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The Specification of Rules of Differentiation in the NDCs to the Paris Agreement

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The Specification of Rules of Differentiation in the NDCs to the Paris Agreement

Ulrike Will*

Abstract

The Paris Agreement has limited problem-dissolving power to face the risks of climate change. Compliance with the agreement depends on the specification of legal obligations, in particular of the criteria for differentiation and the distribution of costs for climate protection. The Paris Agreement and its subsequent agreements provide legal terms (equity, fairness, justice), the principle of common but differentiated responsibilities (CBDR), as well as rules that seek to operationalize differentiation. However, specifying criteria and their weight and relationship remain unclear. Consequently, it cannot be said to what extent each single Contracting Party complies with the Paris Agreement.

This contribution seeks to specify the criteria of differentiation based on the nationally determined contributions (NDCs). The NDCs are between law and politics of self-differentiation. They can be subsequent practice in the legal sense and measures to comply with the Paris Agreement, but they also to make clear where the Contracting Parties do not come to an agreement. The analysis reveals whether the NDCs have the power to fill the vague rules of differentiation of the Paris Agreement with content step-by-step or whether all they can do is making national policies more transparent.

As the Contracting Parties to the Paris Agreement could not agree on a common standard, the NDCs are structured very differently. A comparison needs to find the common ground of criteria for differentiation. Terms, principles, quantifiable parameters, non-quantifiable criteria, and categories, as well as arguments for commitments and mutual expectations are analysed. Criteria used by a representative group of Contracting Parties have the potential to be considered subsequent practice in the legal sense and to serve as a model for other states and future NDCs.

The paper concludes with a proposal for a standard form structuring commitments and expectations of the Contracting Parties towards each other. Based on the criteria of differentiation found in the comparison between NDCs, the table could be included in subsequent decisions to the Paris Agreement or future NDCs. It might facilitate the discourse on the relative weight of the criteria of differentiation. It could also be used to analyse progress in the NDCs to come.

Keywords: fairness, equity, justice, common but differentiated responsibilities, CBDR, Paris Agreement, Nationally Determined Contributions, NDCs, climate change, climate agreement

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Contents

I. Introduction

The Paris Agreement[1] has limited problem-dissolving power to face the risks of climate change. Compliance with the Paris Agreement depends on the specification of legal obligations, in particular of the criteria for differentiation and the distribution of costs for climate protection.[2] The perception of international climate policies as being differentiated in an appropriate manner can also increase the willingness to contribute.[3]

The Paris Agreement and its subsequent agreements provide several legal terms (equity, fairness, justice), the principle of common but differentiated responsibilities and respective capabilities (CBDR),[4] as well as rules that seek to operationalize differentiation. According to these provisions, differentiation depends on the capability to resolve climate change problems, the vulnerability to climate change, and the responsibility for emissions. These three broad criteria are also reflected in different types of mitigation targets for developed and developing countries, in the obligations on financial transfers, and the option to establish flexible mechanisms. However, the Paris Agreement does neither specify qualifying criteria for categories of development nor the weight and relationship of the different criteria to each other. Open terms such as 'circumstances' and 'priorities' even increase the discretion of the Contracting Parties whereas the Paris Agreement and the Rulebook only make vague suggestions on how to formulate the criteria of self-differentiation. Hence, it remains unclear how the costs for climate protection shall be shared between the Contracting Parties. Consequently, it cannot be said to what extent each single Contracting Party complies with the Paris Agreement.

This paper seeks to locate the criteria of differentiation in the nationally determined contributions (NDCs).[5] The NDCs are between law and politics of self-differentiation. They have an impact on subsequent practice in the legal sense[6] and are measures to comply with the Paris Agreement. In the different submission rounds, they can reveal reactions of Contracting Parties on criteria defined by others. They also make transparent where the Contracting Parties do not come to an agreement and want to preserve their sovereign rights. Even where the requirements for subsequent practice are not fulfilled, criteria that are broadly recognized in the first NDCs might affect future agreements, decisions, or NDCs.

Most existing studies that make an inventory of the NDCs are not to be found in the context of international law but in international politics or economics. Studies including all NDCs tend to concentrate on quantitative criteria such as mitigation targets. Using quantitative criteria, they sometimes claim that the degree of compliance or non-compliance with the Paris Agreement can be specified for single states.[7] However, while the reference to the mitigation target and data on emissions

[1] UNFCCC, Adoption of the Paris Agreement (signed 12 December 2015, in force 4 November 2016) Decision 1/CP.21 UN Doc FCCC/CP/2015/10/Add.1, Annex (Paris Agreement).

[2] T. Honkonen, 'CBDR and Climate Change', *Elgar Encyclopedia of Environmental Law* (Edward Elgar Publishing Limited 2016), p. 142.

[3] Cf. C. P. Carlarne and J. D. Colavecchio, 'Balancing Equity and Effectiveness: The Paris Agreement & The Future of International Climate Change Law' (2019) 27(2) *New York University Environmental Law Journal* 107, p. 141; P. Cullet, 'Differential Treatment in Environmental Law: Addressing Critiques and Conceptualizing the Next Steps' (2016) 5(02) *TEL* 305, p. 328.

[4] In the Paris Agreement, the principle of common but differentiated responsibilities was complemented by the qualifier 'and respective capabilities' (CBDRRC). However, as this qualifier was not used Art. 4(1) UNFCCC, I will proceed to employ the term 'CBDR'.

[5] Article 4 Paris Agreement prescribes to formulate NDCs. Of 188 Contracting Parties to the Paris Agreement, 186 Parties have submitted their first NDC in March 2020 and three Parties have submitted their second NDC. The NDCs are uploaded in the NDC Registry. UNFCCC, 'NDC Registry (interim)' <www4.unfccc.int/ndcregistry/Pages/All.aspx> accessed 27 April 2020.

[6] Art. 31(3)(b) Vienna Convention on the Law of the Treaties (VCLT).

[7] X. Pan et al. 'Exploring Fair and Ambitious Mitigation Contributions under the Paris Agreement Goals' (2017) 74 *Environmental Science & Policy* 49; Y. R. Du Pont et al. 'Equitable Mitigation to Achieve the Paris Agreement Goals' (2017) 7(1) *Nature Climate Change* 38. An overview of the selected parameters for differentiation can be found on the website to the latter publication. See Y. R. Du Pont et al. 'Paris Equity Check: How Fair Are

are neutral facts, the selection of the parameters and the definition of their weight are also normative and partly based on additional assumptions on their relevance in comparison to other criteria.[8] However, with the rules of differentiation being hardly specified in the Paris Agreement, the evaluation of selective states' responsibility for the emissions gap appears to be problematic.[9]

This study does not make such assumptions but takes the openness of the Paris Agreement into account. It includes both quantitative and qualitative criteria.[10] It compares between criteria, categories, parameters, and arguments for differentiation used in the NDCs to find out whether these criteria have a common understanding of differentiation but without adding an own normative benchmark. Consequently, it only draws conclusions on compliance only if the NDCs are able to further clarify the legal requirements for differentiation of the Paris Agreement.

Studies analysing samples of NDCs in more detail and including also qualitative criteria focus on NDCs of states that currently have high absolute emissions.[11] Only a few studies including qualitative analyses also include states with lower emissions in their sample.[12] Examining only high emitting states is reasonable from a political perspective. However, from a legal point of view, this bias towards highly emitting states and highly developed states of the global north that have low vulnerabilities is problematic as Contracting Parties of the Paris Agreement have equal weight,[13] also when analysing their subsequent practice.

Criteria for subsequent practice are defined in Article 31(3)(b) of the Vienna Convention on the Law of Treaties (VCLT). The International Law Commission and different studies on subsequent practice make clear that it is insufficient to analyse a random sample of Contracting Parties to define the subsequent practice.[14] Subsequent practice in the sense of Article 31(3)(b) VCLT is the 'conduct in the application of a treaty, after its conclusion, which establishes the agreement of the parties regarding the interpretation of the treaty'.[15] This requires a certain uniformity and representativeness of the conduct.[16]

Therefore, this study will discuss the NDCs of states of various responsibilities for emissions, states of development, continental areas, cultural and legal backgrounds. Considering the central role of the NDCs for the Paris Agreement but also the high discretion Contracting Parties maintain, the conditions for subsequent practice need to be analysed according to the strict requirements that are defined for

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Countries' Climate Pledges?' <paris-equity-check.org/multi-equity-map.html> accessed 29 May 2019; Climate Analytics, New Climate Institute, 'Climate Action Tracker (CAT)' <climateactiontracker.org> accessed 13 December 2019.

[8] For example, the Climate Action Tracker considers Morocco's NDC to be within 1.5 °C whereas the Paris Equity Check assumes Morocco's NDC to lead to 2.6 °C. See *ibid.*

[9] U. Will and C. Manger-Nestler, 'Fairness, Equity and Justice in the Paris Agreement: Terms and Operationalization of Differentiation' *forthcoming*; L. Rajamani and D. Bodansky, 'The Paris Rulebook: Balancing International Prescriptiveness with National Discretion' (2019) *International & Comparative Law Quarterly* 1.

[10] Article 3 Paris Agreement requires to progress in 'efforts' and not (only) in 'mitigation targets'. The progression criterion can include both quantitative *and* qualitative criteria. See also Paras. 65, 66 of the Annex to Dec. 18/CP.24.

[11] Pan et al. (n 7); Du Pont et al. (n 7).

[12] See, for example, M. Mills-Novoa and D. M. Liverman, 'Nationally Determined Contributions: Material Climate Commitments and Discursive Positioning in the NDCs' (2019) *Wiley Interdisciplinary Reviews: Climate Change* 1-15, pp. 8 et seq. Table 1.

[13] Article 25 Paris Agreement.

[14] See UNGA, Report of the International Law Commission, Seventieth Session (30 April–1 June and 2 July–10 August 2018), Chapter IV: Subsequent Agreements and Subsequent Practice in Relation to the Interpretation of Treaties A/73/10 (UNGA, Subsequent Agreements and Subsequent Practice). A systematic analysis of the requirements of subsequent practice is provided by I. Buga, Modification of Treaties by Subsequent Practice (Dissertation, Oxford University Press 2018); see also J. Arato, 'Subsequent Practice and Evolutive Interpretation: Techniques of Treaty Interpretation over Time and their Diverse Consequences' (2010) 9(3) *The Law & Practice of International Courts and Tribunals* 443.

[15] UNGA, Subsequent Agreements and Subsequent Practice, p. 13; see also Buga (n 14), pp. 54, 75.

[16] Detailed criteria for subsequent practice will be analysed in *infra* Section III.A.

subsequent practice.[17] A sample of NDCs will be analysed in detail. Only criteria that are used by more than 50 per cent of the sample are recommended to be analysed for all Contracting Parties. If this dominant character prevails and is representative of all Contracting Parties, the respective criterion might be considered subsequent practice which might affect the interpretation of legal provisions of the Paris Agreement.

Criteria of differentiation imply a more or less direct reference to other states. As the Contracting Parties to the Paris Agreement could not agree on a common standard structuring commitments and expectations towards other states so far, a comparison first needs to find the common ground of criteria for differentiation used in the NDCs. The starting point is the comparison between the principle of CBDR, equity, fairness, and justice as used in the NDCs. The definitions, the frequency with which these terms are used, and the analysis of the context in which they are used specify their meaning and relevance. Moreover, all operationalizing criteria that indirectly refer to differentiation are discussed, such as categories, parameters, and instruments referring to other Contracting Parties or arguments for or against a specific criterion. If a state includes interests of other states[18] or of a group of states into its consideration about the own contribution(s), this shall also be discussed. Finally, the formulation of expectations towards other states will be included in the analysis.

