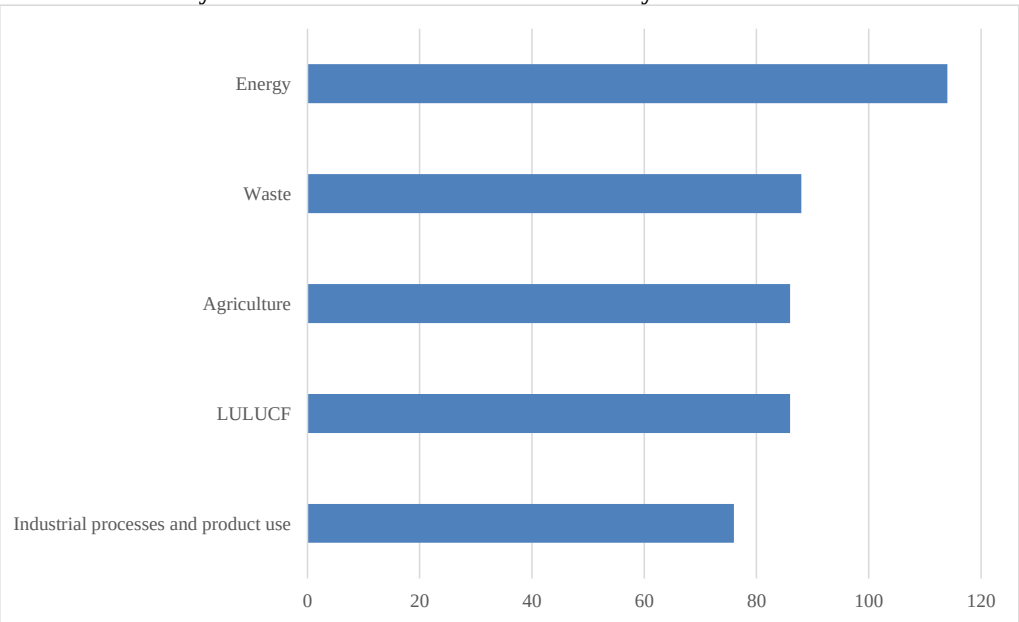
emission development and therefore provides the basis for determining whether the INDCs are covering total GHG emissions or a subset thereof. The mitigation targets or strategies, plans and actions for low GHG emission development communicated in the INDCs vary in their scope and coverage of the sectors and GHGs.

125. Many of the communicated INDCs cover most or all sectors in line with the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines) and hence are 'economy wide'. Those INDCs generally include the energy, industrial processes and product use, agriculture, LULUCF and waste sectors (see figure 5).

126. A few Parties provided information on the coverage of specific sectors that are of national importance and often form a subset of one or several of the IPCC sectors, such as the transport and/or building sector, while others also mentioned shipping and aviation, oil industry flaring, solvents and electric power.

127. Some Parties highlighted their mitigation actions in the forest sector, in particular through implementation of the activities referred to in decision 1/CP.16, paragraph 70 (hereinafter referred to as REDD-plus activities).[45] A few of those Parties further elaborated that their mitigation efforts in the forest sector will be coordinated through their existing REDD-plus initiatives.

Figure 5
Sectors covered by the communicated intended nationally determined contributions

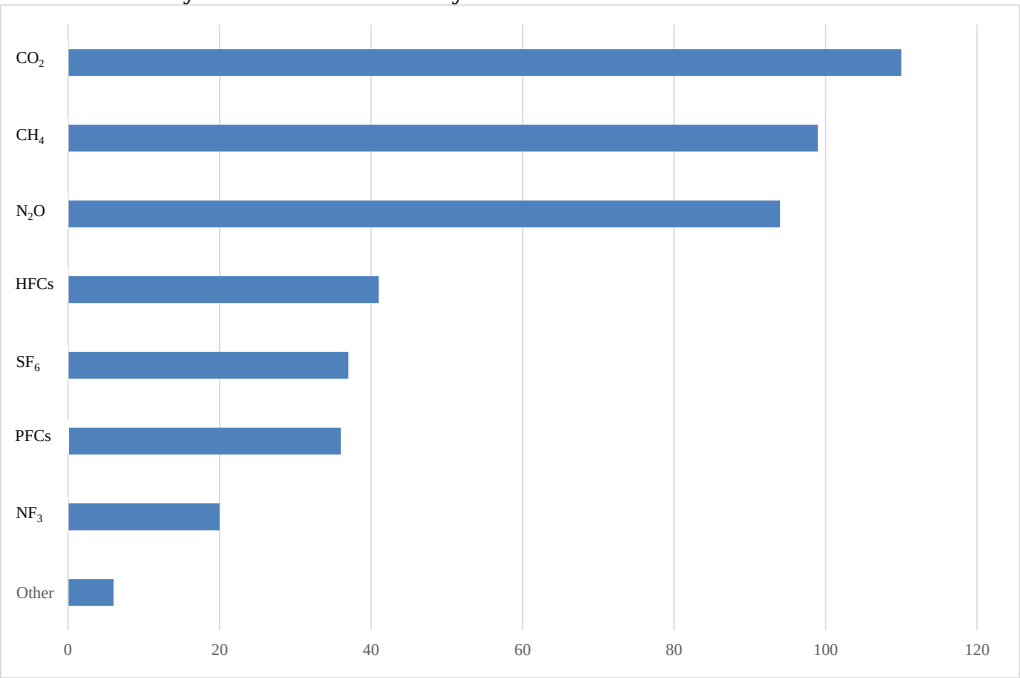


Abbreviation: LULUCF = land use, land-use change and forestry.

128. The coverage of GHGs in the INDCs is influenced by national circumstances. In line with the reporting activities of Parties under the Convention, most of the communicated INDCs cover CO_2 and many cover CH_4 and N_2O emissions, while some also cover emissions of SF_6, HFCs, PFCs and NF_3. A few of the INDCs include additional gases or emissions, including SLCFs (see figure 6).

[45] In decision 1/CP.16, paragraph 70, the COP encouraged developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.

Figure 6
Gases covered by the intended nationally determined contributions



129. Diversity in the coverage of sectors and gases across the communicated INDCs poses a key challenge to assessing the aggregate effect of the INDCs in terms of global GHG emissions, as the aggregate level of emissions resulting from the INDCs in 2025 and 2030 is only a partial estimate of global emissions, excluding emissions from sectors and gases not covered by the communicated INDCs.

130. Differences in the coverage of gases across the INDCs do not have consequences for the evaluation of their aggregate effect itself, as long as such coverage is transparently presented ex ante, but it could affect the estimated total emission reductions and the calculation of the overall impact on increasing the total level and concentration of GHG emissions in the atmosphere.

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

131. Most Parties communicated some information on the assumptions and methodological approaches used for estimating and accounting emissions and removals, with varying level of detail. Most of those assumptions and methodologies relate to the estimation and projection of GHG emissions and removals. The quality and quantity of the information varied greatly, depending primarily on the communicated mitigation target and national capacity. Some Parties also provided information on the source of their data, including references to national studies, their GHG inventory and national communications.

Reporting guidelines

132. To respond to the requirements to prepare and communicate national inventories of GHGs, Parties use guidelines prepared by the IPCC, including: the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*; the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance); the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF); and the 2006 IPCC Guidelines.

133. While the guidelines applied differ, many Parties are shifting or intending to shift towards more recent guidelines. They are also widening the coverage of sectors and GHGs in their inventories.

134. Many Parties referred to the standard methods and procedures contained in the different IPCC guidelines. Some Parties mentioned the use of the 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol, as well as the IPCC good practice guidance, the IPCC good practice guidance for LULUCF and the *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*.

Global warming potentials and other metrics

135. GWPs are used for aggregating emissions of the different GHGs into a single national total. Several of the INDCs communicated by Parties contain information on GWPs. Most of these INDCs considered GWPs on a 100-year timescale in accordance with either the IPCC Second Assessment Report (including those INDCs that refer to decision 17/CP.8) or the AR4 (including the INDCs that refer to decision 24/CP.19). A few Parties used GWP values published in the AR5, and one Party used GWP values and also global temperature potentials to describe its mitigation targets.[46]

Land use, land-use change and forestry

136. Many Parties included emissions and removals from LULUCF or specific mitigation actions targeting them in their INDCs. Several Parties mentioned actions in the LULUCF sector among the priority areas in the implementation of their INDCs.

137. Some of the INDCs contain information specific to LULUCF accounting. Many of them, however, do not include comprehensive information on the assumptions and methods to be used in the accounting of emissions and removals from LULUCF. This presents a major challenge in the assessment of the aggregate effect as it represents a major area of uncertainty.

138. A few Parties stated their intention to account for LULUCF, covering all emissions and removals from all pools and gases, using a net-net approach. Others listed a number of activities, namely afforestation, reforestation, revegetation, wetland restoration, reducing emissions from deforestation and forest degradation.

139. A few Parties indicated that they are switching to a comprehensive land-based approach but that the actual approach for quantifying LULUCF is still to be defined. A few Parties explained that the decision on whether LULUCF would be included, and any related methods, would be made at a later stage once better information on mitigation potential is available.

140. A few Parties stated that they will also make use of specific provisions for LULUCF in order to address specific issues in the contribution, such as how to address the inclusion of harvested wood products, the exclusion of emissions from natural disturbances, permanence, land-use flexibility, legacy and non-anthropogenic effects.

141. Some Parties indicated that a common framework for accounting may be desirable, which could be based on existing guidance and experiences under the Convention and its Kyoto Protocol. Most of these Parties are of the view that such a framework should be comprehensive and should ensure transparency and environmental integrity. Finally, one Party indicated that reference scenarios or levels used in the accounting of LULUCF should, when based on a projection, be subject to a technical assessment process.

Future greenhouse gas emission levels

142. For mitigation targets other that economy-wide absolute emission reductions, information on expected GHG emissions in the future is required to assess the aggregate effect of the INDCs.

[46] One Party used GWPs for black carbon as described in Bond et al. 2013. Bounding the role of black carbon in the climate system: A scientific assessment. *J. Geophys. Res. Atmos*. 118(11): pp.5380–5552.

Only a few Parties provided a quantitative baseline, BAU scenario or projections of emissions for 2025 and/or 2030. A few Parties indicated that they will provide related information once it becomes available.

143. Some Parties provided information on the assumptions used to develop a BAU scenario or to project GHG emissions. Most of these Parties referred to macroeconomic variables such as GDP or population, or to growth rates of these two variables. Other Parties mentioned the use of sector-specific variables, in particular for the energy sector, such as future demand for energy or electricity, electrification rates, efficiency and grid loss, as well as activity data for other sectors. A few only provided values for these variables and some referred to sources of data such as national statistics or international databases.

144. A few Parties mentioned the use of models to estimate future emissions, such as the Long-range Energy Alternative Planning system or the Greenhouse Gas Costing Model (GACMO). A few also indicated the development of scenarios to estimate future emissions under BAU and different levels of mitigation effort and based on the implementation of a series of mitigation measures.

6. Planning processes

145. Most of the INDCs communicated by Parties contain information on planning processes related to their INDCs, in both the national and international contexts. In this context, Parties communicated information on existing and future institutional arrangements related to the implementation of their INDCs, including references to existing related legislation, strategies, policies and measures aimed at addressing climate change, enhancing ambition, and/or concrete measures in the key sectors that lead to reducing GHG emissions or enhancing sinks. Some of the INDCs also contain information on stakeholder engagement processes as well as on concrete areas identified as priorities for future action. Some Parties provided information on how existing policies or legislation would be enhanced in order to implement their INDCs or on further processes necessary for the domestic approval and implementation of their INDCs.

Institutional arrangements

146. Institutional arrangements, including institutional structures and processes, were indicated by Parties to be a key element of the overall national climate change planning process. Many of the INDCs highlight mechanisms for coordination and cooperation, including for: intersectoral/inter-agency dialogue; raising awareness, facilitation of consultation and establishing relationships among various stakeholders; and establishing effective systems for collecting, processing, reporting and archiving required data and information.

147. Many Parties in their INDCs communicated that, as a result of the implementation of their current climate policies, they have already established institutions and instruments to address climate change, which they will draw upon in the agency cooperation and coordination on climate change at the national level, and in some cases at the regional and local levels. In this context, some Parties highlighted that they are preparing existing institutions for the challenges of implementing their INDCs and the transition towards low-emission development by broadening their scope and equipping them with additional mandates and/or resources. Some INDCs note strengthening the existing institutions and their capacities among the priority actions that Parties are planning to undertake to implement their respective INDCs. Some Parties communicated information referring to their established domestic measurement, reporting and verification (MRV) systems, while some INDCs highlight developing or improving the existing MRV systems among the priority actions for their implementation. Some INDCs include information on the establishment of various inter-agency, intergovernmental and multi-stakeholder forums or mechanisms that focus on climate change on an ongoing basis. Some Parties have established institutions to provide capacity-building and information-sharing platforms at the national and regional levels.

Existing legislation and policies

148. Most of the INDCs build on and/or are embedded in existing climate change and/or development strategies, policies and legislation, reflecting national circumstances, or have triggered processes for climate change policymaking and will lead to new policies and legislation (39 INDCs, 33 per cent). While the level of ambition and the degree of advancement in national climate policies vary, all Parties mentioned that their INDCs are based on, among others, existing policies or ongoing national processes, as well as experiences with implementing the Convention and its Kyoto Protocol.

149. Many of the INDCs are already backed up by existing domestic legislation or policies. Most Parties in this context elaborated on: their current national green growth, climate change, sustainable development and related sectoral policies (e.g. energy, transport, agricultural and forestry policy); their international commitments under the Kyoto Protocol and the Doha Amendment; existing domestic regulations and laws; and their performance to date. A few of the INDCs identify a lack of sufficient legislation and policies that would be needed for their implementation and resulting capacity-building requirements.

150. Some of the INDCs include specific policies that provide the potential for scaling up and further development in the context of their implementation. Some examples of current policies include comprehensive national legally binding climate change and energy legislation, national climate change strategies, carbon taxes/levies on CO_2 emissions, domestic and regional emissions trading schemes, GHG emission inventories and registries, among others.

151. Some of the INDCs provide information on processes towards creating new legislation and policies, triggered by the preparation of the INDCs, including the establishment of national carbon pricing instruments, efficiency targets and incentives for low-carbon technologies, while a few of the INDCs contain information acknowledging that new institutions will be created to facilitate implementation.

152. Some Parties noted that the implementation of their INDCs will involve strengthening laws and regulations on climate change and further integrating related objectives into long-term economic and social development plans, as well as the improvement of the overall administration, performance evaluation and accountability system on climate change and low-emission development targets. In some cases, this will require revisions to the existing legal and policy frameworks. A few Parties in their INDCs highlighted specific laws and policies that need to be revised or enhanced during the implementation. Yet, a few Parties specified that the INDC as a whole or the revisions to the existing policies will be subject to approval by their national parliaments.

Priority areas for future implementation

153. On the basis of their national circumstances and development priorities, many Parties outlined priority areas with high mitigation potential (see figure 7). In this context, some Parties referred to, inter alia, renewable energy targets, fuel economy and energy efficiency standards, grid modernization, financial schemes to promote clean investments, environmental taxes, subsidy reforms, programmes for low-emission agriculture and waste management, and measures to promote forest conservation and reduce deforestation.

154. Renewable energy was highlighted in many INDCs. Related actions aim at increasing the share of and improving access to clean energy, such as feed-in tariffs, investment programmes for renewable energy generation, and improvement of the grid infrastructure. A few Parties communicated quantified renewable energy targets, with some aiming at achieving 100 per cent renewable energy supply for the electricity sector.

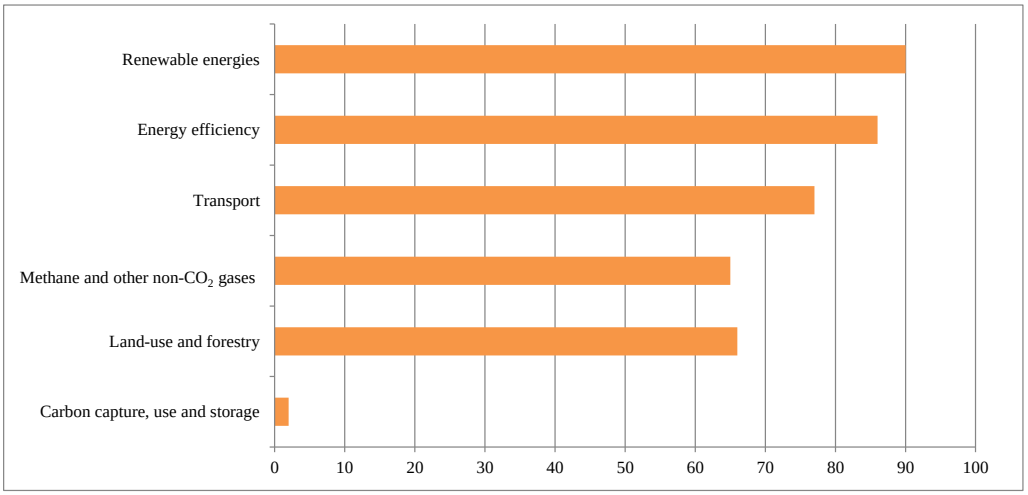
155. Actions on energy efficiency, also highlighted in many INDCs, include the modernization of energy generation and transmission infrastructure, the promotion of smart grids, efficiency improvements in industrial processes, and energy conservation standards. Sustainable transport is highlighted in several INDCs through measures such as

improving public transport, limiting the import of inefficient vehicles and using fuel efficiency standards. A few Parties also communicated quantitative energy efficiency targets.

156. In several INDCs Parties provided information on plans to implement policies and measures to reduce CH_4 and other non-CO_2 gases by improving crop and livestock production, promoting low-carbon agriculture and establishing waste management and recycling programmes as well as waste-to-energy facilities. Furthermore, several INDCs highlight measures to promote the conservation and sustainable management of forests. Some Parties particularly highlighted the importance of REDD-plus activities in this context. A few Parties communicated targets for increasing forest cover.

Figure 7

Priority areas for implementation highlighted in the intended nationally determined contributions



157. In providing information on their priority areas for implementation, several Parties highlighted the link between the actions to address climate change implied by their INDCs and their development priorities, including social and economic development as well as poverty eradication. In this context, some Parties highlighted co-benefits of action to address climate change, including reduction in local air pollution and resulting benefits for health, improved access to energy, and synergies between adaptation and mitigation actions, in particular in agriculture and forestry.

158. With regard to next steps, some Parties communicated improving statistical and accounting systems for emissions as well as analytical capabilities among their priorities. Examples of planned measures include: improving statistical indicator systems; personnel training; improving the quality of data; and establishing reporting mechanisms at the national, subnational and entity levels. Several of the INDCs indicate the intention to improve the existing or to put in place a new system for monitoring, measuring and reporting emissions.

Stakeholder engagement

159. Many Parties referred in their INDCs to the importance of extensive national consultation and interdisciplinary coordination to ensure strong alignment with development objectives and buy-in from all relevant stakeholders.

160. Several Parties specifically highlighted that all levels of government share responsibility for action and the existence of inter-agency coordinating mechanisms on climate change in the countries. A few of the INDCs have been approved at the highest political level, for example by the national Parliament, the Cabinet of Ministers or by the President. Furthermore, the importance of national, subnational and regional cooperative action both by government and non-State actors was noted by several Parties. A few of the INDCs specifically note that

initiatives undertaken by cities and subnational governments will be an important driver for their implementation.

161. Many Parties provided information emphasizing that their INDCs have undergone national stakeholder consultation processes with a view to raising awareness and securing buy-in with respect to their INDCs and related long-term development plans. Parties highlighted that support from actors such as the private sector, academia and civil society, as well as from relevant sectoral ministries and regional and local governments, is critical for identifying realistic targets. A few Parties still plan to hold consultations on the overall national climate policy underlying their INDCs and on the specific measures that allow emission reductions, with some already having specified the target time frame for them to take place.

162. INDCs have led to the establishment of new institutional arrangements and consultation processes, in some cases involving not only sectoral ministries, businesses, environmental non-governmental organizations, academia and local governments, but also the general public. Some Parties have put in place new processes to engage relevant public and private actors, such as sectoral dialogues, cross-cutting working groups, expert teams and technical peer review, or inviting written submissions as part of the national consultation process on their INDCs. Other examples of processes to engage stakeholders included the establishment of expert task forces and working groups, parliamentary hearings, large-scale public consultations, including workshops, targeted meetings and an invitation for written submissions, as well as awareness-raising campaigns. In one country such consultations reportedly involved more than 500 participants.

7. Fairness, ambition and contribution to the objective of the Convention

163. Most Parties communicated in their INDCs information on how they consider that their respective INDC is fair and ambitious in the light of their national circumstances, as well as on how their INDC contributes towards achieving the objective of the Convention as set out in its Article 2 together; hence that information is addressed together in this report.

Fairness

164. Most Parties provided information on how they consider that their INDC is fair and ambitious in the light of their national circumstances.

165. In setting the context for the discussion on fairness and ambition, Parties highlighted a number of principles underlying their INDCs and related action. They included inter alia, the importance of a shared global effort undertaken in a fair and equitable manner; the principles of equity and common but differentiated responsibilities and respective capabilities; the need for taking into account Parties' national circumstances; the recognition that all countries need to act to address climate change; the application of the same legal form and rules to all Parties; and the recognition that fairness considerations include various aspects and national circumstances, as no single indicator can accurately reflect fairness or a globally equitable distribution of Parties' efforts.

166. Most of the INDCs refer to specific national circumstances when outlining why they are fair and ambitious. National circumstances relevant to determining the fairness and ambition of the INDCs communicated by Parties include, inter alia, considerations related to: the size and geography of the country; its population and urban density; its climatic conditions; its natural resource endowment; its energy mix (abundance/lack of natural and renewable energy resources, dependence on fossil fuels, already having a low-carbon energy system, and limits on the use of nuclear energy due to public concerns); and its vulnerability to climate change impacts.

167. Several Parties highlighted the link between the actions to address climate change implied by their INDCs and their development priorities, including social and economic development as well as poverty eradication. Some Parties highlighted synergies between their development and climate priorities and a few further noted specific co-benefits of action to

address climate change, including improvements in air quality, human health, job creation and others, as well as synergies between adaptation and mitigation actions, in particular in agriculture and forestry.

168. Many Parties linked the discussion on the fairness and ambition of their INDCs to national circumstances, in particular to economic and social trends, such as: high economic growth; high population growth; being in the process of rapid industrialization and urbanization; facing challenges of economic development; aspirations for growth and poverty eradication; the need for the improvement of living standards; dependence on the global supply chain for food and energy security; sensitivity to the volatility of regional and global developments; high dependency on climate-sensitive sectors such as agriculture, tourism, water and health; as well as the specifics of the respective industrial structure (e.g. large share of manufacturing and high energy efficiency of major industries, and large share of emissions originating from agriculture).

169. In providing information on how they consider their INDCs to be fair and ambitious, many Parties further provided information on specific criteria for evaluating fairness and ambition, including criteria relating to the Party's responsibility and capability, mitigation potential, cost of mitigation actions, the degree of progression/stretching beyond the current level of effort, and the link to objectives and global goals. Most of those Parties in their INDCs viewed responsibility directly or indirectly in the context of their past, current and future share in the global emissions and per capita emissions in comparison with global averages, as well as the trends in one or several of those indicators.

170. Regarding the capacity to contribute, considerations include level of development, GDP per capita, ability to invest in mitigation, and international support received. Some Parties listed the potential for cost-efficient mitigation and past efforts among the fairness criteria.

Ambition

171. For many Parties, ambition corresponds to the size of their efforts to address climate change in relation to their national circumstances, capacity and responsibility. The interpretation of ambition varies from country to country and is manifested in narratives that explain Parties' level of efforts. For example, many Parties referred in their INDCs to progression beyond current undertakings, either in terms of the size of the effort or its type, comparison to the efforts of other Parties in similar circumstance and linkages to global objectives. Most Parties placed ambition in the context of their national circumstances and the fairness considerations noted above.

172. In explaining how their INDCs are ambitious, most Parties elaborated on how their contributions represent a significant progression beyond their current undertakings. In doing so, some Parties communicated that their mitigation targets or strategies, plans and actions for low GHG emission development imply an acceleration in the national rate of decarbonization of their economies and that a decoupling of GHG emissions from economic growth will be achieved. Other Parties provided information on ambition and progression by highlighting emission reductions below BAU scenarios and/or substantial acceleration in the annual pace of emission reduction, declining per capita emissions, peaking years for emissions and the translation of previously aspirational objectives into domestically legally binding goals. Some noted that their mitigation targets or strategies, plans and actions for low GHG emission development go beyond the reduction requirements stated by the IPCC and/or relevant COP decisions for the global emission level or for specific groups of Parties.

173. Some of the INDCs highlighted past performance and already undertaken actions to reduce emissions as indicators for explaining their fairness and ambition. For example, a few Parties referred to the overall outcomes of policies that they have put in place to implement the Kyoto Protocol and the emission reductions achieved in this context.

174. Some Parties provided information on ambition by linking their INDC to the objectives of the global transition towards a low-carbon economy, with a few INDCs specifically referring

to the overall low-carbon transformation of the economy, the decarbonization of energy supply, increasing carbon sinks, and the modernization and diversification of the economy. A few Parties also highlighted their contribution to the provision of support, including for the development and diffusion of low-emission technologies, and referred to their past performance in reducing their emissions.

Contribution towards achieving the objective of the Convention

175. As previously noted, most Parties communicated information on the contribution towards achieving the objective of the Convention together with the above-discussed information on fairness and ambition.

176. Several Parties indicated that their expected level of emissions in the future would fall within a global emission pathway that is consistent with the goal of keeping the global average temperature increase below 2 °C, while a few Parties referred to 1.5 °C. In this context, some referred to an 80-95 per cent emission reduction by 2050 compared with the 1990 level for developed countries, or to global emissions being at least halved by 2050 compared with the 1990 level, in accordance with the findings of the IPCC. Other Parties referred to global and national decarbonization efforts. Other Parties stated the direct link between their INDC and the general objective of the Convention as stated in its Article 2.

177. A few Parties stated that their adaptation components contribute to the objective of the Convention by reducing vulnerability both nationally and globally.

178. Regarding the Party's capacity to contribute to global mitigation actions towards achieving the objective of the Convention, considerations include the overall level of development, GDP per capita, vulnerability to climate change, ability to invest in long-term mitigation measures, such as carbon-efficient technologies, and the support received from the international community that is framing the national capacity to prepare and implement the INDC. A few Parties considered the carbon intensity of their economy, the potential for cost-efficient mitigation and overall abatement costs, as well as past efforts (ensuring that first movers are recognized for past mitigation actions) among the relevant fairness criteria.

8. Additional information

179. Some of the INDCs contain information in addition to the elements specified in decision 1/CP.20, paragraph 14, including on the use of market-based mechanisms and the provision of support for the implementation of the INDCs.

Market-based mechanisms

180. Nearly half of the Parties that communicated an INDC indicated their intention to use market-based mechanisms, with some Parties identifying those instruments as a condition for the implementation of their INDCs. These Parties explicitly noted plans to use carbon credits from international, regional or domestic schemes, including some Parties that expressed an interest in using the CDM. Moreover, some Parties stated either a general interest in market-based mechanisms or an intention to further explore their use.