The more of these criteria are used by many NDCs and the more they are used uniformly, the more likely they have the potential to specify both the terms and criteria for differentiation and the more likely they affect future NDCs and subsequent agreements. However, even terms, definitions or criteria that are dominant in the NDCs will remain in tension with self-definition where the Paris Agreement allows for discretion. The analysis reveals whether the NDCs have the power to fill vague legal terms, principles, and operationalizing rules for differentiation of the Paris Agreement with content step-by-step or whether all that the NDCs can do is making national policies more transparent.

After providing a brief overview of the terms of differentiation and on criteria operationalizing differentiation in the Paris Agreement (Section II), the paper will discuss how these terms and criteria are specified in the NDCs (Section III). After a summary of the current debate on standard forms, a standard form for rules of differentiation will be developed (Section IV). This form, which is based on the criteria found dominant in the above preceding comparison, helps to structure commitments and expectations of the Contracting Parties towards each other. A common form to state on differentiation in subsequent decisions to the Paris Agreement or in future NDCs might facilitate the discourse on the relative weight of the terms, criteria, categories, parameters, and expectations between the Contracting Parties. The conclusions (Section V) summarize how the rules of differentiation are specified by the NDCs and how this might affect the compliance of each state with the Paris Agreement. An outlook briefly discusses the added value of the suggested approach for future analyses of NDCs and other fields of international law.

II. Differentiation in the Paris Agreement

The Paris Agreement and its subsequent decisions refer to the principle of CBDR, equity, 'climate justice', and fairness. The principle of CBDR is continued to be used since the United Nations Framework Convention on Climate Change (UNFCCC).[19] It is an open balancing concept that makes

[17] In past decisions, even international courts and dispute settlement bodies did not always provide an empirical analysis that suited these criteria. Critically, Buga (n 14), p. 6.

[18] On the inclusion of the interests of other states into procedural requirements, cf. A. Huggins and M. S. Karim, 'Shifting Traction: Differential Treatment and Substantive and Procedural Regard in the International Climate Change Regime' (2016) 5(02) *TEL* 427, p. 429;

[19] 3rd preambular recital, Arts. 2(2), 4(3), 4(19) Paris Agreement. The principle is also used in Arts. 3(1), 4(1) of the United Nations Framework Convention on Climate Change (signed 9 May 1992, in force 21 March 1994) 1771 UNTS 107 (UNFCCC), in Art. 10(1) Kyoto Protocol to the United Nations Framework Convention on Climate Change (signed 11 December 1997, in force 16 February 2005) 2303 UNTS 162 (Kyoto Protocol), in Footnotes 7, 9, 11 of the UNFCCC, Decision 1/CMP.8 of the Conference of Parties Serving as the Meeting of the Kyoto

differentiation mandatory but without specifying criteria. The term 'equity'[20] makes clear that differentiation depends on neutral criteria according to which Contracting Parties might be treated equally. These criteria depend on the respective context of a provision. Equal participation and geographical representation of states[21] as well as to the equal chances to development[22] can be such neutral criteria. The term 'climate justice'[23] appears to have more normative weight but is cautiously formulated as a procedural requirement to include arguments into the discourse on differentiation. The term 'fair' is used in preparatory[24] and subsequent decisions[25] to the Paris Agreement. The formulation of fairness criteria is mandatory whereas its definition is explicitly left open to the Contracting Parties.[26]

Considering all climate agreements and the most relevant subsequent decisions, the term 'equity' is the term used most frequently and in the most prominent parts of the Paris Agreement followed by the principle of CBDR. In contrast, the term 'climate justice' is used in a relativistic manner and only in the preamble reducing its original normative weight. The term 'fair' is open to individual concepts of differentiation and not used in the Paris Agreement but only in its subsequent decisions (Table 1).[27]

Table 1 reveals the frequency of terms of differentiation in various climate agreements and decisions. It specifies the terms by the noun as nouns used more frequently than adjectives.[28] Still, adjectives with the same meaning are also counted (e.g. 'just' instead of 'justice'). The terms are counted only once if they appear several times in the same paragraph. Hence, so far, all terms of differentiation focus on the discourse on differentiation and do not pre-define substantive rules for differentiation or burden sharing.

Protocol (CMP), Doha Amendment to the Kyoto Protocol (8 December 2012) FCCC/KP/CMP/2012/13/Add.1 (Doha Amendment), Para. 27 Dec. 1/CP.21, and 3rd preambular recital Dec. 3/CMA.1.

[20] 3rd, 8th, and 11th preambular recital, Arts. 4(1), 14(1) Paris Agreement. The term is also used in Arts. 3(1), 4(2)(a) second sentence and 11(2) UNFCCC whereas the Kyoto Protocol refers to the general principles of the UNFCCC in the 4th preambular recital, which includes a reference to 'equity'. Subsequent decisions referring to 'equity' are Para. 103 of Dec. 1/CP.21 and 3rd preambular recital of Dec. 3/CMA.1, Para. 6 of the Annex I to Dec. 4/CMA.1, Para. 4(f) to Dec. 7/CMA.1, 5th preambular recital Dec. 9/CMA.1, Para. 10 Dec. 19/CMA.1, Paras. 5 and 11 to the Annex of Dec. 20/CMA.1.

[21] Para. 103 of Dec. 1/CP.21, Para. 4(f) of Dec. 7/CMA.1, Paras. 5 and 11 to the Annex of Dec. 20/CMA.1.

[22] 11th preambular recital Paris Agreement and 7th preambular recital of Dec. 1/CP.21. The Paris Agreement also refers to the United Nations, 'Sustainable Development Goals, Knowledge Platform' <sustainabledevelopment.un.org/topics/sids/list> accessed 28 October 2019. the 4th preambular recital Dec. 1/CP.21, Para. 10 Dec. 1/CP.24, Paras. 6,14 and 14(b) Dec. 9/CP.24 and Para. 5(c) Dec. 10/CP.24 refer to the SDGs. The SDGs also emphasise the right to development. Paras. 10 and 35 to the Declaration of the SDGs.

[23] 13th preambular recital Paris Agreement.

[24] Para. 14 as well as Paras. 16.1 Option 2, 35.2 Option 2(k), 75 Option 2a (a) and (b), 76(5)(d) and 85 Option 1(c) Annex of Dec. 1/CP.20 of the UNFCCC, Decision 1/CP.20 of the Conference of Parties (COP), Lima Call for Climate Action (14 December 2014) FCCC/CP/2014/10/Add.1 (Lima Call for Climate Action).

[25] Para. 27 Dec. 1/CP.21and Para. 11 Dec. 3/CP.24, Para. 9 Dec. 4/CMA.1 and Para. 6 of the Annex to the Dec. 4/CMA.1.

[26] Para. 27 of Dec. 1/CP.21 and 9th preambular recital of Dec. 4/CMA.1 use non-binding language also for the procedural requirement to state on fairness. In contrast, Para. 6 of the Annex I to Dec. 4/CMA.1 is binding as the term 'as appropriate' is not added (which is the case for other rules required by Annex I of the same decision).

[27] A detailed comparison between different terms and the operationalization by criteria of differentiation is provided by Will and Manger-Nestler (n 9).

[28] In the legal text, the Paris Agreement uses 'the principle of CBDR', 'equity', and 'climate justice', and 'fair'. See *supra* nn 19, 20, 23, 24, 25.

Table 1: Terms of differentiation in international climate agreements and subsequent decisions

agreement/ decision	CBDR	equity	fairness	justice	CBDR and equity	CBDR and fairness	equity and fairness
UNFCCC	3	3	·	·	1	·	·
Kyoto Protocol	1	·	·	·	·	·	·
Doha Amendment	·	·	·	·	·	·	·
Paris Agreement	4	6	·	1	2	·	·
Decision 1/CP.21	·	2	1	·	·	1	·
Decisions 1–20 CMA/1	1	21	4	1	1	1	2
Decisions 1–9 CMA/2	1	5	1	·	·	·	1

Source: Ulrike Will and Cornelia Manger-Nestler, 'Fairness, Equity and Justice in the Paris Agreement: Terms and Operationalization of Differentiation' forthcoming, Section 2.

Rules operationalizing differentiation partly refer to the terms but are also formulated independently.[29] They define the following criteria for differentiation: the capability to resolve climate change problems, which is related to the state of development, the vulnerability to climate change, and the responsibility for emissions. All three criteria are reflected in the continued leadership role of developed countries.[30] The Paris Agreement requires developed countries to submit absolute reduction targets. In contrast, developing countries may formulate relative targets.[31] Developing countries, specifically Least Developed Countries (LDCs) and Small Island Developing States (SIDS), benefit more from financial transfers, technology transfer, and capacity building. They also have lower transparency obligations. This strong differentiation is based on the LDCs and SIDS also being countries of vulnerability.

However, the Paris Agreement does not define under which conditions a state belongs to the respective category of development or thresholds. Moreover, it includes open categories for operationalizing provisions such as 'circumstances' and 'priorities' which broaden the discretion of Contracting Parties, specifically of developing countries. Even though the Paris Rulebook[32] makes suggestions on how to define these terms, these suggestions appear in the form of an unbinding open list.[33] Neither the Paris Agreement nor the Rulebook define the weight of these criteria or specify qualitative categories or quantifiable parameters that make contributions or other efforts directly comparable to each other.[34]

III. Differentiation in the NDCs

To structure the legal analysis of the NDCs, I will first explain the method before analysing terms and criteria for differentiation in the NDCs in detail.

[29] On implicit criteria that do not refer to the terms of differentiation, see C. D. Stone, 'Common but Differentiated Responsibilities in International Law' (2004) 98(2) *American Journal of International Law* 276, p. 277. Discussing criteria for operationalization L. Rajamani, 'Ambition and differentiation in the 2015 Paris Agreement: Interpretative possibilities and underlying politics' (2016) 65(2) *International & Comparative Law Quarterly* 493; C. Voigt and F. Ferreira, 'Differentiation in the Paris Agreement' (2016) *Climate Law* 58; J. Huang, 'Climate Justice: Climate Justice and the Paris Agreement' (2017) 9 *Journal of Animal & Environmental Law* 23.

[30] In the context of international climate change, a deviation from the sovereign equality of states has become the rule. See also Voigt and Ferreira (n 29), p. 59; Stone (n 29), p. 281; S. Maljean-Dubois, 'The Paris Agreement: A New Step in the Gradual Evolution of Differential Treatment in the Climate Regime?' (2016) 25(2) *RECIEL* 151, pp. 151 et seq., 159.

[31] Article 4(4) Paris Agreement.

[32] UNFCCC, Decisions of the CMA, 2–15 December 2018 (19 March 2019) FCCC/PA/CMA/2018/3/Add.1, FCCC/PA/CMA/2018/3/Add.2 . The Rulebook consists of 20 decisions with each of these decisions be re-enumerated, it will be cited as a single document providing the exact number of the respective decision. Decisions specifying the content of the UNFCCC and the Kyoto Protocol were also considered as 'rulebook'. See UNFCCC, 'A Guide to the Climate Change Convention Process' (Climate Change Secretariat, 2nd edn) <unfccc.int/resource/process/guideprocess-p.pdf> accessed 5 September 2019, pp. 6 et seq., 11.

[33] Annex I to Dec. 4/CMA.1.

[34] See also D. Bodansky, J. Brunnée and L. Rajamani, International Climate Change Law (Oxford University Press 2017), p. 27.

A. Method for a legal analysis of the NDCs

NDCs could be subsequent practice in the sense of Article 31(3)(b) VCLT. The criteria for subsequent practice need to be defined and then applied to the NDCs, which includes the definition of a representative sample of NDCs to start the analysis.

1. Requirements for subsequent practice

The subsequent practice is a dynamic method of legal interpretation under Article 31(3)(b) VCLT. It can be defined as 'conduct in the application of a treaty, after its conclusion, which establishes the agreement of the parties regarding the interpretation of the treaty'[35]

Subsequent practice can be considered together with the plain meaning, object and purpose, and context[36] of a term or provision.[37] Depending on the specific treaty and context, subsequent practice can also have more weight than the other interpretation methods.[38] The Paris Agreement puts much weight on the NDCs, also on their role to specify the rules of differentiation. Once a criterion qualifies as subsequent practice, it could become more important than the other interpretation methods provided that the agreement among Contracting Parties is strong and specific enough.

The meaning of a legal term or rule can change over time. Still, strict requirements to prove the agreement among contracting parties make dynamic interpretation methods reliable and provide for a certain stability of interpretation. Subsequent practice is related to but different from subsequent agreements in the sense of Article 31(3)(a) VCLT that are more formalized than subsequent practice[39] and other applicable agreements in the sense of Article 31(3)(c) VCLT that do not refer directly to the respective treaty.[40]

Subsequent practice can change the *interpretation* of a treaty but not the treaty itself.[41] For treaty change, the VCLT defines its own requirements.[42] The limitation of subsequent practice to the change of interpretation is also based on the *pacta sunt servanda* principle.[43] In the case of substantial changes, a new treaty would be possible. Even if a new agreement cannot be found, *pacta sunt servanda* does not allow for overriding existing treaties.[44]

Subsequent practice as a method of treaty interpretation differs from state practice (*consuetudo*) as a method to prove international customary law. Accordingly, that rules of international customary law

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[35] Cf. *supra* n 15.
[36] Considering the subsequent practice together with the context, M. E. Villiger, Commentary on the 1969 Vienna Convention on the Law of Treaties (Martinus Nijhoff Publishers 2009), Art. 31, paras. 29–32, 39.
[37] Arato (n 14), p. 458.
[38] Arato (n 14), pp. 458–461. Cf. D. Tladi, 'Is the International Law Commission Elevating Subsequent Agreements and Subsequent Practice?' (EJIL: Talk!, 30 August 2018) <ejiltalk.org/is-the-international-law-commission-elevating-subsequent-agreements-and-subsequent-practice> accessed 3 June 2019; J.-M. Sorel and V. Bore-Eveno, 'Article 31 (1969)' in O. Corten and P. Klein (eds), *The Vienna Conventions on the law of treaties: A commentary* (Oxford commentaries on international law. Oxford University Press 2011), para. 46.
[39] Buga (n 14), p. 54.
[40] See Buga (n 14), p. 59.
[41] See also UNGA, Subsequent Agreements and Subsequent Practice, pp. 14, 51, 58–63. See also the ILC Draft Articles on the Law of the Treaties. United Nations Conference on the Law of the Treaties (First and second Sessions, Vienna, 26 March–24 May 1968 and 9 April–22 May 1969), Official Records (1971 A/CONF.39/11/Add.2 (UNCLT 1968/1969), p. 56; see also Arato (n 14), p. 464. Arguing for modifications (including alterations and terminations of provisions) by subsequent practice Buga (n 14), pp. 2, 93–97, 107–194.
[42] Arts. 39–41 VCLT; see also UNGA, Subsequent Agreements and Subsequent Practice, pp. 58f.; Arato (n 14), p. 464.
[43] See also Art. 26 VCLT; UNCLT 1968/1969, p. 56.
[44] Cf. Buga (n 14), pp. 138–140.

may override rules of outdated treaty provisions[45] does not mean that subsequent practice can do the same.

The subsequent practice can help to clarify all legal terms and provisions of international agreements, not only those where the discretion of Contracting Parties is emphasized.[46] Subsequent practice can but does not have to be expressed in a binding manner.[47] It can change, broaden, or narrow the meaning of a legal term.[48] The less clear and specific a legal provision or term is formulated, the more relevant the method of subsequent practice becomes.[49]

Common subsequent practice requires that the respective acts take place *after* the conclusion of a treaty[50] and the uniformity of the conduct referring to the treaty.[51] Uniformity depends on transparency, attribution to state actors, the quality of consistency and determinateness of the conduct of parties, frequency, the number, and representativeness of states acting in a common manner.[52]

The state conduct must be transparent in the first place.[53] Even though oral statements can affect subsequent practice; written practice is more reliable for the analysis.[54]

'Practice' refers to the conduct of *Contracting Parties*. This conduct does not have to stem from jurisprudence. It can originate from the legislative, executive, or judicial organs of a state.[55] This does not only include acts that are formalized in international relations but also acts within the national policies that refer to the treaty.

A reference to the treaty must be provided.[56] This means that a Contracting Party must be aware of its conduct expresses a position that refers to the interpretation of the treaty.[57] Explicit references to the treaty make state conduct particularly relevant.[58] However, statements made in the same context as the respective treaty provision can also be relevant.

Similarities in the conduct of parties do not only depend on the use of common terms or categories in the same context(s). Moreover, the actions and convictions do not have to be identical in all respects as long as they are sufficiently determined.[59] Different criteria that have a similar meaning or a term, rule, or interpretation applied in different contexts might also reveal similarities. In this case, the common

[45] Article 38 VCLT.
[46] P. Minnerop, 'Taking the Paris Agreement Forward: Continuous Strategic Decision-making on Climate Action by the Meeting of the Parties' (2018) 21(1) *Max Planck Yearbook of United Nations Law Online* 124, p. 152.
[47] UNGA, Subsequent Agreements and Subsequent Practice, p. 75.
[48] UNGA, Subsequent Agreements and Subsequent Practice, p. 14.
[49] UNGA, Subsequent Agreements and Subsequent Practice, p. 71. On the similarities with evolutive interpretation, see Buga (n 14), pp. 1, 63, 93–97; Arato (n 14), pp. 455, 466 et seq.
[50] The practice before the signature might belong to the negotiating history in the sense of Article 32 VCLT. Buga (n 14), pp. 50, 75–77.
[51] UNGA, Subsequent Agreements and Subsequent Practice, pp. 72, 136. Using the terms 'concordant, common and consistent', WTO Appellate Body Report, Japan—Taxes on Alcoholic Beverages (adopted 1 November 1996) WT/DS8/AB/R, WT/DS10/AB/R, WT/DS11/AB/R (WTO Appellate Body Report, *Japan—Alcoholic Beverages II*), p. 12. Referring to uniformity and durability, Sorel and Bore-Eveno (n 38), paras. 44 et seq.; see also R. K. Gardiner, Treaty Interpretation (Oxford University Press 2008), pp. 227, 231.
[52] See also Buga (n 14), p. 22, 71 et seq.
[53] Buga (n 14), p. 27.
[54] Buga (n 14), p. 53 et seq.
[55] Gardiner (n 51), p. 228; Buga (n 14), pp. 24, 50. For court decisions, findings should have a certain authoritative weight being representative, put into a broader context, and not limited to the circumstances only relevant for this specific case. See also Buga (n 14), p. 32 et seq, 58. Buga considers Arts. 4–11 of the Articles on the Responsibility of States for Internationally Wrongful Acts (which are considered to be international customary law) for attribution. See. Buga (n 14), p. 32, 34.
[56] See also Gardiner (n 51), pp. 230, 232; Arato (n 14), pp. 459, 461.
[57] Buga (n 14), pp. 58–62.
[58] Buga (n 14), p. 57.
[59] See also Buga (n 14), pp. 28, 62.

subsequent practice would only be less detailed. Still, it is difficult to find a consistency of state conduct as even in one and the same state the conduct can be contradictory.[60]

A one-time practice can show an agreement of Contracting Parties on how to interpret a provision. However, more than one act, a long *duration*, or a *frequent* repetition of conduct would be a stronger argument for subsequent practice as consistencies are stronger.[61] Still, there is no minimum threshold for how often a criterion must be used to qualify as subsequent practice.

A common practice means that the *agreement* of the parties *as a whole* can be shown.[62] The VCLT does not define how many states must act consistently; the threshold remains unclear.[63] The explicit consensus of all Contracting Parties is not necessary. It is possible that only a group of states has the possibility to apply a rule (specially affected states), in which case only these states would become relevant for defining the subsequent practice.[64] It must be possible 'to discern a virtually uniform usage' taking conflicting interpretations into account.[65] The ILC requires a uniform interpretation by a *representative group* of states 'which needs to be assessed in light of all the circumstances, including the various interests at stake and/or the various geographical regions'.[66]

This requirement raises the question of whether all parties must formulate an interpretation explicitly. If Contracting Parties remain *silent*, this does not necessarily imply a refusal of the respective criterion. It could also imply a neutral position or acquiescence.[67] Acquiescence means that approval to a legal criterion can be presumed where a party knew about this criterion, its legal relevance, and its own interest in the criterion, where it was consistently applied in the context of the respective treaty for a significant period of time and where the opportunity to refuse it was provided to a relevant representative of that state but neglected.[68]

The more difficult question is whether a criterion is excluded from being subsequent practice if it is *refused* by one or several parties,[69] especially within a multilateral treaty *or* whether the respective party only excludes itself from the respective criterion for itself. The latter assumption is more convincing to make effective both the aim and purpose Article 31(3)(b) VCLT and of the *pacta sunt servanda* principle. Only if a criterion is refused by a representative group, this might affect subsequent practice for all parties.

All criteria for subsequent practice must be analysed comprehensively. A strong uniformity, for example, can replace the frequency requirement.[70] The longer parties conduct similarly, the more

[60] On this problem, see also Buga (n 14), pp. 28 et seq.
[61] See also UNGA, Subsequent Agreements and Subsequent Practice, p. 72; WTO Appellate Body Report, *Japan—Alcoholic Beverages II* (n 51), p. 12; Buga (n 14), p. 69, 72.
[62] Buga (n 14), pp. 22, 63.
[63] UNGA, Subsequent Agreements and Subsequent Practice, pp. 72 et seq.
[64] UNGA, Subsequent Agreements and Subsequent Practice, p. 136; WTO Appellate Body, European Communities – Customs Classification of Frozen Boneless Chicken Cuts (adopted 27 September 2005) (WTO Appellate Body, *EC–Chicken Cuts*), para. 259.
[65] UNGA, Subsequent Agreements and Subsequent Practice, p. 136.
[66] UNGA, Subsequent Agreements and Subsequent Practice, p. 136 (emphasis added). Selective examples are insufficient to prove state practice. See also M. Akehurst, 'Equity and General Principles of law' (1976) 25(4) *International & Comparative Law Quarterly* 801, p. 819. Representativeness was also required by ICJ, North Sea Continental Shelf Cases (Germany/Denmark) Judgment (20 February 1969) ICJ Reports 1969, p. 3 (ICJ, *North Sea Continental Shelf*), para. 73; Buga (n 14), p. 74.
[67] See also Buga (n 14), p. 22; Arato (n 14), p. 460.
[68] ICJ, Case Concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v USA), Admissibility (26 November 1984) ICJ Reports 1984, p. 392 (ICJ, *Nicaragua v US*), para. 38; ICJ, Case Concerning the Temple of Préah Vihear (Combodia v Thailand) (15 June 1962) ICJ. Reports 1962, p. 6 (ICJ, *Temple of Préah Vihear*), p. 23. see also Buga (n 14), pp. 61, 64–69; D. A. Lewis, N. K. Modirzadeh and G. Blum, 'Quantum of Silence: Inaction and Jus ad Bellum' (Harvard Law School Program on International Law and Armed Conflict, 2019) <ssrn.com/abstract=3420959%20or%20http://dx.doi.org/10.2139/ssrn.3420959>, pp. 14, 21–22.
[69] Buga (n 14), p. 29.
[70] UNGA, Subsequent Agreements and Subsequent Practice, pp. 73 et seq.

uniform a practice is and the more parties confirm this conduct, the clearer the impact on the interpretation of a term or criterion. The more concordant, common, and consistent a state practice is, the more likely it can be considered a subsequent practice in the sense of Article 31(3)(b) VCLT.[71] Nevertheless, the more concrete criteria are, the more difficult it is to find a uniform practice. Conversely, the more abstract they remain, the easier it is to find a uniform practice.[72] Accordingly, the subsequent practice is more likely to reveal general than specific criteria.