181. Some of these Parties highlighted the role of market-based mechanisms in enhancing the cost-efficiency of mitigation efforts, thus creating opportunities to raise overall ambition. While almost no quantitative information was provided on the expected degree of use, some Parties indicated that they would use market-based mechanisms to meet only part of their mitigation targets.

182. Finally, some Parties stressed the need for principles and/or rules for governing the use of such mechanisms. Such rules would aim at preventing double counting of emissions, ensuring the environmental integrity of the credits generated and promoting sustainable development benefits.

Support for implementing intended nationally determined contributions

183. Information on support for implementing INDCs communicated by Parties includes: needs for targeted investment and finance, technology and capacity-building; domestic matters such as planned measures to enhance support for implementation; and general expectations of the agreement to be reached at the Paris Conference in relation to finance, technology cooperation and capacity-building.

184. Information on support needs was communicated in many of the INDCs. The majority include information on the need for enhanced international support for the implementation of the INDCs and for enhancing ambition over time in the form of finance, technology transfer and capacity-building. Some Parties included quantitative estimates of the investment and financial support required for the full implementation of their communicated INDCs or for achieving the upper level of their conditional targets. Parties communicating conditional and unconditional components identified financial support as a key factor for moving towards the highest range.

185. Some Parties communicated INDCs including information on domestic measures related to the support and finance necessary for their implementation. Among others, such measures include: the use of market instruments; increased budgetary support for climate action; the development of public-private partnerships; green procurement programmes; reformation of pricing and taxation regimes; improvement of green credit mechanisms; establishment of national funds to channel and stimulate financial flows from different public and private sources; and the development or strengthening of cooperation arrangements with financial institutions, such as the GCF.

186. With regard to international support, several Parties noted the need: for enhancing existing institutional arrangements under the Convention for delivering international financial, technology and capacity-building support under the agreement to be reached at the Paris Conference; for increasing the scale of financial support for climate change action; for strengthening support mechanisms under the Convention, such as the GCF, the GEF and/or the Technology Mechanism; and for establishing an international mechanism on capacity-building.

E. Aggregate effect of the intended nationally determined contributions

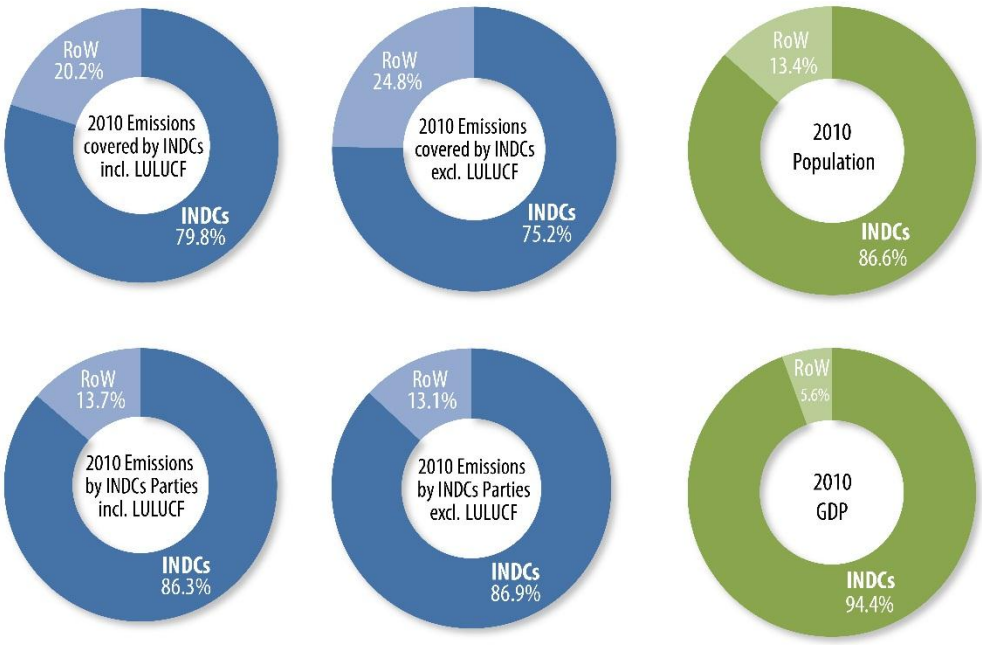
1. Coverage by the intended nationally determined contributions of current emissions

187. The INDCs presented up to 1 October 2015 cover 80 per cent of global emissions in 2010. Excluding LULUCF, they cover sectors and gases from which 75 per cent of global emissions in 2010 originated. The level of total national emissions of the Parties that put forward INDCs is slightly higher, given that there are some sectors and gases not covered by the INDCs. Those emissions cover 86 per cent of global emissions in 2010 and 87 per cent excluding LULUCF. The Parties that put forward an INDC represent 87 per cent of the world's population and 94 per cent of GDP in 2010 (see figure 8).[47]

[47] GDP in current USD according to the International Monetary Fund *World Economic Outlook 2015*. When using GDP adjusted for purchasing power parity in current USD, according to the International Monetary Fund *World Economic Outlook 2015*, the share of Parties that communicated an INDC represents 90 per cent of the world's GDP in 2010.

Figure 8

Coverage of the communicated intended nationally determined contributions as at 1 October 2015



Source: Aggregation of greenhouse gas emissions reported in the INDCs; population data: 2015 revision of the United Nations World Population Prospects, available at <http://esa.un.org/unpd/wpp/>; GDP data: International Monetary Fund World Economic Outlook data, with GDP expressed in current USD, available at <https://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>.

Abbreviations: GDP = gross domestic product, INDCs = intended nationally determined contributions, LULUCF = land use, land-use change and forestry, RoW = rest of the world.

2. Expected aggregate emissions in 2025 and 2030

188. The estimated aggregate emission level for only the sectors and gases covered by INDCs and that results from the implementation of the communicated INDCs, applying the methods described in chapter II.C above, is expected to equal 41.7 (36.7 to 47.0)[48] Gt CO_2 eq in 2025 and 42.9 (37.4 to 48.7) Gt CO_2 eq in 2030.

189. The global levels of emissions in 2025 and 2030 were estimated by adding the estimated aggregate emission levels resulting from the implementation of the communicated INDCs to the levels of emissions not covered by the INDCs, in accordance with the IPCC reference scenarios. Thus, the global emission level resulting from the INDCs[49] is expected to amount to **55.2 (52.0 to 56.9) Gt CO_2 eq in 2025 and 56.7 (53.1 to 58.6) Gt CO_2 eq in 2030**.[50] Many of the targets in

[48] Unless otherwise stated, ranges indicate 20–80 per cent ranges and single values indicate medians.

[49] Reported emission levels in this report, unless otherwise indicated, include land-use change emissions and use GWP AR4 metric values with a 100-year time-horizon.

[50] These estimates are based on adding the assessed aggregate level of emissions covered by the INDCs and global emission figures for 2025 and 2030 for the countries, sectors and gases not covered by the INDCs derived from scenarios in the IPCC AR5 scenario database that reflect 2020 pledges under the Cancun Agreements. The quantification of the INDCs has been done separately for the lower and higher ends of any provided ranges, distinguishing as well into conditional and unconditional targets. In each of those cases, uncertainties related to estimating and accounting methodologies, data gaps and interpolation of 2025 values in the case of INDCs communicating targets for 2030 etc. were taken into account as previously discussed. If a Party provided only a single value of emission reduction (without a range), that single value is reflected in both distributions, possibly with a respective low and high quantification, if there was ambiguity around the appropriate estimated 2025 or 2030 emission level.

the INDCs were stated as ranges, or alternatively the quantification underlying this report used in some cases a low and high scenario, if the quantification was not unambiguous. If only the higher end of each unconditional INDC is aggregated, global total emissions are projected to be 55.3 to 58.8 Gt CO_2 eq in 2025 and 57.8 to 61.2 Gt CO_2 eq in 2030. Similarly, when aggregating all of the lower ends of the ranges, including any conditional INDCs, the estimated level of global emissions is equal to 51.4 to 55.0 Gt CO_2 eq in 2025 and 52.6 to 56.1 Gt CO_2 eq in 2030.

190. Global cumulative CO_2 emissions resulting from the implementation of the communicated INDCs after 2011 are expected to reach 541.7 (523.6 to 555.8) Gt CO_2 in 2025 and 748.2 (722.8 to 771.7) Gt CO_2 in 2030.

3. Expected aggregate emissions in relation to emission levels in 1990, 2000 and 2010

191. The level of global total emissions is estimated as 38.8 Gt CO_2 eq in 1990; 40.5 Gt CO_2 eq in 2000; and 48.1 Gt CO_2 eq in 2010.[51]

192. The global aggregate level of emissions resulting from the implementation of the communicated INDCs is thus expected to increase as follows:

(a) In relation to 1990: by 41 (34-46) per cent by 2025 and by 45 (37-52) per cent by 2030;

(b) In relation to 2000: by 35 (29-40) per cent by 2025 and by 39 (32-45) per cent by 2030;

(c) In relation to 2010: by 13 (8-18) per cent by 2025 and by 17 (11-22) per cent by 2030.

193. If the ambition level of the announced INDC targets is kept, targets not enhanced and those stated targets exactly met, rather than overachieved, global emissions are likely to increase until 2030. The rate of emission increase over the past two decades is however very unlikely to be repeated, with an expected increase of 11-22 per cent in the period 2010-2030 compared with 24 per cent in the period 1990-2010. From 2010 to 2030, the relative emission increase in line with the INDCs is expected to be 10-57 per cent lower than the relative global emission increase over the prior two decades from 1990 to 2010, thus reflecting the impact of the implementation of the INDCs.

194. Global average per capita emissions are expected to be 6.8 (6.5 to 7.1) t CO_2 eq/capita in 2025 and 6.7 (6.4 to 7.2) t CO_2 eq/capita in 2030.[52]

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[51] The contribution of Working Group III to the AR5 estimated emissions in 1990 at 38 Gt CO_2 eq, emissions in 2000 at 40 Gt CO_2 eq and emissions in 2010 at 49 Gt CO_2 eq (with uncertainty ranges) using GWPs from the IPCC Second Assessment Report for aggregation (see figure SPM.1 in the contribution of Working Group III to the AR5). For this report, 100-year GWPs from the AR4 were used, but global numbers are comparable and within the uncertainty range of the contribution of Working Group III. In order to estimate historical emissions that are consistent and comparable with the provided future INDC emission estimates, the historical emission estimates were derived on the basis of IPCC AR5 scenario estimates. The set of IPCC AR5 scenario estimates is not harmonized and exhibits slight variations in recent historical emissions between the scenarios. Specifically, historical emission estimates are derived by backwards extending IPCC AR5 scenarios on the basis of UNFCCC inventory data for Parties included in Annex I to the Convention, IPCC historical data for Parties not included in Annex I to the Convention, the Houghton et al. emissions used by the IPCC for land-use change emissions and any remainder emission differences in 2010. Those remainder emission differences between the bottom-up emission estimates and the IPCC scenarios in 2010 vary from scenario to scenario (–0.1 (–0.2 to 0.8) Gt CO_2 eq), but are small when compared with global emissions (–0.3 (–0.4 to 1.5) per cent). To capture the uncertainty, those remainder differences were backcasted by a range of four different methods: (1) keeping the remainder emissions constant, or making them proportional to the other emissions at a (2) global, (3) regional or, where IPCC scenario information was available, (4) country level.

[52] The projections of per capita emissions assume three different population growth projections, namely the low, median and high ones according to the 2015 revision of the United Nations 2012 population projections (median: 8.04 billion by 2025 and 8.40 billion by 2030).

195. Per capita emissions were equal to 7.4 t CO_2 eq/capita in 1990; 6.7 t CO_2 eq/capita in 2000; and 7.0 t CO_2 eq/capita in 2010. Thus, future global average per capita emissions show a slight decline of 8 and 4 per cent by 2025 and of 9 and 5 per cent by 2030 compared with their historical levels in 1990 and 2010, respectively.[53] Emission levels in 2000 were approximately equal (+/-0 per cent) to expected per capita emission levels in 2030 (range: -5 to +6 per cent) and 1 per cent above expected 2025 levels (range: -3 to +5 per cent). After a decade of decreasing global average per capita emissions from 1990 to 2000 and the recent increase from 2000 to 2010, the implementation of the communicated INDCs hence represents a turning point, namely the restart of lowering per capita emissions.

4. Expected aggregate emissions resulting from the implementation of the communicated intended nationally determined contributions in relation to trajectories consistent with actions communicated by Parties for 2020 or earlier

196. In this report, global emission levels resulting from the implementation of the communicated INDCs are compared with reference case scenarios similar to other 'with existing measures' scenarios. More precisely, the used reference scenarios could be called 'with existing pledges', as they capture the 2020 Cancun pledges, but are not necessarily 'with current policies' scenarios (hereinafter referred to as pre-INDC trajectories). Reference case scenarios from the IPCC AR5 scenario database[54] that are used in this chapter correspond to those that take into account actions communicated by Parties for 2020 or earlier and project emissions further until 2030 without additional climate policies for the 2020-2030 period.

197. Reflecting the assumptions underlying the pre-INDC trajectories, aggregate global emissions according to these scenarios are projected to reach 57.7 (57.7 to 58.5) Gt CO_2 eq in 2025 and 60.8 (60.7 to 60.8) Gt CO_2 eq in 2030.

198. A discussion on the expected global level of aggregate emissions resulting from the implementation of the communicated INDCs in relation to trajectories consistent with the pre-INDC trajectories provides information on progress on action to reduce emissions and enhance sinks. In particular, it illustrates the aggregate effect of the implementation of the INDCs in addition to actions communicated for 2020 or earlier.