A challenge to subsequent practice is the formulation of terms or provisions that are meant to remain open to discretion.[73] The more important the role of sovereignty and discretion in the treaty, the less stable the common interpretation. Accordingly, the potential refusal of selective states would have more weight for such provisions.[74] Still, if the criteria for a common subsequent practice are fulfilled, narrowing the discretion of Contracting Parties by a common interpretation might be possible, in particular, if a common interpretation can be shown very clearly.

2. Requirements for subsequent practice applied to NDCs

The NDCs are ambiguous for a legal analysis. The Paris Agreement prescribes only to formulate NDCs but not to comply with the commitments made,[75] not to mention sanctions. Furthermore, other rules of differentiation leave much discretion to the Contracting Parties.[76] Eventually, the NDCs are not effective to achieve the two degrees target so far.[77] Many of these problems do not only address the NDCs but to the whole Paris Agreement. However, as long as no better agreement is achieved, it is important to understand the NDCs to find out what can be improved. The NDCs might still reveal more specific criteria for differentiation than the Paris Agreement alone. These criteria can have an impact on the interpretation of the rules of differentiation and, therefore, help to specify the conditions for compliance. In the long-run, reactions to the criteria of other states might be shown.

Even though the NDCs are only one part of the potential subsequent practice of the Paris Agreement, they are particularly suitable for the analysis: First, they play a prominent role in the agreement; they are even the decisive tool to formulate substantive targets under the Paris Agreement.[78] Neither the reference to the treaty nor the attribution of conduct of state officials is problematic. Second, they explicitly include reflections on criteria of fairness.[79] Third, they are collected in one database that is globally available at an online platform (NDC registry), which makes them transparent. Fourth, the NDCs are available in the official languages of the United Nations (UN). Fifth, the Parties can easily react to the criteria or expectations formulated in the NDCs of other states. Hence, a comparison of NDCs does not only provide the sum of criteria of all Parties. At least when the second generation of NDCs starts to come into effect, it also reveals a written interaction between these states. Sixth, even if the chance for a common subsequent practice is not high, at least not in the first NDC round, a detailed

[71] WTO Appellate Body Report, *Japan—Alcoholic Beverages II* (n 51), p. 12; Buga (n 14), p. 26; Arato (n 14), p. 460.
[72] This was stated in the context of international customary law, see U. Fastenrath, 'Relative Normativity in International Law' (1993) 4 *European Journal of International Law* 305, p. 317.
[73] See also Arato (n 14), p. 450.
[74] The persistent objector argument that is necessary to be excluded from a rule of international customary law is stricter. As, once proven, customary law has universal coverage (which excludes discretion), it is consequent to have strict requirements for being a persistent objector. A similar procedure might be applied to the general principles of law recognized by civilized nations. Akehurst (n 66), p. 821.
[75] Art. 4 (2) and (3) Paris Agreement. See also Maljean-Dubois (n 30), p. 155; F. G. Sourgens, 'Climate Commons Law: The Transformative Force of the Paris Agreement' (2017) 50 *NYUJ Int'l L & Pol* 885, pp. 889, 891, 899 et seq., 907, 914 et seq., 979.
[76] See *supra* Section II.
[77] UNEP, 'The Emissions Gap Report 2017' (Nairobi, 2017) <wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR_2017.pdf> accessed 14 May 2019, p. XVII; M. Doelle, 'The Heart of the Paris Rulebook: Communicating NDCs and Accounting for Their Implementation' (2019) 9(1) *Climate Law* 3, p. 19.
[78] Maljean-Dubois (n 30), p. 155; Rajamani and Bodansky (n 9), p. 5.
[79] Para. 6 of the Annex I to Dec. 4/CMA.1.

analysis of the NDCs might reveal where and why the Contracting Parties disagree and makes it easier to overcome this disagreement. The most accepted criteria might affect future agreements, decisions, and NDCs even without qualifying as subsequent practice.

Contracting Parties include terms of differentiation, categories, or parameters, use these criteria to justify their own targets or policies or they formulate expectations towards other states. The weight of a criterion for differentiation could be formulated by using it in conjunction with the terms of differentiation or with provisions operationalizing the rules of differentiation,[80] by putting it into perspective to other criteria of differentiation or by extending the criterion not only to the own category of states but also to other states.

What seems to be problematic is the time when the first NDCs have been submitted. Of 186 NDCs 154 were submitted in form of intended NDCs (INDCs) *before* the conclusion of the Paris Agreement.[81] Referring to the UNFCCC instead of the Paris Agreement would not avoid this problem. Even though the UNFCCC was concluded before all NDCs and is still relevant, the NDCs do not refer to rules defined before the Paris Agreement but to the rules of the Paris Agreement. However, at least, 32 NDCs were submitted *after* the conclusion of the Paris Agreement and are 'subsequent' in the sense of Article 31(3)(b) VCLT.[82] Moreover, all NDCs after the first round will be subsequent to the conclusion of the Paris Agreement. Finally, the NDCs that have been submitted before the Paris Agreement was signed might be considered as negotiating history of the Paris Agreement in the sense of Article 32 VCLT.[83] As the rules of differentiation of the Paris Agreement are so vague that Article 32 VCLT is without a doubt applicable, criteria that fulfil all qualifying requirements of practice except the criterion of being 'subsequent' still affect the legal interpretation.

As the Contracting Parties of the Paris Agreement are only at the beginning of the submission procedure of second NDCs, the frequency of state conduct cannot be shown. Hence, uniformity is the decisive criterion.

Similarities that are determinate might be difficult to find. Although it helps that the NDCs are formulated in a limited number of UN languages, the submissions in French as well as in Spanish language raise problems for the comparison. For example, where the English language uses fairness, equity, and justice the French and Spanish language only use two terms.[84] The interests and circumstances of the Contracting Parties differ substantially. The Paris Agreement also contains almost no formal requirements on how to structure the NDCs.

Seeking for criteria of differentiation, it might be difficult to distinguish impartial motifs of equity, justice, or fairness from self-interest, self-serving biases, or from altruism, generosity, and kinship.[85] However, this distinction is dispensable as the rules of differentiation do not preclude reciprocity or tit for tat as long as criteria are broadly recognized. If the qualifying requirements for subsequent practice are fulfilled, criteria find acceptance across all interest groups, they become relevant for the definition of rules of differentiation.

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[80] Buga (n 14), p. 58; WTO Panel Report, United States – Laws, Regulations and Methodology for Calculating Dumping Margins ("Zeroing") (adopted 9 May 2006) WT/DS294/R (WTO Panel Report, *US–Zeroing*), para. 7.217.

[81] The INDCs can be found in a separate database. UNFCCC, 'INDCs as Communicated by Parties' <www4.unfccc.int/sites/submissions/INDC/Submission%20Pages/submissions.aspx> accessed 22 April 2020.

[82] UNFCCC (n 81); UNFCCC (n 5).

[83] UNGA, Subsequent Agreements and Subsequent Practice, p. 14.

[84] In Spanish language, the term *justicia* stands for both justice and fairness. The French language does not differentiate between the terms 'fairness' and 'equity' but uses the terms *équité* and *équitable* for both terms. See also Will and Manger-Nestler (n 9), Section 2.5.

[85] See J. Konow, 'Which Is the Fairest One of All?: A Positive Analysis of Justice Theories' (2003) 41(4) *Journal of Economic Literature* 1188, pp 1189–1192, 1202. An approach to filter the moral convictions from self-interest and (unconscious) self-serving biases is provided by A. Lange et al. 'On the Self-Interested Use of Equity in International Climate Negotiations' (2010) 54(3) *European Economic Review* 359, p. 360. On the self-serving bias of unilateral assertions in the context of subsequent practice, see Buga (n 14), p. 30.

Another problem is even more difficult to resolve. The Paris Agreement explicitly formulates the NDCs as instruments of discretion.[86] Accordingly, the Paris Agreement and subsequent decisions suggest rather than prescribe criteria that shall be included in the NDCs. Para. 27 of Decision 1/CP.21 recommends including quantifiable information on the reference point such as the base year, time frames, the scope and coverage of the NDC, its planning process, assumptions, and methodological approaches including those for estimating the emissions and removals.[87] Using terms such as 'as appropriate' these procedural requirements are not binding.[88] This unbinding and open list can be complemented by further criteria that might be defined in subsequent decisions.[89] The Katowice Rulebook narrows the requirements suggesting to include the reference year, base year, time frames, reference indicators, information on sources of data, information on update reference indicators, sectors and gases covered, methodologies, co-benefits, information on national circumstances, information on fairness.[90] To formulate fairness requirements has become binding with the Paris Rulebook.[91] Still, the substantive criteria of differentiation are neither structured nor pre-defined. The limited binding requirements on the form are another strong argument for the need to analyse the NDCs. However, the lack of pre-defined criteria also makes this analysis challenging. Even a criterion defined by a majority of NDCs is not necessarily prescriptive for other Parties. Owing to the high discretion Contracting Parties maintain (so far), the requirements on uniformity that are necessary to qualify as subsequent practice will have to be applied strictly to analyse criteria for differentiation in the NDCs.

Consequently, acquiescence cannot be presumed even where Contracting Parties remain silent on a criterion they knew and for which they neglected the opportunity to react, in particular, if they still negotiate on the respective criterion[92] or want to maintain their discretion. Narrowing the criteria without consent might be too far from the intention of the Paris Agreement upholding discretion for its Contracting Parties.[93] Acquiescence is also of low practical relevance for the NDCs, as the opportunity to comment on the NDCs of others is provided only after the first NDCs. Therefore, it is not sufficient that a state did not refuse a criterion. The explicit acceptance of a criterion is necessary for this criterion to become binding for the respective Party. Still, for a possible future relevance of acquiescence, once the discretion of Contracting Parties is reduced, states might consider explicitly refusing criteria they want to exclude in the second round of NDCs.

Even though in the context of the Paris Agreement, subsequent practice seems to be limited to criteria that can build upon consensus, the comparison of a broad range of criteria for differentiation still makes sense. The more states support a criterion and the more weight and priority they attribute to this criterion, the more likely it becomes relevant for subsequent practice in the future, in particular, from the second NDCs on. A deep analysis of the *status quo* of the most accepted criteria helps to coordinate the expectations between the Parties[94] and to develop common criteria in the long run even where these are not (yet) found to be subsequent practice.

[86] The emphasis on discretion is formulated in Article 4(3) Paris Agreement where the national circumstances are defined as the central criterion for differentiation. Other relevant rules on NDCs are Articles 3, 4(2), (8), (9), (10), (11), (12), (13), (14), and (16), 6(1), (2), (3), (4)(c), (5), and (8), 7(11), 13(5), (7)(b), (11), and (12) Paris Agreement, Paras. 12–20, 22–32, 37, 95, 100(a)(i) Dec. 1/CP.21, Annex I to Dec. 4 CMA.1 deal with the NDCs.
[87] Article 4(8) Paris Agreement refers to Dec. 1/CP.21, whereas Para. 27 of Dec. 1/CP.21 provides for the list of criteria.
[88] Paras. 1, 4(a) and 5 of the Annex I to Dec. 4/CMA.1. Further criteria shall be defined in 2024. Para. 20 Dec. 4/CMA.1, Para. 2 Dec. 20/CMA.1. See also H. Winkler, 'Mitigation (Article 4)' in D. Klein et al. (eds), *The Paris Agreement on Climate Change: Analysis and Commentary* (Oxford University Press 2017), p. 154.
[89] Art. 4(8) Paris Agreement.
[90] Annex I to Dec. 4/CMA.1.
[91] See also *supra* n 26.
[92] See also Buga (n 14), p. 69.
[93] See *supra* n 86.
[94] See *supra* n 75.