199. Figure 9 compares global emission levels resulting from the implementation of the communicated INDCs by 2025 and 2030 (yellow bars) with pre-INDC trajectories (red).

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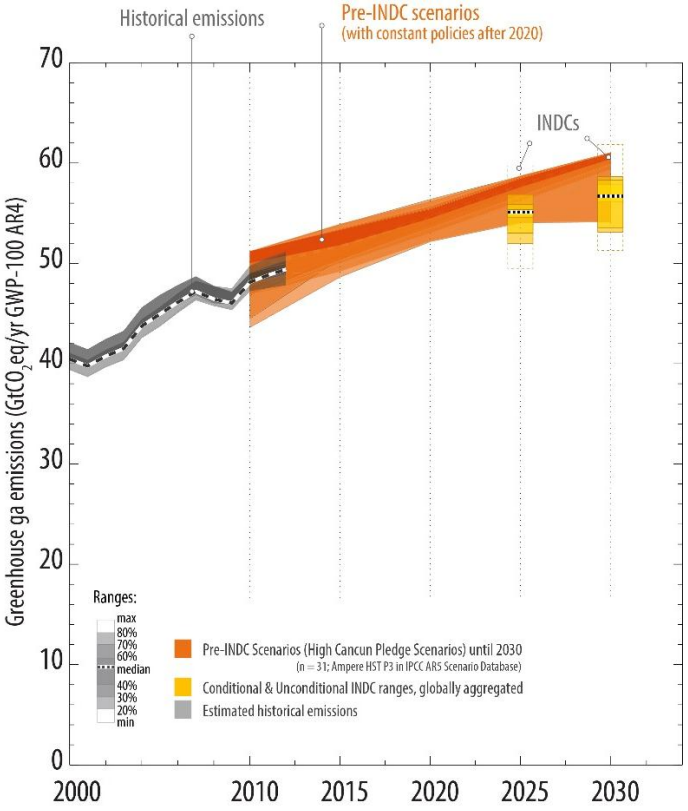
[53] The declines in per capita emissions are stated here as averages of the median values for the low and high cases, which represent the two ends of any ranges within the INDCs. The 60 per cent uncertainty range is approximately +/–3 per cent around those median values.

[54] Specifically, this report uses 22 reference scenarios that are categorized as P3 scenarios in the IPCC AR5 scenario database and belong to the group of 'high short-term' scenarios designed within the AMPERE project (see <https://secure.iiasa.ac.at/web-apps/ene/AMPEREDB/static/download/WP2_study_protocol.pdf>). This subset's emissions are only used until 2030, after which they assume the onset of global implementation. Before 2030, these scenarios assume the implementation of the higher-emission end of the 2020 Cancun pledges and keep climate policies constant until 2030.

Figure 9

Global emission levels resulting from the implementation of the communicated intended nationally determined contributions by 2025 and 2030 in comparison with trajectories consistent with action communicated by Parties for 2020 or earlier



Source: Intergovernmental Panel on Climate Change Fifth Assessment Report scenario database and own aggregation.

Abbreviations: AR4 = Fourth Assessment Report of the Intergovernmental Panel on Climate Change, GWP = global warming potential, INDCs = intended nationally determined contributions.

200. As illustrated in figure 10, global GHG emissions resulting from the implementation of the communicated INDCs are generally expected to be lower than the emission levels according to pre-INDC trajectories by 2.8 (0.2-5.5) Gt CO_2 eq in 2025 and 3.6 (0.0-7.5) Gt CO_2 eq in 2030.[55, 56] Taking into account the conditional components of the INDCs would make the upper level of the range 1.0 and 1.9 Gt CO_2 eq higher than with unconditional components only.[57]

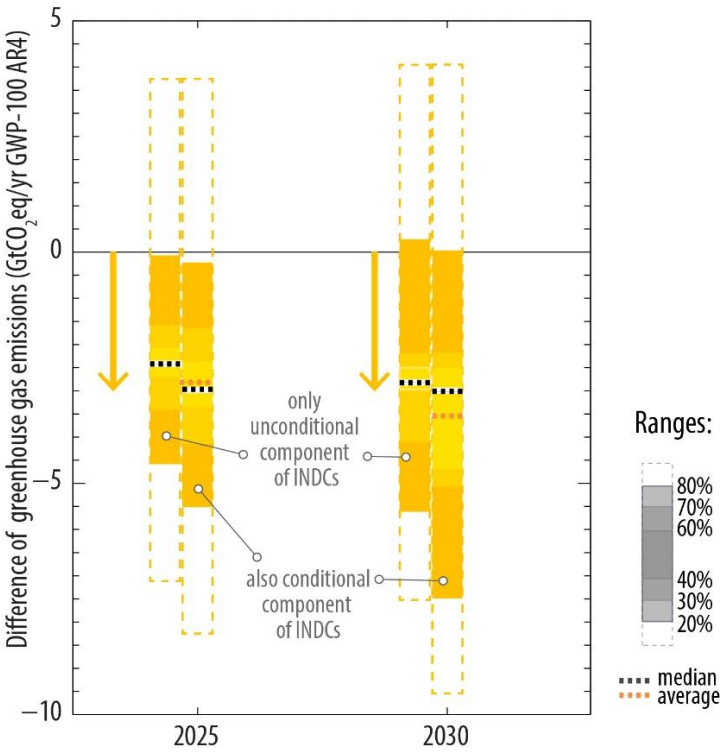
[55] In some instances, the estimated global emissions at the higher end of the INDC target range would theoretically result in higher global emissions than in the considered IPCC reference scenario. This can occur if communicated INDC target growth rates are above the IPCC reference scenario growth rates for the same sectors and gases.

[56] In contrast to the given average reduction, the median reduction resulting from the INDCs below reference scenarios is 3.0 Gt CO_2 eq in 2025 and 3.0 Gt CO_2 eq in 2030.

[57] This excludes an assessment of the conditions related to LULUCF and cases where the extent of the conditional component of the INDC is uncertain.

Figure 10

Difference between global emission levels resulting from the intended nationally determined contributions and pre-INDC trajectories



Note: Both bars indicate the percentiles over 304 individual scenarios, which sample across multiple choices, like lower or higher ends of communicated intended nationally determined contributions, different interpolation methods and different reference scenarios from the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

Abbreviations: AR4 = Fourth Assessment Report of the Intergovernmental Panel on Climate Change, GWP = global warming potential, INDCs = intended nationally determined contributions.

201. Any emission reduction below the considered reference scenarios is a step towards achieving 2 °C scenarios. Thus, the percentage achievement of the full path can be measured as the percentage by which the global emission levels resulting from the implementation of the communicated INDCs are lower than the reference scenarios in comparison with the full difference between the reference and 2 °C scenarios. In this comparison, the INDCs are estimated to reduce the difference between the pre-INDC trajectories and 2 °C scenarios by 27 (1 to 58) per cent by 2025 and 22 (-1 to 47) per cent by 2030.[58]

[58] The provided reductions below reference scenarios, expressed as percentages of the full difference between reference scenarios and least-cost mitigation scenarios, take both the 2 °C mitigation scenarios into account that enhance mitigation in 2010 (P1 scenarios) and those that enhance mitigation in 2020 (P2 scenarios), as shown in figure 11. When taking into account only the 2 °C mitigation scenarios with an enhancement of global mitigation action by 2020 (P2), the respective percentages are 37 (3 to 73) per cent by 2025 and 18 (0 to 42) per cent by 2030.

5. Expected aggregate emissions resulting from the implementation of the communicated intended nationally determined contributions in relation to least-cost 2 °C scenarios

202. Least-cost 2 °C scenarios were taken from the IPCC AR5 scenario database.[59] The scenarios that follow a least-cost emission trajectory from 2010 onwards exhibit on average a slight emission increase until 2015 (see figure 11) and many scenarios of this set could be considered as approximating a world in which mitigation action is being enhanced 'today'. A second set of scenarios implies an enhancement of least-cost global mitigation action by 2020, reaching on average even lower emissions by 2030 compared with the first set of scenarios. Taking both groups of 2 °C scenarios together, emissions in 2025 tend to be between the 2000 and 2010 emission levels, namely at 45.4 (43.0 to 48.9) Gt CO_2 eq. By 2030, the emissions of this joint set are at 42.5 (36.3 to 43.6) Gt CO_2 eq, close to 2000 emission levels. In comparison, considering only scenarios with an enhancement of global mitigation action by 2020 implies 2030 emissions levels of 38.1 (30.3 to 45.0) Gt CO_2 eq, which is similar to 1990 emissions.

203. According to the AR5, global cumulative CO_2 emissions after 2011, for a likely chance of keeping global average temperature rise below 2 °C, should be limited to less than 1,000 Gt CO_2.[60]

204. In general terms, aggregate emissions resulting from the implementation of the communicated INDCs do not fall within the range of least-cost 2 °C scenarios, as illustrated in figure 11.

205. The global temperature at the end of this century depends on both emissions up to 2030 and emissions in the post-2030 period. By lowering emissions below pre-INDC trajectories, the INDCs contribute to lowering the expected temperature rise until and beyond 2100. However, temperature levels by the end of the century strongly depend on assumptions on socioeconomic drivers, technology development and action undertaken by Parties beyond the time frames stated in their INDCs (e.g. beyond 2025 and 2030).

206. If Parties were not to enhance mitigation action until 2030, but assumed mitigation action after 2030 that still aimed at staying below a 2 °C temperature increase, scenarios from the IPCC AR5 scenario database indicate that this is possible, but only at substantially higher annual reduction rates compared with the least-cost 2 °C scenarios. Thus, it can be concluded that greater reductions in the aggregate global emissions than those presented in the INDCs will be required for the period after 2025 and 2030 to hold the temperature rise below 2 °C above pre-industrial levels.

207. Reductions in GHG emissions compared with 2010 emission levels are on average 3.3 (2.7-3.9) per cent per annum for the 2030-2050 period in mitigation scenarios that approximately start from INDC global emission levels by 2030. In comparison, least-cost mitigation scenarios that enhance mitigation action by 2010 or 2020 will suffice with annual reductions of only 1.6 (0.7-2.0) per cent in comparison with 2010 emission levels for the 2030-2050 period.

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[59] Scenarios consistent with limiting the temperature rise below 2 °C above pre-industrial levels were taken from the AR5 scenario database. Scenarios that follow a least-cost emission trajectory from 2010 onwards (so-called P1 scenarios) with a greater than 66 per cent likelihood of temperature rise staying below 2 °C correspond to a range of 44.3 (38.2–46.6) Gt CO_2 eq emissions in 2025 and 42.7 (38.3–43.6) Gt CO_2 eq emissions in 2030. Scenarios that follow a least-cost emission trajectory from 2020 onwards (so-called P2 scenarios) with a greater than 66 per cent likelihood of temperature rise staying below 2 °C correspond to a range of 49.7 (46.6–51.6) Gt CO_2 eq emissions in 2025 and 38.1 (30.3–45.0) Gt CO2 eq emissions in 2030. Given the similar emissions of P1 scenarios to current emissions in 2015 (see figure 11), and given the similarity between P1 and P2 scenarios by 2030, this report analyses the joint set of P1 and P2 mitigation scenarios in addition to separate considerations of P1 or P2 only.

[60] This figure relates to a 'likely chance'. For a 50 per cent probability of staying below 2 °C, the AR5 indicates 1,300 Gt CO_2 as the amount of cumulative CO_2 emissions after 2011.

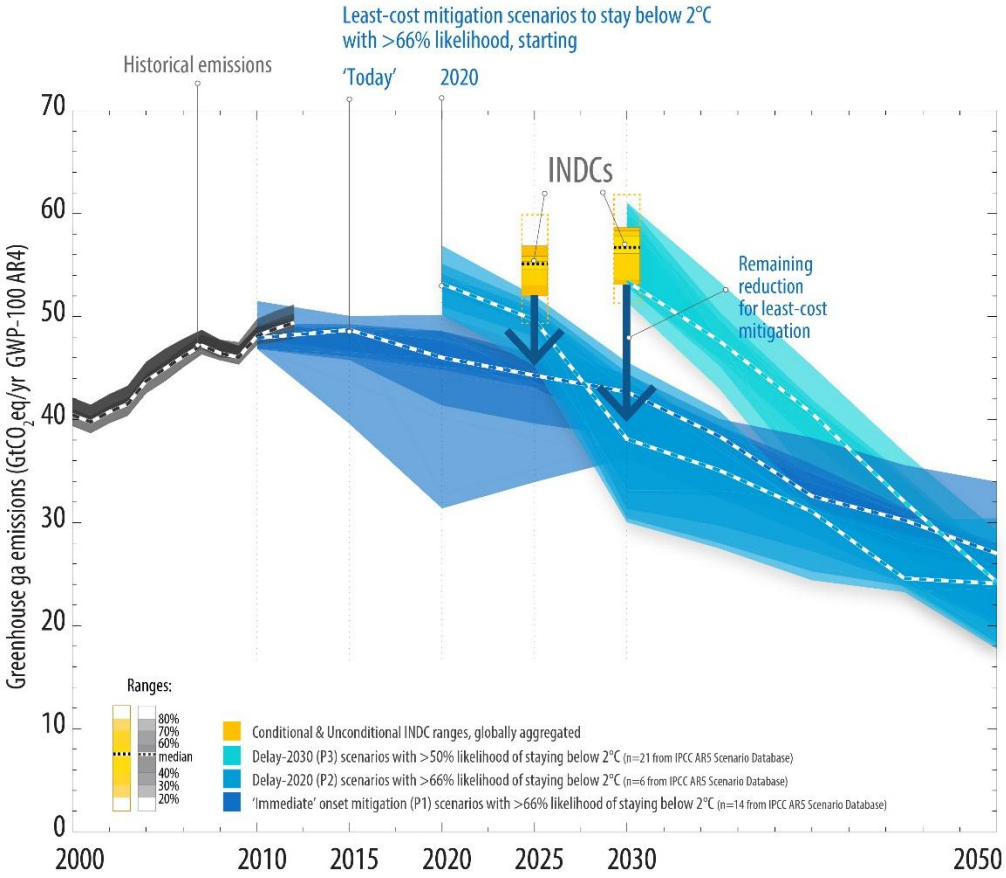
208. The assessment of end-of-century temperatures is possible under ‘what-if” cases for the level of emissions beyond 2030. While this report draws a comparison between emission levels expected to result from the INDCs in 2025 and 2030 and various IPCC scenarios, the use of climate models to estimate end-of-century temperatures resulting from specific post-2030 assumptions (like constant or linear extensions of emissions or assumed constant climate policies) is considered to be out of its scope.

209. The following discussion is therefore limited to a comparison of the level of global emissions resulting from the implementation of the communicated INDCs in 2025 and 2030 and GHG emission levels for the same years implied under the 2 °C scenarios.

210. The discussion provides only a snapshot comparison of the level of emissions in the individual years. Whether or not current efforts are enough to achieve a limit on temperature rise can only be evaluated on the basis of information on action within and beyond the time frame covered by the INDCs, including all countries, gases and sectors as well as efforts to reduce emissions from 2030 onwards.

Figure 11

Estimated global emissions following the implementation of the communicated intended nationally determined contributions by 2025 and 2030 and 2 °C scenarios



Abbreviations: INDCs = intended nationally determined contributions, IPCC AR5 = Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

211. Aggregate GHG emissions resulting from the implementation of the communicated INDCs are expected to be 8.7 (4.7-13.0) Gt CO_2 eq (19 per cent, range 10-29 per cent) and 15.1

(11.1-21.7) Gt CO_2 eq (35 per cent, range 26-59 per cent) above the level of emissions under the joint set[61] of 2 °C scenarios in 2025 and 2030, respectively (see figure 12).

212. The emission differences towards least-cost trajectories can be read in at least three ways:

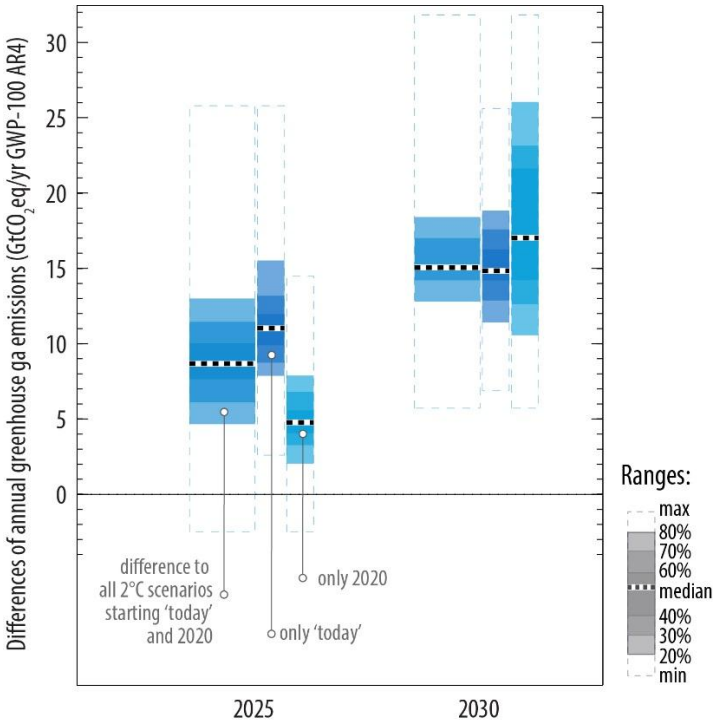
(a) They illustrate a difference that could be filled by either enhanced INDCs or additional mitigation effort on top of that currently indicated in the INDCs;

(b) They indicate the additional effort that would have to be mastered after 2025 and 2030, as higher emissions in the near term would have to be offset by lower emissions in the long term in order to achieve the same climate targets with the same likelihood;

(c) They are an illustration of the higher costs that the world might face in the long term, given that least-cost emission trajectories indicate the cost-optimality of increased near-term mitigation action.

Figure 12

Aggregate global emissions due to the implementation of the communicated intended nationally determined contributions and least-cost 2 °C scenarios



Note: The figure is based on a collective set of 7,296 differences resulting from all combinations between 48 considered Intergovernmental Panel on Climate Change 2 °C least-cost mitigation scenarios and 152 estimates of the global aggregate emission levels in accordance with the intended nationally determined contributions and any related uncertainties or ranges.

Abbreviations: AR4 = Fourth Assessment Report of the Intergovernmental Panel on Climate Change. GWP = global warming potential, INDCs = intended nationally determined contributions.

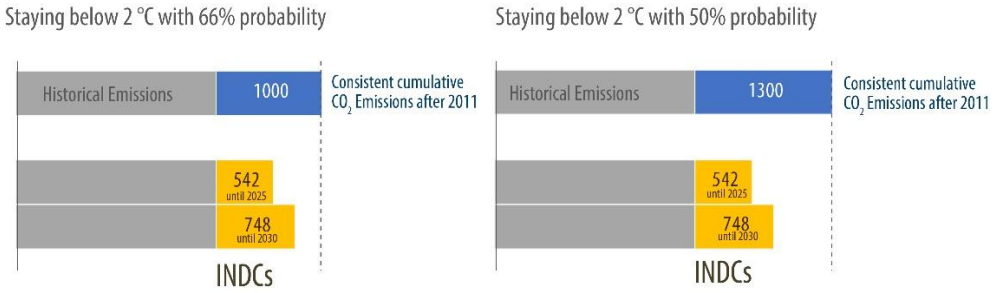
213. Given the fact that GHGs are long lived in the atmosphere and cumulative emissions therefore determine the impact on the climate system, higher emissions in the early years (compared with least-cost trajectories) would necessitate lower and overall likely more costly reductions later on in order to keep global mean temperature below the same level with the same

[61] Considering both scenario groups with enhancement of mitigation action in 2010 (so-called P1 scenarios) and 2020 (so-called P2 scenarios), which keep the global mean temperature rise below 2 °C with at least a 66 per cent likelihood, as shown in figure 11.

likelihood. Global cumulative CO_2 emissions resulting from the implementation of the communicated INDCs (see para. 190 above) are expected to reach 54 (52-56) per cent by 2025 and 75 (72-77) per cent by 2030 of the global total cumulative CO_2 emissions consistent with 2 °C scenarios (see para. 203 above).

214. Figure 13 compares cumulative CO_2 emissions expected under the INDCs (medians) and cumulative CO_2 emissions in line with keeping the global average temperature rise relative to pre-industrial levels below certain levels. Shown are comparisons for keeping temperatures below 2 °C with 66 per cent (middle panel) or 50 per cent likelihood (right panel). Historical (grey, 1,890 Gt CO_2) and consistent future cumulative CO_2 emissions (blue) are taken from the contribution of Working Group I to the AR5.[62] Numbers shown relate to Gt CO_2 emissions after 2011.

Figure 13
Cumulative CO_2 emissions



Abbreviation: INDC = intended nationally determined contribution.

6. Opportunities for the medium and longer terms emerging from the intended nationally determined contributions

215. As already noted, the time frame for action indicated by Parties in their INDCs is up to either 2025 or 2030, with a few Parties providing longer-term targets towards a transition to low-emission development and enhanced ambition until and beyond 2050. The following is a discussion in general terms of the effect of the INDCs beyond 2030. It does not intend to draw conclusions regarding future action or possible temperature scenarios, but rather reflects trends emerging from the aggregation of the communicated INDCs that could provide opportunities for increased ambition in the future.

216. The extent to which efforts to reduce emissions will be sufficient to limit the global average temperature rise to less than 2 °C above pre-industrial levels strongly depends on the long-term changes in the key economic drivers that will be modified by the implementation of the current INDCs, as well as the determination of Parties to increase levels of ambition before and after 2030, including through the multilateral process.

Participation

217. **The INDCs indicate a significant increase in the number of countries taking climate action, which is often of national character and covers a large number of sectors and GHGs.** Parties responded actively to the invitation made by the COP for them to communicate their INDCs, despite the short time frame established by decision 1/CP.20. At the time of the adoption of the Cancun Agreements (decision 1/CP.16), 96 Parties had submitted their quantified economy-wide emission reduction targets and nationally appropriate mitigation actions. In comparison, by 1 October 2015, 148 Parties overall had submitted their INDCs. It is expected that several of the Parties that did not communicate their contributions by October 2015 will do so in the run-up to the Paris Conference or shortly thereafter.

[62] See a comparison with other cumulative CO_2 emission amounts in table 2.2 of the Synthesis Report of the AR5.

218. A large number of Parties communicated INDCs that are national in scope, using a variety of ways to express them. Of particular importance is the increase in the number of Parties that have moved from project-, programme-, or sector-based actions towards economy-wide policies and objectives. Whereas in the pre-2020 period a total of 61 Parties presented absolute, BAU, intensity or peaking year based quantified targets, in their INDCs 127 Parties communicated such targets.

219. Parties have also been active in providing information to facilitate the clarity, transparency and understanding of their INDCs, with many following guidance provided in decision 1/CP.20, paragraph 14. This has enabled many Parties to be explicit on the technical aspects of their contributions, such as scope, coverage, assumptions and methodologies, and has allowed for enhanced clarity, transparency and understanding. While there are gaps and issues of consistency and data quality, this information has provided a basis for the evaluation contained in this report of the aggregate effect of the INDCs in terms of GHG emissions. This constitutes a significant improvement compared with the information provided on the pre-2020 period, which was shared in many cases informally through the work programmes under the subsidiary bodies.

220. The high level of response of Parties as well as the presence of information communicated as part of the INDCs point towards an increase in national capacities to plan, develop and communicate mitigation actions in the form of targets, strategies and plans. The identified areas where data quality, transparency and completeness could be further improved indicate, however, that further efforts are needed to increase the capacity of many countries to plan, implement and monitor their climate-related actions, including through enhanced cooperation, support and/or an enabling institutional environment.

Policies and institutions

221. **The INDCs show an increasing trend towards introducing national policies and related instruments for low-emission and climate-resilient development.** Many INDCs are already backed by national law and many have triggered national processes to establish relevant policy frameworks. Furthermore, many INDCs have gone through public consultation and engagement of a wide range of stakeholders to socialize the development benefits of action to combat climate change and secure the buy-in of such action.

222. One key driver for understanding the aggregate effect of the INDCs in the longer term is the induced institutional, legislative and policy change at the national and international levels. All Parties that have communicated INDCs have already taken a number of steps to develop a strong basis at the domestic level for the implementation of their INDC and are planning on building on those efforts going forward.

223. The information communicated by Parties related to planning processes (see chapter II.D.6 above) shows that a large number of the INDCs have been prepared by Parties on the basis of existing institutions, policies and legislative frameworks, with some being already backed up by national law. Although the level of advancement in the national climate policies varies across Parties, depending on national circumstances and capacities, all Parties developed their INDCs building on existing processes and experiences.

224. The information communicated in the INDCs points towards the strengthening and further developing of national institutional arrangements, legislation and policies and measures for addressing climate change in the future, suggesting credible and realistic political commitments with an implementation plan and a longer-term vision.

225. In their INDCs, many Parties communicated that the preparation and finalization of their INDCs was underpinned by a number of national consultation and interdisciplinary coordination processes, many of which have been established solely for the INDC preparation process. Such stakeholder engagement processes generally aim at fostering the understanding of the INDC on a political and societal level in order to ensure alignment with development objectives and enhance broad support across relevant stakeholder groups.

226. Information provided by Parties highlights the trend towards an increasing prominence of climate change on national political agendas, driven in many cases by interministerial coordination as well as by an increasing trend towards the mainstreaming of climate change into national and sectoral development priorities. At the same time, many Parties have made efforts to ensure that the private sector, civil society and other non-governmental actors recognize the importance of, and provide support for, national action to combat climate change.

227. National political and institutional processes have been partly influenced by the invitation for Parties to communicate their INDCs. While INDCs may have served as a catalyst for the consolidation and enhancement of climate-related policies in a few countries, in many it has represented an incentive to initiate them. In general, it can be argued that the realities of policy development and of social acceptance related to the preparation of the INDCs provide the grounds for increased action in the future. However, the timing and scale of such enhanced action depends on the determination of governments and the long-term effectiveness of the 2015 agreement.

228. Existing and enhanced national capacities with regard to the formulation and implementation of climate policies, together with a better understanding and enhanced general acceptance and support of climate policies as part of national development strategies, could increase the potential for enabling stronger implementation and further policy change in the longer term and transitioning to low-emission development.

229. However, the timing and scale of such enhanced action depends on the determination of governments. In this context, many Parties referred in their INDCs to their expectations and the need for a robust outcome of the current negotiations process towards a new agreement in order to provide an enabling environment for action as well as the means to enhance the capacity of those countries that need it the most.

Cooperation and support

230. **The INDCs show the increasing interest of Parties in cooperation to achieve climate change goals and raise ambition in the future.** In their INDCs, many Parties referred to the enhanced cooperation required for the implementation of their INDCs, as well as it being an important driver of future ambition. They also referred to the need for enhanced cooperation to enable Parties to enhance domestic actions related to climate change and to address related challenges collectively in the future.

231. Some Parties indicated the general role of cooperation related to financial, technology transfer and capacity-building support for implementing their INDCs, while other Parties communicated opportunities for cooperation in the areas of technology and the development and implementation of policy and economic instruments, including market-based mechanisms, or through cooperative initiatives.