3. Sample

So far, the NDCs are not formulated in a common structure[95] but in an individual form.[96] To compare the NDCs, it is useful to use categories many NDCs have in common. A definition of a term, a category, a parameter, or an argument of differentiation becomes more relevant the more uniform it is and the more parties confirm it in their NDCs.

The subsequent practice as a legal interpretation method depends on all Contracting Parties of the Paris Agreement (189 parties[97]) that have submitted their first NDCs (186 parties[98]) whereas a uniform practice can be assumed if a representative group of states uses the same criteria. As the full analysis of all NDCs is beyond the reach of this contribution and also not expected to lead to consistent findings, and the NDCs are only within their first round, I use a sample of 51 NDCs.[99]

For their strong relevance for climate protection, I include the states with the highest emissions and strong capabilities,[100] but I also pick a sample that is *representative* in the light of other criteria relevant to climate issues. I analyse NDCs of different continental areas including the information whether a country belongs to the SIDS, different languages, different legal systems, different emissions, different states of development and capabilities, different vulnerabilities, and different natural resources.[101] For each characteristic I build classes. Comparing the frequency of distribution of classes, I seek to reduce the difference of population and sample for each characteristic to a minimum.[102]

For the qualitative criteria, each category is represented. For quantifiable criteria (emissions, development, vulnerability, resources), I build five classes. Each class is, at least, represented once. For all comparisons, the difference between the sample and the total population is below 10 per cent.[103] With 16 EU Member States each sharing a common NDC, the sample consists of 51 states but only 36 NDCs.[104]

The USA is included as representative of high emitting states. However, the USA has announced its withdrawal from the Paris Agreement. Unless this withdrawal is taken back, the USA will not be Contracting Party of the Paris Agreement from 4 November 2020. Therefore, the NDC of the USA will be included in the analysis but not in the sample or in the calculations for the analysis of subsequent practice.

The NDCs are all transparent, can be attributed to state officials, and refer explicitly to the Paris Agreement. Recalling the requirements for subsequent practice, a criterion of differentiation becomes

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[95] Maljean-Dubois (n 30), p. 155.

[96] See also the open requirements formulated for NDCs in *supra* n 86.

[97] See United Nations Treaty Collection <treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27> accessed 7 April 2020 .

[98] Of 186 NDCs (April 2020) the necessary data to find the sample are available only for 173 states. Therefore, the analysis does not include the Cook Islands, Eritrea, Liechtenstein, the Marshall Islands, Monaco, Nauru, Niue, Palau, the proposed Palestinian state, San Marino, St. Kitts and Nevis.

[99] See Annex I.

[100] China, USA, EU, India, Russia are the top-five emitters as regards absolute emissions. World Bank, 'World Bank Open Data, CO2 emissions (kt) 2014' <api.worldbank.org/v2/en/indicator/EN.ATM.CO2E.KT?downloadformat=excel> accessed 14 May 2019. These states are also on the top of the list of cumulated emissions. See IPCC Working Group II, Fifth Assessment Report, Climate Change 2014: *Impacts, Adaptation, and Vulnerability* (Cambridge University Press 2014), p. 131. Saudi Arabia, USA, Australia, Canada, Russia are the top-five as regards per capita emissions. See also the data in Annex I.

[101] Data and sources can be found in Annex I. All data are of 2014, which is necessary to make them consistent, as not all data are available for 2018.

[102] On the calculations, see Annex II.

[103] See *infra* Annex II.

[104] Annex II reveals that the representation of 16 EU states (Bulgaria, Croatia, Cyprus, Czech Republic, Finland, France, Germany, Hungary, Latvia, Luxembourg, Malta, Netherlands, Romania, Slovakia, Slovenia, Sweden) instead of the entire EU leads to a difference between population and sample below 10 per cent. Taking into account that the EU NDC has *de facto* more weight would lead to the inclusion of all EU 27 states. In that case, the difference between population and sample would only be below 17 per cent.

relevant if it is applied sufficiently uniformly. Requirements of determinateness, consistency, and frequency of criteria will be analysed. Moreover, I will discuss the determinateness by referring to specifying criteria and arguments, to terms of differentiation.

With the first NDCs, there is no frequency or repetition of criteria. Therefore, broad recognition is necessary to make an argument for subsequent practice. Hence, criteria need to be recognized by almost every Contracting Party of the Paris Agreement to become relevant. However, a complete analysis of all NDCs only makes sense if the results found in the sample are clear. Hence, a criterion must be specific and dominant, which I consider to be the case if, at least, 50 per cent of the sample approve this criterion (26 out of 51 NDCs). Only if this threshold is reached, it might be useful to analyse all NDCs. Where criteria are not broadly recognized, it is still possible to analyse the most frequent terms, criteria, and parameters as those are still eligible to affect subsequent practice in the future.

B. Terms of differentiation

Table 2 provides an overview of the terms of differentiation as used in the NDCs. In contrast to Table 1, it reflects the degree of recognition of the terms and makes clear where the Contracting Parties consider the terms of differentiation belonging into the same context. A sum is marked in bold type if it is recognized by more than 50 per cent of the sample.

Table 2: Terms of differentiation in the first NDCs

	CBDR	equity	fairness	justice	CBDR and equity	CBDR and fairness	equity and fairness	equity and justice	fairness and justice	CBDR and justice
Australia	·	·	1	·	·	1	·	·	·	·
Belize	·	1	1	·	·	·	·	·	·	·
Brazil	1	1	1	·	·	·	1	·	·	·
Canada[a]	·	·	·	·	·	·	·	·	·	·
China	3	3	·	·	3	·	·	·	1	·
Cuba[b]	1	2	·	·	1	·	·	·	·	·
Dominican Republic	·	1	1	1	·	·	·	·	·	·
Equatorial Guinea[b]	·	·	·	·	·	·	·	·	·	·
Ethiopia	1	2	1	·	·	·	1	·	·	·
EU (16 states)	·	·	2	·	·	·	·	·	·	·
Fiji	·	·	1	·	·	·	·	·	·	·
Guinea-Bissau	·	·	2	·	·	·	·	·	·	·
Guyana	3	5	1	1	1	·	1	1	·	1
Haiti[c]	2	1	1	·	1	1	·	·	·	·
India	2	6	3	4	1	·	·	1	·	2
Japan	·	·	2	·	·	·	·	·	·	·
Madagascar	·	1	1	·	·	·	1	·	·	·
Mali[c]	2	·	·	·	·	·	·	·	·	·
Mauretania[c]	·	1	1	·	·	·	·	·	·	·
Mexico	·	1	1	·	·	·	·	·	·	·
Morocco	1	1	2	·	1	1	1	·	·	·
Mozambique	·	1	1	·	·	·	·	·	·	·
Niger	·	·	2	·	·	·	·	·	·	·
Pakistan	2	·	·	·	·	·	·	·	·	·
Peru	·	1	1	·	·	·	·	·	·	·
Russia[d]	·	·	1	·	·	·	·	·	·	·
Rwanda	·	1	1	·	·	·	1	·	·	·
São Tomé and Príncipe	·	1	·	·	·	·	·	·	·	·
Saudi Arabia	·	·	1	·	·	·	·	·	·	·
Solomon Islands	1	1	2	·	·	·	·	·	·	·
South Africa	3	14	7	3	2	2	3	·	1	1
Sudan	2	1	2	·	1	·	·	·	·	·
Timor-Leste	1	1	2	·	·	·	1	·	·	·
Tunisia	·	1	1	·	·	·	1	·	·	·
(USA[e])	·	·	(1)	·	·	·	·	·	·	·
Venezuela[b]	1	3	18	18	·	·	4	1	·	·
Zambia	·	2	1	·	1	1	1	·	·	·
all (+)	15	24	**44**	5	9	5	11	3	2	3
all (–)	·	·	·	·	·	·	·	·	·	·

[a] The first version of the first NDC of Canada referred to fairness and circumstances, which is not the case in the revised version.
[b] NDC only in Spanish (equal terms for the English terms 'fairness' and 'justice'). The table counts the Spanish terms *justa* or *justicia* for both English terms fairness and justice.
[c] NDC only in French (equal terms for the English terms 'fair' and 'equitable'). The table counts the French terms *équité* or *equitable* for both English terms fairness and equity.
[d] Russia did not submit an NDC so far but an INDC. UNFCCC, 'INDCs as communicated by Parties' <www4.unfccc.int/sites/submissions/INDC/Submission%20Pages/submissions.aspx> accessed 3 September 2019.
[e] Withdrawal from the Paris Agreement coming into effect, at earliest, on 4 November 2020. Therefore, the data of the NDC of the USA are not included in the calculations.

Source: own design and calculations based on UNFCCC, 'NDC Registry (interim)' <www4.unfccc.int/ndcregistry/Pages/All.aspx> accessed 27 April 2020.

All but two states use terms of differentiation. The NDCs use all terms of differentiation that arise in the Paris Agreement. The terms 'fairness' and 'equity' are the most recognized terms. The term 'fairness' (44 states) represents over 50 per cent of the sample as the threshold requires. Even though Paragraph 6 of Annex I to Decision 4/CMA.1 prescribes to state on fairness, the strong recognition of the fairness requirement in the first NDCs is not intuitive. The majority of the first NDCs were formulated in 2015/16, i.e. before the decisions of the Paris Rulebook were taken. Still, it is not surprising that the term 'fair' is frequently used in the NDCs. Of the four terms of differentiation, fairness is the most open term allowing for individual criteria for differentiation. To understand whether the strong recognition of the term 'fairness' helps to specify the rules of differentiation, the definitions need to be compared (Table 3).

However, the definitions of the other terms that remain below a representation of 50 per cent of the sample might also be discussed. All four terms of differentiation overlap in their function and

meaning.[105] This can also be shown by those NDCs using different terms as synonyms or in the same context (Table 2). Hence, the definitions of different terms might affect each other.

Only some NDCs of the sample use several terms of differentiation in the same context. The strongest connection can be found between 'equity' and 'fairness'. Six of the NDCs putting equity and fairness into the same context have French as (one) official language (Haiti, Madagascar, Rwanda) or unofficial language (Morocco, Mauretania, Tunisia), in which both terms are translated by *équité*. However, Brazil, South Africa, and Venezuela also use the two terms in the same context (although Spanish and the non-official language Portuguese have different terms for fairness and equity). Hence, the connection between fairness and equity does not depend on the language. The parallels between these two terms found in Chapter II appear to be confirmed by this (non-representative) practice of the NDCs. However, mentioning both terms together does not necessarily imply that the respective Parties consider the terms to be similar. It could also mean that the terms are different because the use of both terms is considered to be necessary (*effet utile*).

Apart from the findings that are highly represented, criteria might be recognized by selective groups of states. However, a selective recognition is unlikely to be of representative as it is required for subsequent practice. Yet, selective recognition in groups and self-interests might help to explain why there is no consensus for a term or criterion.

For the high legal relevance and recognition of development-based criteria, I use the categories of development to describe the group tendencies. The Paris Agreement does not specify the categories of development or their thresholds. To avoid the ambiguity to assign each state to one of the controversial categories, I discuss the data of development-based groups using the terms of the UN Development programme that calculates the Human Development Index (HDI). They use four groups: countries of a low, medium, high, and very high development.[106]

Countries of high and very high development prefer the terms fairness or the principle of CBDR to justice and equity whereas countries of lower development (also) use the more normative terms of differentiation. This seems to confirm the above discussion, where equity and justice were found to be closer to universal criteria (whether or not there is consensus on the definition of these criteria).[107] Countries of high and very high development seem to be less interested in common pre-defined criteria of differentiation. They might fear that these might lead to stronger differentiation in climate protection increasing their own share of costs for climate protection. Accordingly, it is no surprise that Canada avoids all terms of differentiation. Yet, it is surprising that poor countries such as Mali and Pakistan only refer to the principle of CBDR and avoid more normative terms.