232. The information communicated by Parties in their INDCs indicated a trend towards enhanced international cooperation in order to drive the implementation of the INDCs as well as to raise the ambition of future action in response to climate change. Cooperation is increasingly taking place among various stakeholders, including national, subnational and regional cooperative action both by governmental bodies and non-State actors, mobilizing action in response to climate change.

233. Some of the INDCs refer to international and regional cooperation and partnerships in specific areas, including: sustainable energy; low-carbon agriculture; biofuels; forest monitoring systems; restoration and reforestation activities; international exchanges on best practices; as well as partnerships with research centres, the private sector, technology funds and financing institutions in the context of global decarbonization. A few of the INDCs highlighted the importance of North-South and South-South cooperation.

234. Through their INDCs, Parties indicated a general interest in global action in the context of a multilateral response to climate change under the UNFCCC, with some Parties suggesting

enhanced institutional arrangements for international finance, technology transfer and capacity-building support as part of the agreement to be reached at the Paris Conference as central elements to create an enabling environment in this regard. The UNFCCC, through its Technology Mechanism and Financial Mechanism, including the Technology Executive Committee, the Climate Technology Centre and Network, the GEF and the GCF, provides the framework and tools for enhancing targeted cooperation and delivering the necessary support to Parties for implementing their INDCs and could enhance its catalytic role in this regard. In this context, some Parties referred to the importance of reaching agreement by the end of this year on a protocol, another legal instrument or an agreed outcome with legal force and to improve the linkages to and between existing mechanisms under the Convention.

235. The information contained in some of the INDCs points to the need for identifying, exploring and implementing further opportunities for cooperation on addressing climate change. In this context, Parties referred to the outcome of the current negotiation process under the ADP and the need for it to foster and promote cooperation, including through the strengthening of existing mechanisms and tools under the Convention or the establishment of new ones.

National circumstances and ambition

236. All Parties have raised the ambition of their climate action in relation to efforts communicated for the pre-2020 period. There is strong recognition of the need for enhanced global action in the context of achieving the objective of the Convention and of the commitment to doing so through a multilateral response. In this context, many Parties referred to the goal of limiting global average temperature rise below 2 °C or 1.5 °C above pre-industrial levels as a benchmark for national and aggregate ambition. They also stressed the clarity provided by this goal to guide national and international efforts. Many Parties expressed their determination to achieve this goal and acknowledged that this would only be possible through collective efforts, including enhanced cooperation.

237. As previously noted, while significant progress has been made with regard to the pre-2020 period, global aggregate emission levels in 2025 and 2030 resulting from the INDCs do not fall within 2 °C scenarios. It has also already been stressed that the extent to which efforts to reduce emissions linked to the INDCs are sufficient to meet the temperature goal strongly depends on the long-term changes in the key economic drivers that will be induced by the implementation of the current INDCs as well as the determination of Parties to increase their levels of ambition before and after 2030. The INDCs could potentially affect such action, either by inducing changes today that could be replicated or scaled up in the future, or by locking in factors such as policies or infrastructure.

238. National narratives on ambition and fairness indicate the serious consideration that Parties have given to the size of national efforts to combat climate change. An increasing number of countries are considering longer-term horizons towards low-emission and climate-resilient development. With a view to delivering their INDCs, several countries may have to overcome a range of economic, technological and capacity-related barriers.

239. While a discussion of the efforts beyond 2025 and 2030 as well as the changes and factors mentioned above is beyond the scope of this report, the INDCs signal an increasing determination of Parties to take action to reduce emissions and increase the resilience of their economies, with a few Parties already indicating an aim to reduce their net emissions to zero. National determination has enabled Parties to shape their efforts in line with their circumstances, with many already recognizing and realizing related socioeconomic co-benefits. Yet the need for sustained and longer-term action would require not only maintaining those trends after 2025 or 2030 but also some degree of acceleration and scaling up.

240. As noted in paragraph 163 above, most Parties provided information on how they consider their INDCs to be fair and ambitious and how they contribute towards achieving the objective of the Convention. The information contained in the communicated INDCs suggests that there is strong recognition among Parties of the need for enhanced global action in the

context of the objective of the Convention to address climate change and the commitment to doing so through a multilateral response with all countries contributing their fair share. The understanding of what is considered fair and ambitious, however, varies depending on the particular national circumstances (see chapter II.D.7 above).

241. Related narratives convey the vision that each country has of its own efforts. Such information could potentially lead to a higher degree of understanding of how national circumstances and other factors determine the efforts of each country. At the same time, the narratives reveal the need to balance a wide variety of national circumstances with the information provided by science on the efforts required to keep global average temperature rise below any given level. This question should be addressed as Parties prepare further efforts beyond current time frames and consider them in relation to any goal agreed under the UNFCCC.

F. Adaptation component of the intended nationally determined contributions

1. Background information

242. By 1 October 2015, 100 Parties, including 38 LDC Parties, had included an adaptation component in their INDCs. The secretariat received adaptation components from 46 African States, 26 Asia-Pacific States, 19 Latin American and Caribbean States, 7 Eastern European States and 2 Western European and other States. Some of them indicated that adaptation is their main priority in addressing climate change.

243. This chapter provides a concise overview of the adaptation components of the INDCs communicated by Parties in accordance with paragraph 12 of decision 1/CP.20. The chapter focuses on the elements of the adaptation components that featured in most INDCs:

(a) National circumstances informing the adaptation component;

(b) Long-term goals and/or vision guiding the adaptation component;

(c) Impact and vulnerability assessments;

(d) Legal and regulatory frameworks, strategies, programmes and plans, which provide the basis for, or have informed, adaptation actions;

(e) Measures or actions planned or under implementation for different time frames, in particular for the shorter (2015-2020) and longer terms (2020-2030);

(f) Loss and damage;

(g) Means of implementation;

(h) Monitoring and evaluation;

(i) Synergies between adaptation and mitigation.

244. The secretariat has synthesized the information submitted by Parties for each element with a focus on areas communicated by a critical mass of Parties. Additional examples and specific aspects of the adaptation components are highlighted throughout the sections. For each element, a number of emerging trends have been identified. It was not possible at this point to evaluate the aggregate effect of the adaptation components given the methodological uncertainties associated with such an evaluation.

2. Synthesis of the information communicated by Parties in the adaptation components of their intended nationally determined contributions

National circumstances informing the adaptation component

245. Most Parties provided information on their national circumstances, identifying, inter alia, aspects of their national circumstances that are particularly important for the adaptation

component. This information relates in particular to their geography, population and economic indicators. A few Parties stated that their INDC is subject to revision, taking into account future changes in national circumstances.

246. Several Parties described their overall geographical characteristics. Such information generally includes a description of the overall location and geography of the country. Parties also referred to key climatic zones of the country, length of coastline, mountain chains and level of forest coverage and biodiversity. Descriptions of the overall climate of the country were included in some INDCs, with references to indicators such as mean temperature, mean precipitation, arid- or semi-arid character and level of climate variability of the country. Some Parties provided more specific parameters, such as the amount of cultivated land, estimated amount of available groundwater and deforestation rate. Specific environmental developments were also highlighted, including the disappearance of major water bodies, a high deforestation rate and the rapid spread of desertification in past decades.

247. Some Parties described their population dynamics and considered how they relate to climate change and adaptation, referring to, for example, high population density, growth, high proportion of youth in the population and the need to adapt under the assumption that the population is likely to be significantly higher in 2030. Others highlighted the challenges associated with concentrations of population in vulnerable areas. Some referred to their placement in the Human Development Index as an indicator of their overall development status.

248. Overall economic situation and associated development challenges were also described. Parties highlighted key economic indicators such as GDP, GDP growth and Gini coefficient. They described the main economic activities and the number of people engaged in those activities, dependencies on climate-sensitive sectors such as agriculture, water resources, tourism and health, as well as economic weaknesses due to, for example, the narrow focus of the economy. Some drew attention to the multiple challenges of pursuing economic development and undertaking climate action under the limitations posed by their economic situation.

249. In addition, Parties drew attention to various specific development indicators, including the proportion of people employed in vulnerable sectors, the proportion of people with access to electricity, sanitation, drinking water and basic services and health care, the number of people living in poverty or with lack of food security, and the proportion of infants suffering malnutrition.

250. Political stability was highlighted by some Parties. While a few Parties emphasized that they have recently stabilized a political crisis and are now focusing on development, others highlighted the priority of ensuring national security and territorial integrity in view of regional conflicts and the additional pressures brought on by absorbing large numbers of refugees.

251. Finally, Parties highlighted some key development setbacks, such as the Ebola outbreak in Western Africa and major hurricanes in the Caribbean, illustrating that development gains can be fragile in the light of climate change impacts.

Long-term goals and/or vision guiding the adaptation component

252. Most Parties defined a long-term goal or vision to guide the adaptation component of their INDC. Their long-term goals or visions are aspirational, qualitative, quantitative or a combination of the three. Some goals and visions are enshrined in the constitution of a Party, while others are contained in national laws, strategies and plans.

253. Several goals and visions are climate specific, but all of them are closely intertwined with development objectives such as poverty eradication, economic development or improvement of living standards, security and human rights. A few Parties referred to the United Nations Millennium Development Goals and subsequent Sustainable Development Goals in defining their national goals.

254. Some Parties articulated their vision in climate- or adaptation-specific terms, for example as the objective of mainstreaming adaptation into development. In sharing their long-term goals

or visions, Parties also emphasized specific elements such as the need to reduce losses, the participation of all segments of the population and the consideration of related issues, such as the welfare of women, children, the elderly, people with disabilities and environmental refugees.

255. Others expressed their vision in broader and non-climate or adaptation-specific terms, such as a commitment to safeguarding security, territory and population, human rights and advancing development goals in the light of projected climate impacts. Several Parties, in particular the LDCs, mentioned that they aspire to become an emerging country with a middle-income economy by 2030. Another example of a broader approach was the aim to create, by 2050, a prosperous, strong, democratic, culturally developed and harmonious modern socialist society.

256. A few Parties aligned their vision for adaptation with the goal of holding the increase in global average temperature below 2 °C or 1.5 °C above pre-industrial levels. One Party mentioned that its goal is to focus on initiatives necessary to ensure the achievement of mitigation targets. Another Party is seeking, among other things, to enhance collaboration at the national, regional and global levels.

257. References to Mother Earth, adaptation as a matter of survival and a nation suffering from the adverse impacts of climate change were also included in the national visions and goals.

258. Most of the adaptation components indicated a time frame for the national long-term goals and/or vision, while others provided the year by which they/it will be achieved. In many cases, it is by 2030.

Impact and vulnerability assessments

259. Most Parties reflected on key impacts and vulnerabilities in their adaptation components. Depending on their national circumstances, Parties did this through different types of information, mainly on (1) observed and projected changes and impacts, including high-risk impacts; and (2) the most vulnerable sectors and geographical and population segments of the country. In describing their vulnerabilities, Parties drew attention to their ongoing vulnerability studies, provided estimates of past socioeconomic losses due to extreme weather events and referred to links and interconnections between climate risks and non-climatic factors, such as food insecurity and rapid urbanization. Table 1 presents the main elements of impact and vulnerability assessments communicated by Parties, accompanied by some examples.

Table 1
Main elements of impact and vulnerability assessments

Main element	*Examples*
General description of non-climatic vulnerabilities	– Post-conflict fragility of the State – Poverty and low-skilled human resources – High prevalence of HIV/AIDs in adult population – Host country to displaced persons
Observations, predictions and risks	– Observed rate of warming of 0.26 °C per decade in the period 1951-2012 – Projected sea level rise of 0.81 m by 2100
Vulnerable sectors and zones	– Water – Agriculture and forestry – Ecosystems and biodiversity, including wildlife – Health – Energy, tourism, infrastructure and human settlements – Areas liable to drought and desertification, low-lying coastal areas and small islands – Land-locked countries and mountains

Main element	*Examples*
Vulnerable populations	– Rural populations – Poorest segments of society – Women, youth, the elderly and the disabled
Economic costs of impacts	– Annual cost of extreme events in the period 2000-2012 estimated at USD 1.4 billion – Loss of gross domestic product (GDP) due to drought and floods estimated at 3 per cent – Consequence of one extreme event: loss of 20 years of investment in road and water infrastructure, USD 3.8 billion (equivalent of 70 per cent of GDP per year) and the collapse of the productive apparatus of the country
Ongoing assessments	– Launch of a vulnerability study for the period 2012-2100 – Process to develop tools for assessing vulnerability and risk – Process to estimate the cost of adaptation as well as support needs

260. In terms of observed changes, many Parties reported that they have observed various levels of temperature increase in their territories, ranging from 0.5 to approximately 1.5 °C in the past 50 years. Some Parties referred to observed sea level rise, including to a global increase of 1.7 mm per annum in the period 1901-2010. Other observed changes highlighted by many Parties include increased extreme weather, in particular floods and drought, changes in rainfall patterns and increased water scarcity. For instance, one Party reported that water availability per capita is now three times lower than in 1960, while another Party highlighted that annual maximum rainfall intensity in one hour increased from 80 mm in 1980 to 107 mm in 2012.

261. Future projections were made for similar indicators. Parties drew on a variety of models and scenarios to estimate changes. Estimates of temperature increase include 1-2 °C by 2050 and 1-4.5 °C by 2100, depending on scenarios and regional differences. Estimates of sea level rise include a range of 60-70 cm under a +2 °C scenario, as well as 0.81 m by 2100. Other projections include lower or more extreme seasonal precipitation.

262. Most of the adaptation components contain a description of the key climate hazards faced by countries. The three main sources of concern identified by Parties are flooding, sea level rise and drought/desertification. One Party reported that some of the islands in its territory have disappeared under water. Many Parties highlighted stronger winds and rains, typhoons, hurricanes, heat waves, sea surges, ocean acidification and changes in circulation patterns. The high risk of glacial lake outburst floods, in particular in the Himalayan region, was also mentioned.

263. The vulnerable sectors most referred to by Parties are: water, agriculture, biodiversity and health. Forestry, energy, tourism, infrastructure and human settlements were also identified as vulnerable by a number of Parties, and wildlife was also mentioned by at least three. In terms of geographical zones, arid or semi-arid lands, coastal areas, watersheds, atolls and other low-lying territories, isolated territories and mountain ranges were identified in the adaptation components, and some Parties identified specific regions of their countries that are most vulnerable. Vulnerable communities were identified as being mostly composed of: rural populations, in particular smallholders, women, youth and the elderly. Several Parties provided quantitative estimates of vulnerable people or communities, sometimes using specific indicators. For instance, one Party identified 319 municipalities as highly vulnerable, while another one stated that 42 million people might be affected by sea level rise due to its long coastline.

264. In addition to climate impacts, Parties referred to the social, economic and political consequences of those climate change impacts. Many referred to the risk of fluctuations in food

prices as well as to other food and water security concerns, while some highlighted that agricultural calendars are at risk of being disrupted due to changes in precipitation and the growing season. In this context, a few Parties also referred to elements of social justice, highlighting that high-risk areas are often populated by the poorest and most marginalized segments of the population. A few are transitioning to a post-conflict situation and climate change poses an additional burden on their fragile state.

265. In describing their high vulnerability, a few Parties referred to their rank in the Human Development Index or in climate change vulnerability indices.

266. Transboundary aspects were also mentioned, with Parties explaining how some national vulnerabilities have regional and even global effects. For instance, one Party explained that it is the home of four major rivers of West Africa, which are threatened by the impacts of climate change, and that its geographical situation could make it a shelter for neighbouring countries, in particular nomadic pastoralists, increasing the pressure on river basins already affected by drought and changing rainfall patterns. Two major food exporters reported on their contribution to global food security and the global risk induced by the vulnerability of their agriculture and livestock sectors.

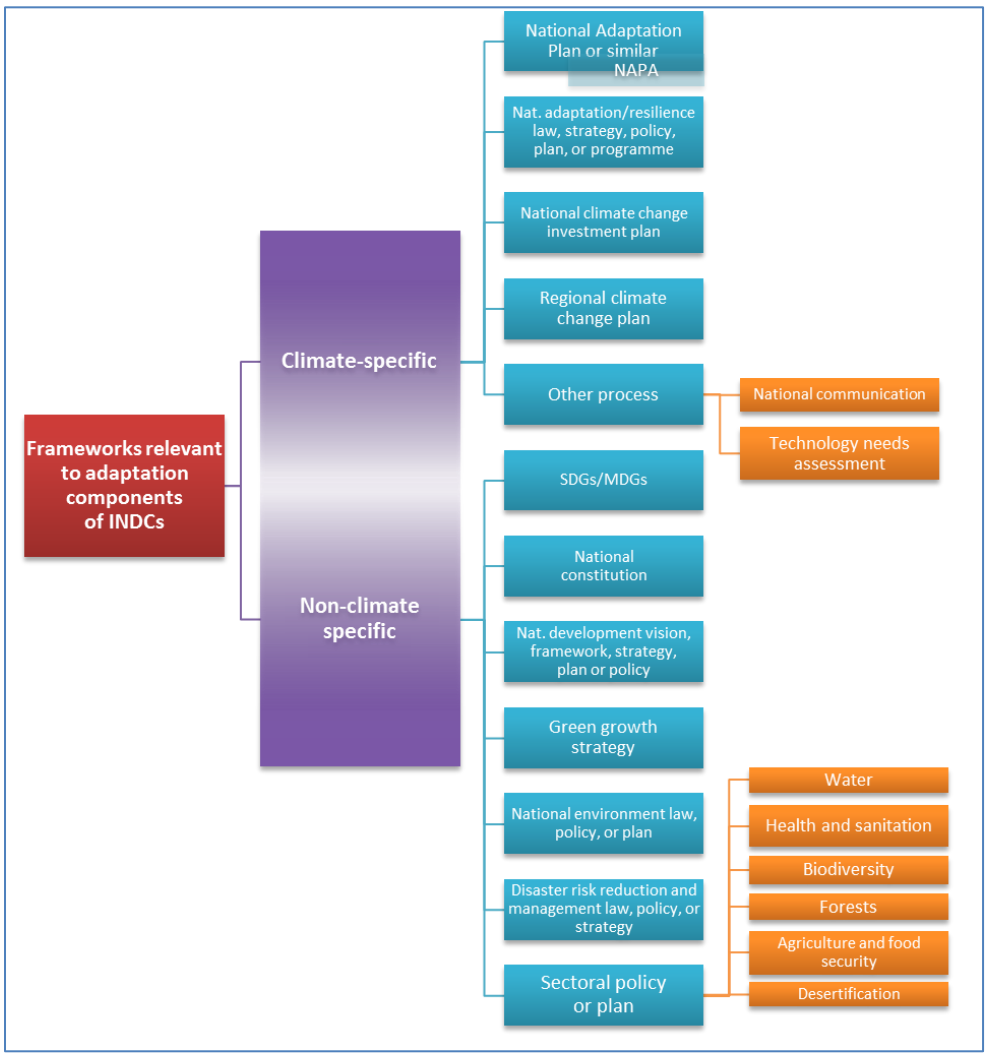
267. Some Parties drew attention to ongoing vulnerability assessments. Parties are engaging in various types of activity; for example, they are developing guidance and tools to support the assessment of vulnerability and risk at the national level for a comprehensive and quantitative analysis of impacts, mapping regional vulnerabilities, developing an adaptation information system, and identifying vulnerabilities in the period 2021-2100 in seven key sectors with the aim of defining an adaptation action plan. In addition, a few Parties shared their intentions to regularly update their climate vulnerability assessments on the basis of new climate information.

268. Some of the adaptation components provide assessments of the loss and damage incurred over a given period or for an extreme event that occurred at one point in time. These were expressed in financial terms. For example, one Party suffered losses of USD 48 million per annum in the period 1980-1999 and USD 1.4 billion per annum in the period 2000-2012, while another one referred to total losses of USD 6 billion due to extreme events in the period 2010-2011. A devastating hurricane in August 2015 was reported to have led to loss and damage amounting to USD 392.3 million for one Party. Past loss and damage is also expressed a few times as a percentage of Parties' GDP. For example, one Party stated that floods and drought cause economic losses worth an estimated 3 per cent of the country's GDP. It is also worth noting that one Party stated that 9 per cent of overall government investment already goes to adaptation, and that that proportion could increase to 15 per cent in the future. In addition, Parties expressed loss and damage in non-financial terms, including by providing information on the size of flooded areas, houses destroyed, decrease in crop yield, drop in industrial production, number of roads affected or number of casualties.

Legal and regulatory frameworks, strategies, programmes and plans that provide the basis for, or have informed, adaptation actions

269. In their INDCs, Parties demonstrated that they have or are establishing national adaptation planning and implementation processes to enhance the impacts of their adaptation actions (for an overview, see figure 14). Coordination mechanisms were highlighted, some of which have been established at the highest political level with a legal mandate.

Figure 14
Legal and regulatory frameworks, strategies and programmes



Abbreviations: INDC = intended nationally determined contribution, MDGs = United Nations Millennium Development Goals, NAPA = national adaptation programme of action, Nat. = national, SDGs = Sustainable Development Goals.

270. Most Parties have committed to further advancing the implementation of their existing frameworks, strategies, programmes and plans in the future and to developing new ones, when deemed necessary, and have described those that guide their current and future work on adaptation, including in the context of implementing the adaptation component of their INDC. Various strategies, programmes and plans were presented, some of which are specific to climate change, some are specific to sectors of the economy and others are economy wide. Despite the various frameworks and instruments used to enhance the enabling environment for addressing adaptation, the information communicated demonstrates Parties' efforts to address adaptation in a coherent and programmatic manner.

271. There are also references to instruments established under the Convention. For instance, many LDCs expressed their willingness to build upon the momentum created by the preparation and implementation of their national adaptation programmes of action (NAPAs) to continue enhancing their adaptation actions, in particular as they embark on the process to formulate and implement NAPs.

272. In fact, several Parties, the LDCs and developing countries that are not LDCs alike, indicated that they are conducting the process to formulate and implement NAPs and that they are developing a NAP to be ready by 2020. Thus far, progress in the process to formulate and implement NAPs includes the development of road maps for some and the formulation of the NAP itself for a few others. One Party that is currently formulating its NAP already plans for it to be updated in 2021.

273. In addition, some Parties have embarked on adaptation planning and implementation processes that encompass many features of the NAP process. Some Parties mentioned having developed national or sectoral plans or national programmes that define their adaptation priorities. In addition, many Parties have integrated climate change adaptation into either their national plans and policies or some of their sectoral plans. Other Parties are in the process of doing so. For instance, one Party described how planning processes are undertaken at the subnational level by mandating decision makers to identify vulnerabilities and to define adaptation plans for their regions. They also reported on the opportunity to align national adaptation strategies with regional adaptation strategies and action plans.

274. Other instruments that were reported as contributing to the strengthening of the enabling environment for adaptation action in the medium and long terms include a national climate change communication strategy and seeking synergies with other environmental agreements.

275. The consideration of gender issues is seen by many Parties as imperative in establishing an enabling environment for adaptation. For example, one Party has established a climate change gender action plan. Other Parties mentioned the need to address human rights. Linkages with mitigation aspects were also recognized, with one Party indicating that its climate change strategy focuses on adaptation and that it considers mitigation as a function of adaptation.

Measures and actions, planned or under implementation

276. The development and coordination of national frameworks, policies and programmes leads to the identification and prioritization of adaptation measures and actions to be implemented. In fact, the main element of the adaptation components communicated by Parties is their measures and actions, in particular the ones that they consider as priorities. The most common time-horizons defined for implementing the reported measures and actions are the periods of 2015-2020 and 2020-2030, but some Parties also provided information on their past and current initiatives. Most Parties derived the measures or actions presented in their adaptation components from those contained in existing strategies, plans or programmes, such as their NAPAs, which were cited by many LDCs, or other national action plans.

277. While all adaptation measures and actions identified contribute to the implementation of the national vision and goals, the decision to prioritize some of them was based on criteria such as: timing or urgency; efficacy; co-benefits, in particular poverty reduction, sustainable development or mitigation; social inclusiveness; technological feasibility; and cost, including economic costs and benefits.

278. According to the adaptation components received, a lot of work has already been undertaken in addressing adaptation and the implementation of measures or actions is already happening in many countries. As such, Parties expressed their willingness to strengthen or upscale existing efforts.

279. In addition, most of the adaptation components identify priority areas or sectors and a set of associated specific actions. Several Parties also reported measures of a cross-cutting nature. In addition, a few reported that they will take an integrated approach in implementing part or all of their adaptation measures and actions. For example, one Party intends to address adaptation by looking at the nexus of water, agriculture, energy and human consumption. In a few cases, quantitative targets and goals were included as part of the description of the actions and measures.

280. Intended adaptation efforts were also expressed as overall policy objectives, such as: integration of adaptation into development planning and implementation, including 'climate proofing' key development sectors and the integration of adaptation into the national budget; strengthening institutional capacity; enforcing behavioural change; ensuring various types of resilience (economic, social and environmental); and preventing and solving conflict.

281. Approaches to implementing adaptation found in the adaptation components include:

(a) Community-based adaptation;

(b) Ecosystem-based adaptation;

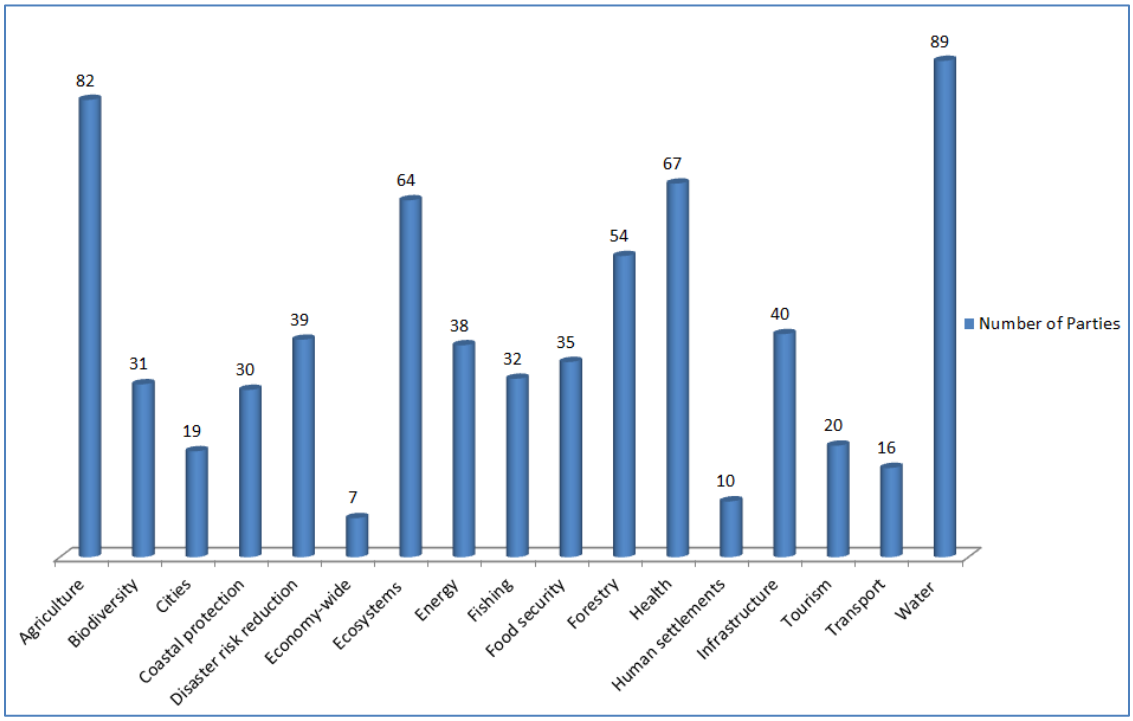
(c) Landscape approach to adaptation;

(d) Livelihood diversification;

(e) Exploring synergies between adaptation and mitigation (see paras. 311 and 312 below).