Table 3 summarizes the criteria that were used to specify the terms of differentiation. The Contracting Parties refer to commitments such as the mitigation targets, reference periods, years of peaking, and of carbon neutrality to the terms of differentiation. They also explain their understanding of these terms by formulating expectations towards other states. As far as these expectations are formulated generally by suggesting instruments, they are listed under 'expectations'. Finally, they use various categories and parameters that can be listed under the broad categories operationalizing differentiation in the Paris Agreement: responsibility, capability, and vulnerability. These three categories overlap owing to

[105] See also *supra* Section II.

[106] Countries with an HDI below 0.550 of are considered to have a low development, countries with an HDI between 0.55 and 0.699 as countries of medium development. Countries with an HDI between 0.700 and 0.799 as countries of high development, and countries with an HDI above 0.8 as countries of very high development. United Nations Development Programme, 'Human Development Report 2019: Reader's Guide' <hdr.undp.org/en/content/human-development-report-2019-readers-guide> accessed 29 April 2020. As the data on this groupings is not interrelated with other data used for this analysis, I use the most recent data available, the HDI of 2019. United Nations Development Programme, 'Human Development Index' <hdr.undp.org/en/data> accessed 29 April 2020. For their legal and political weight, these groups will be used for the interpretation of the results. For the intervals used for the selection of the sample, see Annex II.

[107] See *supra* Section II.

correlations. However, the sub-categories are referred to the main category to which they belong. For example, the sub-category ‘developing countries’ is referred to capability even though countries of low and medium development are mostly less responsible for emissions and less vulnerable than countries of high development.

Table 3: Criteria to specify the terms of differentiation

	commitments					expectations							criteria suggested for differentiation																							vulnerability (need)
													responsibility (emissions)							capability (development)																	
	unconditional mitigation target	conditional mitigation target	peaking year	commitments based on reciprocity	technology transfer or capacity building	leadership role of developed countries	capacity building	financial transfers	technology transfers or lower IPR	quantified transfers in US $	market mechanism	expectations of support for vulnerability	absolute emissions	share of absolute emissions	emissions per capita	historical emissions	cumulative emissions/ emissions budget	emission intensity (CO2- per GDP unit)	net carbon sink country	(lower) middle income countries	developing countries	LDCs	SIDS	GDP (per capita)	HDI	fight poverty	sustainable development or green growth	right to development or right to grow	aim of equality	losses of resource income	abatement costs	focus on own vulnerability and priority of adaptation
Australia	f	.	.	f	.	.	.	.	.	.	.	.	.	.	f	.	.	f	.	.	.	.	.	.	.	.	.	.	.	f	.
Belize	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	f	.	.	f	.	f	.	f	.	.	.	.	.	.	.	.
Brazil	f	.	.	f	.	.	.	.	.	.	.	.	f	.	f	e, f	.	.	f	.	.	.	.	.	.	f	f	.	.	.	.
Canada	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
China	.	.	.	.	.	.	.	.	e	.	.	.	.	.	.	d, e	.	.	.	.	.	.	.	.	.	.	d, e	.	.	.	.
Cuba[a]	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Dominican Republic	.	.	.	.	.	.	.	.	.	.	.	.	.	f	f	.	.	.	.	f	.	.	.	.	.	f	.	.	.	.	.
Equatorial Guinea[a]	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ethiopia	f	.	.	.	.	.	f	f	f	.	.	.	.	.	f	.	.	.	.	.	e, f	e, f	.	.	.	.	d, e	.	.	.	e, f	.
EU (16 states)	f	.	f	.	.	.	.	.	.	.	.	.	.	.	.	.	.	f	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Fiji	.	.	.	.	.	.	.	f	.	.	.	.	.	.	f	f	.	.	.	.	f	.	.	.	.	f	.	.	.	.	.	.
Guinea-Bissau	.	.	.	.	.	.	f	f	f	.	.	.	.	.	.	.	.	.	f	.	.	.	.	.	.	.	.	.	.	.	.	.
Guyana	.	d	.	.	.	.	.	d, e, g	d, e, g	.	.	.	.	e, f	d	d	.	.	d, e, f	.	e, f	.	e, f	.	.	.	d	.	d, e	d, e, f	.	e
Haiti[b]	e, f	.	.	.	.	.	d, e, f	d, e, f	d, e, f	.	.	.	.	e, f	d, e, f	.	.	.	.	.	.	e, f	e, f	.	.	.	.	.	.	.	.	.	.
India	f	.	.	f	.	e	.	d, e, g	d, e, g	.	.	.	.	f	f	.	.	f	e	.	.	.	.	.	.	d, e, g	d, e, g	e, g	.	.	.	.
Japan	.	.	.	.	f	.	.	.	.	.	.	.	.	.	f	.	.	.	f	.	.	.	.	.	.	.	.	.	.	.	f	.
Madagascar	f	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	f	.	f	f	.	f	.	f	.	.	.	.	.	.
Mali[b]	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	d	.	.	.	.	.
Mauretania[b]	.	e, f	.	.	.	.	.	.	.	e, f	.	.	.	e, f	.	.	e, f	.	.	.	.	.	.	.	.	.	.	.	.	.	.	e, f
Mexico	f	.	f	.	.	f	.	.	.	.	.	.	.	f	f	.	.	.	.	.	.	.	.	.	.	.	f	.	.	.	.	f
Morocco	.	.	.	.	.	.	.	.	.	.	.	.	.	e, f	e, f	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	d, e, f
Mozambique	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	e, f	.	.	.	.	.	.	.	.	.	e, f	e, f	.	e, f	.	.	e, f
Niger	.	f	.	.	.	.	f	f	f	.	f	.	.	f	f	.	.	.	.	.	f	.	.	.	.	f	.	.	.	.	.	.
Pakistan	.	.	.	.	.	.	d	d	d	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	d
Peru	.	.	.	.	.	.	.	.	.	.	.	.	.	f	f	.	.	.	.	.	.	.	.	.	.	.	f	.	.	.	.	f
Russia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	f	.	.	.	.	.	.	.	.	.	.	.	f	.	.
Rwanda	.	e, f	.	.	.	.	.	.	.	.	.	.	.	.	e, f	.	.	.	e, f	.	.	.	.	.	e, f	e, f	.	.	.	.	.	e, f
São Tomé and Príncipe	.	e	.	.	.	.	e	e	e	.	.	.	.	.	.	.	.	.	e	.	.	.	.	.	.	.	.	.	.	.	.	.
Saudi Arabia	f	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	f	.	.	.	.	f

Solomon Islands	·	·	·	·	·	.	.	.	.	.	.	.	.	f	f	.	.	.	.	.	.	.	f	.	.	.	e, f	e	.	.	.	f
South Africa	·	·	d, e, f	e, f	·	e, f	e, f	e, f	e, f	.	.	e, f, g,	.	.	.	e, f, g	.	.	.	.	.	.	.	.	.	e, f	e, f, g	.	.	.	.	.
Sudan	·	·	·	f	·	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	f	f	.	.	.	.	f	.	.	.	.	.
Timor-Leste	·	·	·	·	·	.	.	.	.	.	.	.	.	e, f	.	.	.	.	.	.	e, f	e, f	f	.	.	.	d, f	d, f	.	.	.	e, f
Tunisia	e, f	e, f	·	·	·	.	.	.	.	.	.	.	.	.	e, f	.	.	.	.	·	e, f	.	.	.	.	.	.	.	.	.	.	.
(USA[i])	(f)	·	·	·	·	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Venezuela[a]	·	·	·	f, g	·	.	g	g	g	.	.	.	.	.	.	d, e, g	.	.	.	.	.	.	.	.	.	e, g	g	e, g	g	.	.	.
Zambia	·	d, e, f	·	d, e, f	·	.	.	.	.	.	.	.	.	.	e	.	.	.	.	.	.	.	.	.	.	d, e, f	d, e, f	.	.	.	.	.
all CBDR	·	2	1	·	·	.	2	3	4	.	.	.	.	.	2	3	.	.	1	.	.	.	.	.	.	2	7	1	1	1	.	2
all equity	2	5	1	2	·	2	3	5	6	.	.	1	.	5	5	5	1	1	3	.	4	3	2	.	1	6	7	3	2	1	1	6
all fairness	25	5	18	7	1	2	5	6	5	1	1	1	1	11	15	5	2	19	6	1	9	5	5	1	1	9	10	1	1	2	3	9
all justice	·	·	·	1	·	.	1	3	3	.	.	1	.	.	.	2	.	.	.	.	.	.	.	.	.	2	3	2	1	.	.	.
all[c]	25	7	18	7	1	3	8	10	11	1	1	1	1	11	17	8	2	20	7	1	9	5	5	1	1	11	16	4	3	2	3	11
all CBDR	3					3							4							7												2
all equity	7					5							15							13												6
all fairness	**33**					4							40							23												9
all justice	1					3							2							3												·
all[c]	**35**					14							**44**							**26**												11

[a] NDC only in Spanish (equal terms for the English terms 'fairness' and 'justice'). The table counts the Spanish terms *justa* or *justicia* for both English terms fairness and justice.
[b] NDC only in French (equal terms for the English terms 'fair' and 'equitable'). The table counts the French terms *équité* or *equitable* for both English terms fairness and equity.
[c] Where a state specifies several terms by the same criterion, it is counted once. Within the main criteria summarizing different specific criteria each state can only be counted once.
[d] Reference of operationalized criteria to CBDR.
[e] Reference of operationalized criteria to equity.
[f] Reference of operationalized criteria to fairness.
[g] Reference of operationalized criteria to justice.
[h] Withdrawal from the Paris Agreement coming into effect, at earliest, on 4 November 2020. Therefore, the data of the NDC of the USA are included in the table but not in the calculations.

Source: own design and calculations based on UNFCCC, 'NDC Registry (interim)' <www4.unfccc.int/ndcregistry/Pages/All.aspx> accessed 27 April

Criteria of responsibility (44 states) are the most recognized criteria to define terms of differentiation. The commitments made are also used frequently to specify the terms of differentiation (35 states). This confirms the criteria for operationalization of the Paris Agreement.[108]

The detailed criteria that are most frequently used to specify terms of differentiation are the (conditional or unconditional) mitigation target (31 states), the emissions intensity (20 states) and the emissions per capita (17 states). 16 states use sustainable development or green growth to specify terms of differentiation. The categories of development are used by only 12 states. Hence, the terms of differentiation are only partly specified by detailed criteria. None of the criteria is used by more than 50 per cent of the sample states.

Countries of very high development use the emissions intensity to specify the terms of differentiation. They avoid the emissions per capita,[109] sustainable development,[110] categories of development. In contrast, countries of high, medium, and low development use these criteria. Countries of very high and high development specify the terms of differentiation by referring to their unconditional targets and only exceptionally formulate expectations towards other states whereas countries of medium and low development consider their conditional and expectations towards others to specify the terms of differentiation.

The term that has been defined most frequently is 'fairness'. Apart from the specification by the mitigation target (33 states), all specifications of fairness remain below 50 per cent. However, it is interesting that the responsibility for emissions is considered to be more relevant for the definition of fairness than capabilities to react to climate change.

Finally, apart from the broad categories that are also used by the Paris Agreement, the definition of the terms of differentiation remains divers in the first NDCs.

C. Operationalization of differentiation

If the NDCs apply common criteria for differentiation that are subsequent practice, this might narrow the rules of differentiation, even where the NDCs do not refer to the terms of differentiation. Table 4 reveals the operationalization of criteria for differentiation in the NDCs. The states remain the same as in the sample of Table 2. As the Contracting Parties of the Paris Agreement did not yet agree on a common structure for their NDCs,[111] the structure of the table includes all possible criteria of differentiation to which more than two NDCs of the sample refer. Apart from the criteria used in Table 3, the support for the REDD-plus mechanism[112] is added to the expectations and South-South Cooperation[113] is added to the expectations and commitments. Developed countries are added as a criterion of capability. Indices and the quantifications of costs are added to the criterion of vulnerability.

If a state supports a criterion, it is marked with a (+), if it refuses a criterion, with a (–). An exclamation mark means that a state considers the respective criterion not only as suitable but itself to belong to the respective category.

[108] See *supra* Section II.
[109] Of this group, this criterion is only used by Australia and Japan.
[110] Of this group, only Russia and Saudi Arabia use this criterion.
[111] See also *supra* n 95.
[112] REDD-plus stands for Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries. It was established by Paras. 6 and 8 Dec. 2/CP.15 (Copenhagen Accord) and seeks to improve the former idea of REDD (Reducing Emissions from Deforestation in Developing Countries) established by Dec. 2/CP.13
[113] K. Kheng-Lian and N. A. Robinson, 'South–South Cooperation: Foundations for Sustainable Development' in C. G. Gonzalez et al. (eds), *International Environmental Law and the Global South* (Cambridge University Press 2015).

Table 4: Operationalization/implicit criteria for differentiation in the NDCs

	commitments							expectations								criteria suggested for differentiation: *responsibility (emissions)*								*capability (development)*[a]																				*vulnerability (need)*				
	unconditional mitigation target[b]	conditional mitigation target or target referring to business as usual (BAU)	peaking year	year of carbon neutrality	commitments based on reciprocity	technology transfer or capacity building	South-South cooperation	leadership role of developed countries	capacity building	financial transfers	technology transfers or lower IPR	quantified transfers in US$	market mechanism	REDD-plus or compensation for afforestation	South-South cooperation	expectations of support for vulnerability	absolute emissions	share of absolute emissions	emissions per capita	historical emissions	cumulative emissions/emissions budget	emission intensity (CO_2- per GDP unit)	net carbon sink country	energy use or energy efficiency	developed countries	(lower) middle income countries	developing countries	LDCs	SIDS	GDP (per capita)	HDI	fight poverty	sustainable development or green	Reference to SDGs (S) or MDGs (M)	right to development or right to grow	aim of equality	competitiveness	abatement costs	losses of resource income	focus on own vulnerability and priority of adaptation	recognition of vulnerability of others	Climate Change Vulnerability Index (v)	Global Climate Risk Index (r)	quantification of costs in US$
Australia	-26–-28% (2005–2030)	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.
Belize	.	.	.	.	.	.	.	.	+	+	+	+	+	+	.	+	.	+	.	+	.	.	+	.	.	.	+!	.	+!	+	.	+	+	.	.	.	.	.	.	+	.	.	.	+
Brazil	-37% (2005–2025) -43% (2005–2030)	.	.	.	+	+	+	+	.	+	+	.	+	+	+	.	+	.	+	+	.	+	+	.	+	.	+!	.	.	+	.	+	+	.	.	.	.	.	+	.	+	.	.
Canada	-30% (2005–2030)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.
China	emissions intensity: -60–-65% (2005–2030)	.	2030	.	+	.	+	+	+	+	+	.	+	.	.	.	.	.	.	+	+	+	.	.	.	+	.	+!	+	+	.	.	.	+	.	.	.	.	.	+	.	.	.
Cuba	.	.	.	.	.	.	+	+	+	+	+	.	.	.	+	.	.	+	.	.	.	.	.	.	.	+	.	+!	.	+!	+	.	+	+	S	.	.	.	.	.	+	.	.	.
Dominican Republic	.	25% (2010–2030)	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	+	+	.	.	.	.	.	.	.	+!	+	.	+	+	.	+	+	.	.	.	.	.	.	+	.	.	+
Equatorial Guinea	.	-20% (2010–2030) -50% (2010-2050	.	.	.	.	.	.	+	+	+	+	–	.	.	.	.	+	+	.	.	.	.	.	.	.	+!	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
Ethiopia	-64% (BaU)	.	.	.	.	.	.	.	+	+	+	+	+	.	.	.	.	.	+	.	.	.	.	.	.	.	+!	+!	.	.	.	.	+	.	.	.	.	+	.	+	.	.	.
EU (16 states)	-40% (1990–2030)	.	1979	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+!	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Fiji	-30% in electricity (–2030, BaU)	.	.	.	.	.	.	.	+	+	+	+	+	+	.	.	.	.	+	+	.	.	.	+	.	+	.	+	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.
Guinea-Bissau	.	.	.	.	.	.	.	.	+	+	+	+	.	+	.	.	+	.	.	.	.	.	+	.	.	.	+!	+!	+!	+	+	+	+	M	.	.	.	.	.	+	.	.	+
Guyana	.	-48.7 Mt CO_2e per year (BaU)	.	2025	.	.	.	+	.	+	+	+	+	+	.	.	+	+	+	+	.	.	+	.	.	+!	+	.	+	.	.	+	+	.	.	+	.	.	+	.	.	.	.
Haiti	-5% (BaU)	-31% (BaU)	.	.	.	.	.	.	+	+	+	+	+	+	.	.	.	+	+	.	.	+	.	.	.	.	.	+!	.	+!	+	.	.	.	.	.	.	.	.	+	.	.	+
India	emissions intensity: 33–35% (2005– 2030)	.	.	.	+	+	.	+	+	+	+	+	+	+	.	.	.	+	+	+	+	+	.	.	+	.	+!	.	.	+	+	+	+	S	+	.	.	.	.	+	+	.	+
Japan	-25.4% (2013–2030)	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	+	+!	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.
Madagascar	.	-46% (-2030, BaU)	.	.	+	.	.	.	+	+	+	+	+	+	.	.	.	.	.	.	.	.	+	.	.	.	+!	+!	.	+	.	+	+	.	.	.	.	.	.	+	.	.	+
Mali	-16.50 kt CO2e (2020-2030, BaU)	-55.60 kt CO2e (2020–2030, BaU)	.	.	.	.	.	.	+	+	+	+	.	.	.	.	+	+	.	.	.	.	+	.	.	.	.	.	.	+	.	+	+	.	.	.	.	.	.	+	.	.	+
Mauretania	-2.68% (2010–2030, BaU)	-22.3% (2010–2030, BaU)	.	.	.	.	.	.	+	+	+	+	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	+	.	+	+	.	.	.	.	.	.	+	.	.	+
Mexico	-25% (–2030, BaU)	-40% (–2030, BaU)	2026	.	.	.	.	+	+	+	+	.	+	.	+	.	.	+	+	.	.	+	.	.	+	.	.	.	.	.	.	+	+	.	.	.	+	.	.	.	+	+	.	+
Morocco	-17% (–2030, BaU)	-42% (–2030, BaU)	.	.	.	.	.	.	+	+	+	+	+	.	.	.	+	+	+	+	.	.	.	.	.	.	.	.	.	+	.	+	+	S	+	.	+	.	.	+	.	.	+

Mozambique	·	-76.5 MtCO2e (–2030, BaU)	·	·	·	·	·	·	+	+	+	·	+	+	·	·	·	·	·	+	·	·	·	·	·	·	·	·	·	·	·	+	+	·	·	+	·	·	·	+	·	·	+
Niger	-2.5% (–2020, BaU) -3.5% (–2030, BaU)	-25% (–2020, BaU) -34.6% (–2030, BaU)	·	·	+	·	·	·	+	+	+	+	+	·	·	·	·	+	+	·	·	·	+	·	·	·	+!	·	·	+	+	+	+	·	·	·	+	·	·	+	·	·	+
Pakistan	·	up to -20% (–2030, BaU)	after 2030	·	·	·	·	+	+	+	+	+	+	·	·	+	+	+	+	·	·	·	·	+	+	+!	+	·	·	+	·	·	+	S	·	·	·	+	·	+	·	v, r	+
Peru	-20% (–2030, BaU)	-30% (–2030, BaU)	·	·	·	·	·	·	+	+	+	·	+	+	·	+	·	+	+	·	·	·	·	·	·	·	+	·	·	·	·	+	+	·	·	·	+	·	·	+	·	·	+
Russia	-25–-30% (1990–2030)	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	+	·		+	·	+[c]	·	·	·	·	·	+[c]	·	·	·	·	·	+[c]	·	·	·	·
Rwanda	·	sector-specific targets	·	·	·	·	·	·	+	+	+	+	+	+	·	·	·	·	+	·	·	·	+	·	·	·	+!	+!	·	+	+	+	+	·	·	·	·	·	·	+	·	v	·
São Tomé and Príncipe	·	-24% (2005–2030, BaU)	·	·	·	·	·	·	+	+	+	+	+	·	·	+	·	·	·	·	·	·	+	·	·	·	+!	·	+!	+	·	·	+	·	·	·	·	·	·	+	·	·	·
Saudi Arabia	up to -130 Mio t CO2e per year (by 2030, BaU)	·	·	·	·	·	·	·	+	·	+	·	·	·	·	·	·	·	·	·	·	·	·	·	+	·	·	·	·	·	·	·	+	·	·	·	+	·	+	+	·	·	·
Solomon Islands	-12% (2015–2025, BaU) -30% (2015–2030, BaU)	-27% (2015–2025, BaU) -45% (2015–2030, BaU) -50% (2015–2050, BaU)	·	·	·	·	·	·	+	+	+	+	+	·	·	·	·	+	+	·	·	·	·	·	·	·	+!	+!	+!	+	+	+	+	M	+	·	·	·	·	+	·	·	·
South Africa	398–614 t CO2e per year (2030)	·	·	2020–2025	+	·	·	+	+	+	+	·	·	·	·	+	·	·	·	+	+	·	+	·	+	·	+	·	·	+	·	+	+	·	·	·	·	+	·	+	+	·	·
Sudan	·	20% renewable energy (by 2030)	·	·	+	·	·	·	+	+	+	+	+	+	·	·	+	·	·	·	·	·	·	·	+	·	+!	+!	·	·	·	+	+	M	·	·	·	·	+	+	·	·	+
Timor-Leste	·	·	·	·	·	·	·	·	+	+	+	·	·	·	·	·	·	+	·	·	·	·	·	·	·	·	+!	+!	+!	+	+	+	+	·	+	·	·	·		+	·	·	·
Tunisia	carbon intensity: -13% (2010–2030)	carbon intensity: -41% (2010–2030)	·	·	·	·	·	·	+	+	+	+	+	·	·	+	·	+	+	·	·	+	·	·	·	·	+!	·	·	+	·	·	+	·	·	·	·	·	·	+	·	·	+
(USA)[b]	-26–-28% (2005-2025)	·	·	·	·	·	·	·	·	·	·	·	(–)	·	·		·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Venezuela	·	-20% (2030, BaU)	·	·	+	·	·	·	+	+	+	·	–	·	·	·	+	+	·	+	·	·	·	·	+	·	+!	·	·	·	·	+	+	·	+	+	·	·		+	·	·	·
Zambia	·	-25% (2010–2030, BaU) -47% (2010–2030, BaU)	·	·	+	·	·	·	+	+	+	+	+	+	·	·	·	·	+	·	·	·	·	·	·	·	·	·	·	·	·	+	+	·	·	·	·	·	·	+	·	·	+
All (+)	**36**	20	19	2	11	3	3	8	**28**	**29**	**30**	20	22	13	3	7	9	18	19	10	4	25	10	4	**28**	4	**27**	8	10	20	6	23	**29**	7	5	3	6	5	6	**28**	5	2	17
All (–)	·	·	·	·	·	·	·	·	·	·	·	·	2	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
All (+)[d]	**48**							**21**									**49**								**51**															**30**			

[a] The exclamation mark is used for the category to which the respective country considers itself to belong.
[b] Withdrawal from the Paris Agreement coming into effect, at earliest, on 4 November 2020. Therefore, the data of the NDC of the USA are not included in the calculations.
[c] Reference made in the declaration upon ratification, acceptance or accession (not in the NDC).
[d] Within the main criteria summarizing different specific criteria each state can only be counted once.