282. In their adaptation components, Parties referred to actions in virtually every sector and area of the economy, as indicated in figure 15. The first three priority areas were water, agriculture and health.

Figure 15
Priority areas and sectors for adaptation actions



283. Water security is clearly a key development priority for most Parties and therefore various types of action related to the protection of water resources have been included in the adaptation components. These generally aim at saving water, ensuring security of supply, enhancing the allocation of water and broadening the resource base. The actions range from specific water-saving measures, such as the desalination of 285 million m^3 water for drinking water supply, or the construction of water conservation facilities for farmlands, to broader considerations, such as mainstreaming climate change adaptation in the water sector, implementing a national water master plan, building a man-made lake, constructing reservoirs for glacier melt water harvesting, or building a water-saving society. A few Parties are putting in place integrated water management systems. Some Parties seek to develop water-saving irrigation systems, while others referred to their consideration of climate criteria in their water

management efforts. Some Parties outlined more specific techniques, such as digging wells, rainwater harvesting or the substitution of water withdrawal from aquifers with surface water.

284. Many Parties referred to actions in the agriculture sector and introduced their programmes and policies, such as promoting sustainable agriculture and land management, implementing integrated adaptation programmes for agriculture, developing climate criteria for agricultural programmes and adopting agricultural calendars. Others described specific methods that can be applied to combat specific climate-related problems in the agriculture sector. For example, Parties described methods for pest management, including integrated pest management, introduction of heat-, drought- and disease-resistant crop and fodder types and the distribution of medicine. Many referred to the importance of resilient crops and are planning to build on native maize species or other improved crop varieties. Parties also referred to agricultural improvements that can reduce erosion, including measures such as improving livestock production to reduce erosion. Some Parties defined quantitative parameters, for instance the objective of converting 1 million ha grain to fruit plantations to protect against erosion.

285. Human health was also commonly cited as a priority sector. A number of Parties are aiming at an overall integration of climate impacts and/or the identification of priority actions in the health sector and would like to enhance management systems or contingency plans for public health to enhance the adaptive capacity of public medical services. In terms of more specific measures to combat vector-borne diseases, one Party aims to protect pregnant women and children under five against vector-borne diseases, while another one referred to suppressing mosquito populations. Other measures include early warning systems with epidemiological information, as well as health surveillance programmes and contingency plans for heat waves.

286. Another priority area identified by many Parties is ecosystems, including in the context of biodiversity conservation. Many defined enhancing the resilience of or rehabilitating ecosystems as one of their objectives. In terms of biodiversity, Parties identified some specific objectives and actions, including tracking, monitoring and assessing impacts on biodiversity, establishing biodiversity corridors, protecting moorlands and other ecosystems, and increasing the conservation of species and the recovery of forest, coastal and marine ecosystems. One Party is preparing a biodiversity index and atlas, while others are striving to protect wildlife species.

287. Disaster risk reduction has been addressed concomitantly to adaptation by several Parties and they reported on their current and future efforts relating to disaster reduction, the strengthening of early warning systems and contingency plans. Some mentioned the development of insurance schemes as one of their measures, in particular to protect the most vulnerable communities. A few Parties intend to resettle part of their population highly exposed to climate risk in safer areas. In this context, one Party announced that it is preparing its people for emigration owing to the country's high vulnerability to sea level rise.

288. In line with emerging trends seen in national frameworks and policies as reported by Parties, some of the actions and measures seek to address transboundary issues. Among those, most relate to the regional level and are associated with the management of shared river basins, but one Party also mentioned its intention to contribute to the integration of climate change into regional transhumance plans. Transboundary issues with a global scope were reported by a few Parties that have sectors of their economies, for example food production, that contribute to ensuring global security.

289. There is recognition that progress has already been made by many Parties in addressing adaptation. For example, one Party indicated that it has made great strides in reducing vulnerability in the tourism, agriculture and ecosystem management sectors, among others; it has also enhanced its research and data management. In addition, a few Parties mentioned that the methodologies and tools that they have developed for their national adaptation work have been recognized by the international community as good practices.

290. In addition, several Parties indicated that they are encouraging the active participation of relevant stakeholders as a means of strengthening the implementation of their adaptation actions. Among these, some Parties specifically mentioned the need to enhance the participation of vulnerable communities, including women, with a view to empowering them.

291. A few Parties provided objectives and targets for their adaptation measures or actions. For example, one Party defined quantitative targets for planning, including that 100 per cent of the national territory and all sectors should be covered by climate change plans by 2030.

Loss and damage

292. Loss and damage associated with past[63] and projected impacts of climate variability and change were reported by several Parties. Loss and damage are projected to be incurred because of extreme hydrometeorological events such as drought, floods or tropical storms but also because of sea level rise and associated coastal erosion, increases in vector- and water-borne diseases or fires.

293. Projected loss and damage have been quantified by some Parties, for example in the form of absolute costs, annual loss of GDP (ranging from 1 to 2 per cent by 2030 to 1.8 to 8.6 per cent by 2050 to 9.4 per cent by 2100), or percentage of land or agricultural production lost or percentage of population affected by a certain year or a particular threshold, for example a specific rise in sea level. A few Parties provided details on projected costs of climate change impacts and how intended adaptation measures are expected to reduce the projected costs of impacts, leaving some residual damage, thus clearly making an economic case for investing in adaptation and disaster risk reduction.

294. Measures highlighted to reduce projected loss and damage include first and foremost: aligning development, adaptation, disaster risk reduction and adaptation; enhancing risk sharing and transfer, including setting up insurance schemes; strengthening institutional arrangements and legislative frameworks; strengthening early warning systems; enhancing building codes and land-use planning; and promoting social protection.

Means of implementation for adaptation actions

295. Most Parties provided information on the means needed, including finance, technology and capacity-building, to support the implementation of their envisaged adaptation actions. The information reported relates to:

(a) Support needs, including needs for finance, technology and capacity-building;

(b) Domestic support, including institutional arrangements;

(c) International support;

(d) South-South cooperation.

296. Specific support needs identified by Parties include the need for:

(a) Favourable enabling environments with appropriate institutional arrangements and legislation, including for strengthening the engagement of the private sector;

(b) Sufficient financial resources to assess, plan, implement, monitor and evaluate adaptation actions;

(c) Technologies for adaptation,[64] including in the areas of climate observation and monitoring, early warning systems, water resources, including irrigation and waste water management, coastal zones, resilient transportation, sustainable agriculture, forestry and land management;

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[63] Information on loss and damage due to past climate impacts is included in the section on impact and vulnerability assessments above.

[64] Some Parties referred to their technology needs assessments.

(d) Training and building of institutional and human capacities and technical expertise, including in the area of vulnerability and adaptation assessments;

(e) Research, data and information, including in the area of climate forecasting and modelling;

(f) Education, raising awareness and outreach on climate change impacts and adaptation.

297. While several Parties quantified their financial needs, others are in the process or are planning to do so. Needs for finance were expressed either as total quantified financial needs to implement mitigation and adaptation actions identified in the INDCs or as specific adaptation finance needs. Parties that reported specific financial needs for adaptation did so for either the whole INDC period (with individual needs ranging from USD 100 million to over USD 200 billion) or on an annual basis (with individual needs ranging from around USD 10 million to USD 3 billion per year). A few Parties provided additional information on their finance needs by sector or plan/strategy and two Parties provided projected adaptation costs for different mitigation scenarios.

298. Several Parties reported on how they are addressing the identified support needs through the provision of domestic support, in particular finance. Those financial resources are reported to come from a variety of sources, including: the national budget; insurance; contingent credit and catastrophe bonds; income credits of the domestic market; allocations from valued added tax as well as environmental fees, taxes and levies; soft and low-interest loans; and the domestic private sector.

299. Investment strategies/plans and national climate change/adaptation funds are being set up by some Parties to assist in allocating resources in national budgets, to mobilize additional resources, to assist in engaging the private sector, including through establishing public-private partnerships, and to ensure adequate uptake of finance.

300. In addition, several Parties noted their ongoing capacity-building, training and research efforts, including related to research cooperation, innovation clusters and cooperation with regional and local governments as well as the financial sector.

301. While developing country Parties are providing significant domestic support for adaptation, many underlined the need to receive international support in the form of finance, technology transfer and capacity-building in line with the Convention. While one Party noted that all adaptation costs should be borne by developed country Parties, several Parties stressed that a substantial amount should be provided by developed countries to allow for the implementation of additional adaptation activities. International support for adaptation is further sought as it will determine Parties' ability to safeguard development gains, fulfil their intended unconditional mitigation actions and use their domestic resources for development purposes rather than for adaptation.

302. International finance is to come from the GCF, the Adaptation Fund, the GEF, including the Least Developed Countries Fund and the Special Climate Change Fund, other bilateral and multilateral funds, including United Nations programmes and organizations, as well as foreign direct investments and soft loans.

303. In addition to finance, Parties called for international support in the areas of:

(a) Clean technology transfer on concessional and preferential terms;

(b) Capacity-building.

304. South-South cooperation on the basis of solidarity and common sustainable development priorities was highlighted by a few developing country Parties as a further means to support and strengthen adaptation, including at the regional level. For example, one Party communicated its intention to establish a fund for South-South cooperation on climate change.

Monitoring and evaluation

305. Given that the complex and long-term nature of climate change and its impacts require that adaptation be designed as a continuous and flexible process and subject to periodic review, several Parties described how they will monitor and evaluate their intended measures.

306. While some Parties have developed or are in the process of developing an integrated system for monitoring, reporting and verifying their mitigation and adaptation components, others have developed or are in the process of developing adaptation-specific M&E systems and institutional set-ups. A few Parties intend to integrate the review of adaptation into existing M&E systems and processes for national development, for example into annual sector-based progress reports or results-based management systems, to ensure that adaptation achievements are captured and reported in regular development reports.

307. Parties seek to monitor and evaluate adaptation actions as well as support provided and received, with a view to:

(a) Tracking progress in implementation to inform the adaptation process by sharing lessons learned and to update adaptation plans;

(b) Determining the degree to which the adaptive capacity of individuals, communities and systems has been raised and vulnerability has decreased;

(c) Improving transparency, performance evaluation and accountability;

(d) Ensuring that resources are well utilized to increase resilience and produce real benefits;

(e) Tracking climate finance as well as technology transfer and capacity-building.

308. Regarding the M&E of adaptation action, some Parties highlighted that they have established or will establish adaptation and vulnerability indicators to measure progress. Indicators reported include quantitative (e.g. number of people benefiting from adaptation activities, number of hectares with drought-resistant crops under cultivation, and forest coverage increases to 45 per cent) and qualitative (e.g. degree of integration of adaptation into sectoral policies and plans, and level of awareness) ones.

309. The focus on short-term monitoring of activities, processes and outputs rather than on longer-term outcomes was stressed by one Party. A few Parties have initially tested the M&E of adaptation for specific regions, sectors or projects and, on the basis of those experiences and lessons learned, are now planning to scale up M&E to the national level. Connecting project-level with national-level M&E of adaptation is the goal of a three-tier M&E approach[65] highlighted by one Party.

310. In terms of the M&E of domestic and international support provided and received, in particular finance, a few Parties are putting in place climate finance systems for determining, disbursing and monitoring climate expenditure and for enhancing the visibility of adaptation measures within the allocation of their national budgets.

Synergies between adaptation and mitigation

311. Noting that climate change actions require a holistic approach, several Parties elaborated on the synergies between adaptation and mitigation as part of their overall low-emission, climate-resilient development strategies. Synergies are being sought at project, sector or

[65] The first tier, macro-level monitoring, would allow for tracking the evolution of the national adaptation planning process as a whole. The second tier, meso-level monitoring, would allow for tracking progress and results at a disaggregated level, either sectoral or geographical; and finally the third tier, a micro-level structure of reporting, would apply to specific adaptation actions. Reporting is envisaged to be undertaken annually. Every four years (i.e. at the end of a planning cycle), an aggregated NAP impact study would elaborate on results achieved and make recommendations for the next cycle.

landscape level, in planning or institutional frameworks at national, regional or local level and in urban and rural settings. Table 2 provides an overview of the frequently highlighted sectors offering adaptation and mitigation synergies along with example measures.

Table 2
Sectors and sample measures reported by Parties offering synergies between adaptation and mitigation

Sector	*Examples of adaptation measures with mitigation co-benefits*
Agriculture, forestry and other land-use, including livestock	– New crop varieties that allow for a decrease in the use of pesticides and are able to withstand water stress – Sustainable land management practices – Improved livestock production practices – Protection and restoration of forests – Afforestation, including of mangroves and drought-tolerant species
Human settlements and infrastructure	– Climate-smart and resilient urban centres – Waste and storm water management, including treatment
Water	– Integrated water resources management, including watershed protection
Energy	– Renewable energy – Energy efficiency
Tourism	– Ecotourism

312. Reported ways of maximizing synergies between adaptation and mitigation include:

(a) Taking an ecosystem-based or a community-based approach;

(b) Prioritizing those adaptation measures that offer significant mitigation co-benefits;

(c) Minimizing the carbon footprint of adaptation measures.