Source: own design and calculations based on UNFCCC, 'NDC Registry (interim)' <www4.unfccc.int/ndcregistry/Pages/All.aspx> accessed 27 April 2020.

All Contracting Parties to the Paris Agreement define criteria for differentiation in their NDCs. Most states refer to more than one criterion to specify their approach to differentiation. 36 states of the sample formulate unconditional mitigation targets, 20 states (also) formulate conditional targets. 46 states formulate expectations towards other states. General expectations towards others are mostly specified by financial transfers (29 states), technology transfers (30 states), and capacity building (28 states).

With each Contracting Party having used at least one criterion of capability, these criteria are the most recognized criteria for differentiation. Within this criterion, the categories of development (developed countries, lower middle-income countries developing countries, LDCs, SIDS) are used by 44 states. Parties do not limit the categories of development to describe themselves (exclamation mark), they also refer to other categories of development to describe commitments or expectations towards other states. In contrast, the categories of SIDS and LDCs are mostly used by the states belonging to the respective category. Sustainable development is another well-recognized criterion (29 states). This is also not astonishing as the term is used 13 times in the Paris Agreement.[114]

The high relevance of capability is followed by criteria of responsibility (49 states) and vulnerability (46 states). This also confirms the priorities of the Paris Agreement. However, whereas capability and responsibility were also criteria to define the terms of differentiation, this is not the case for vulnerability.

24 states recognize market mechanisms as a suitable instrument. This is slightly below the threshold. However, market mechanisms reveal an interesting option that might also be applied to other criteria of differentiation in the future: two states use their NDCs to refuse market mechanisms explicitly. This refusal makes the position of these states more transparent than if they would remain silent on market mechanisms. Even if refusals do not sound like progress, if this approach were also used for other criteria, the formulation of both acceptance *and* refusal could help to come to an agreement.

The own vulnerability is mentioned by 28 states as an argument for their own contribution. However, quantitative parameters to make this criterion more comparable to the vulnerability of others are only used by two states. The only quantifiable criterion of differentiation that is broadly recognized in the sample is emissions per capita (19 states). However, they remain below the defined threshold. These broader criteria fulfil the threshold requirement of 50 per cent and could, therefore, be analysed in more detail.

Apart from the few general results, group tendencies can be observed. Almost all countries of high and very high development define absolute and unconditional emissions reduction targets that go beyond previous efforts as it was required by Article 4(3) and (4) Paris Agreement. They use the categories of development less than countries of low development. Countries of high and very high development do not refer to vulnerability and most of them avoid quantifiable parameters that would impose higher obligations on them than on other states.

Japan is an exception. It formulates to support developing countries through technology transfer and human resource development. It also makes commitments for capacity building, financial transfers, and technology transfer to less developed or more vulnerable states in its NDC. Moreover, despite being at the top of the list of emissions per capita, Japan refers to this parameter and considers it explicitly as fair.[115] The only other country of high development also using the emissions per capita as a parameter is Australia.

Regardless of being a country of high development,[116] Saudi Arabia does not formulate absolute emissions reduction targets [117] but even formulates expectations of sustainable development and that capacity building and technology transfer are accorded to Saudi Arabia to the same extent as to countries

[114] 8th and 16th preambular recitals, Articles 2(1), 4(1), 6(1), (2), (4)(a), (8), and (9), 7(1), 8(1), 10(1) Paris Agreement.
[115] See also *supra* Table 3.
[116] Saudi Arabia had an HDI of 0.85 in 2014, which is at the same level as the Slovak Republic and Lithuania.
[117] Saudi Arabia uses the provision ‘up to’, which could also mean zero emissions reductions.

of low development.[118] Saudi Arabia and Russia refer to possible losses owing to natural resources in their own country.

Brazil, China and Mexico consider themselves as developing countries, but they still formulate unconditional mitigation targets. Brazil and China also offer support to (other) developing countries.

Most countries of low and medium development formulate conditional reduction targets. Nine of the countries of low and medium development (also) formulate an unconditional target.[119] However, their unconditional targets are modest, refer to emission intensity instead of absolute emissions, are sector-based, or compared to a business-as-usual (BaU) scenario. Countries of low development are keener to quantifiable parameters for development or emissions than countries of higher development.

Countries of low development recognize vulnerability to be a relevant category for differentiation, mostly referring to the own vulnerability or to the vulnerability of their own reference group. Pakistan and Rwanda refer to the Climate Change Vulnerability Index and Pakistan also to the Global Climate Risk Index.

Finally, only a few criteria of operationalization are recognized to the extent that this affects rules of differentiation. They confirm that the criteria of capability and the state of development are the decisive criteria for differentiation, followed by criteria of responsibility and vulnerability. The strong compliance of countries of high development with the requirement to define absolute emission reduction targets also confirms the recognition of the capability requirement.[120] Other specifying criteria are sustainable development and the expectations of financial, technology transfers, and support for capacity building. These would have to be analysed in more detail for all Contracting Parties.

Even though the relative weight of the criteria found in the NDCs remains open, the comparison made accepted criteria more visible and provides a starting point where the criteria of differentiation have a chance to be sharpened step-by-step.

IV. Proposal for a standard form for criteria of differentiation in the NDCs

With the results of the comparison of terms and operationalization of the terms of differentiation in the NDCs, I will now proceed to the standardized form that aims at making the criteria of differentiation in NDCs more comparable in the future. If common criteria are formulated, they have the potential to become a common subsequent practice.

The standardized form could complement existing proposals on table forms made in different contexts of the Paris Agreement: the common reporting tables (CRTs) and Common Tabular Formats (CTFs) to track progress under Article 4 Paris Agreement.[121] These tables are currently advanced by the Subsidiary Body for Scientific and Technological Advice (SBSTA). As transparency measures under Article 13 Paris Agreement, the CRTs were also an issue at the international climate conference in Madrid in December 2019. Accounting, capacity building, and a specification of where the Paris Agreement maintains flexibility for Contracting Parties were central aspects discussed to be included in the CRTs[122]

[118] The requirements to define a single and consistent reference or base year are not binding. Hence, Saudi Arabia seems to comply with the rules of the Paris Agreement. Para. 1 of Annex I to Dec. 4/CMA.1. However, as far as Saudi Arabia considers itself as a developed country party, it might conflict with the requirement to define an absolute reduction target of Art. 4(4) Paris Agreement.

[119] Ethiopia, Haiti, India, Mali, Mauretania, Morocco, Niger, Solomon Islands.

[120] Article 4(4) Paris Agreement.

[121] M. Rocha, 'Reporting Tables – Potential Areas of Work under SBSTA and Options: Part I – GHG Inventories and Tracking Progress Towards NDCs' (2019); C. Falduto and J. Ellis, 'Reporting Tables – Potential Areas of Work under SBSTA and Options: Part II – Financial Support Provided, Mobilised and Received' (2019).

[122] UNFCCC SBSTA, 'Methodological Issues under the Paris Agreement: Common Reporting Tables for the Electronic Reporting of the Information in the National Inventory Reports of Anthropogenic Emissions by Sources

whereas progression, financial transfers, and technology transfer were central for the CTFs.[123] The table forms shall be concluded in December 2020.

The standard form of Table 5 makes suggestions on how to structure criteria for differentiation. It might improve the current discourse on the criteria for differentiation but also help to structure the NDCs. This form could be used as an annex to the NDCs or as a digital table accompanying the NDCs.

The categories of Table 5 are subdivided into mitigation and adaptation including both quantifiable and non-quantifiable categories. It also provides the option to define the terms of differentiation. Open categories such as 'further circumstances' and 'further comments' shall enable a party to formulate expectations that are not covered by this form.[124] Table 5 shows an example of a fictive developing country 'Developmentland'.[125] The white cells are filled to make the filling options clearer.

A Contracting Party can approve a category filling the cell with numbers or qualitative requirements highlighting the criteria that become relevant for itself (e.g. in italics). A Party could also leave a cell blank ('--'). Finally, a Party could refuse a category either noting explicitly that the category is refused within the respective cell or under 'refused criteria'.[126] Refusing a category might be in the interest of Contracting Parties that seek to maintain their discretion on how to specify the criteria for differentiation.[127] However, even though the option to refuse sounds destructive, it can lead to progress. It helps to make motives more transparent inviting Parties to formulate clearly which criteria they refuse instead of dealing with refusals in the same way as with criteria on which a Party is uncertain or indifferent. Even if a criterion is not approved, the table might help to facilitate discourse about controversial criteria.

and Removals by Sinks of Greenhouse Gases' (9 December 2019) <unfccc.int/sites/default/files/resource/IN.SBSTA_.i11a.pdf> accessed 3 March 2020.

[123] UNFCCC SBSTA, 'Methodological Issues under the Paris Agreement: (c) Common Tabular Formats (CTF) for the Electronic Reporting of the Information on Financial, Technology Development and Transfer and Capacity-Building Support Provided and Mobilized, as well as Support Needed and Received, under Articles 9-11 of the Paris Agreement' (6 December 2019) <unfccc.int/sites/default/files/resource/SBSTA51.IN_.i11c.pdf> accessed 3 March 2020; UNFCCC SBSTA, 'Common Tabular Formats for the Electronic Reporting of the Information Necessary to Track Progress Made in Implementing and Achieving Nationally Determined Contributions under Article 4 of the Paris Agreement' (9 December 2019) <unfccc.int/sites/default/files/resource/IN.SBSTA51.i11b.pdf> accessed 3 March 2020.

[124] Open categories were also used in Rocha (n 121), p. 24 (Table 5).

[125] A developed country would leave the cells for conditional targets blank using '--'.

[126] Rocha includes the two latter options under 'flexibility'. Cf. Rocha (n 136), p. 8.

[127] This follows from the possibility of acquiescence discussed in Section III.A.2.

Table 5: Proposal for a standardized form for commitments and expectations for differentiation

	state		*Developmentland*
mitigation	**target**	**unconditional**	**conditional**
	relative	*-5%*	*-30%*
	absolute	*-10,000,000 t CO_2-eq per year*	*-300,000,000 t CO_2-eq annually*
	base year	*2010*	*2010*
	period	*2025–2030*	*2025–2030*
	reference to BaU	*yes*	*no*
	sectors covered	*all*	*all*
	sectors not covered	--	--
	gases covered	*CO_2*	*CO_2*
	gases not covered	*methane, NO_2*	*CH_4, HFCs, N_2O, PFCs, SF6*
	peaking	--	*2030*
	carbon neutrality	--	*2050*
	general expectations towards other states		
	total costs covered in USD		*20,021,000 annually*
	total costs not covered in USD		*100,000,000 annually*
	who is expected to contribute		developed countries
	form(s) of investment expected		direct investments, funding, flexible mechanisms
	expected technological support		access to intellectual property rights in the renewable energy sector
	expected support for capacity building		support needed to establish monitoring
	international market mechanism suggested		Clean Development Mechanism and similar
	further expectations		--
	recognized criteria for differentiation		
	responsibility for emissions		
	non-quantifiable criteria and categories		*low historical responsibility, net carbon sink*
	quantifiable criteria and parameters		share in global emissions: *0.7 %*, emissions per capita: *1.1 t CO_2-eq*
	capability (state of development)		
	not quantified criteria and categories		developed country, *developing country, LDC,* SIDS
	quantifiable criteria and parameters		poverty measured by HDI rank in 2019: *150*
	vulnerability (need)		
	qualitative criteria and categories		*extreme weather events, sea level rise*
	quantifiable criteria and parameters		--
	further circumstances		--
	refused criteria		Climate Change Vulnerability Index, emissions intensity
	definition of terms of differentiation (CBDR, equity, fairness, justice)		
	(qualitative) criteria		fairness, equity: equality of development, sustainable development, historical responsibility
	(quantitative) parameters		fairness, equity: cumulative emissions
	support offered to other states		South-South cooperation
	further comments		--
adaptation	**vulnerability (need)**		6,000,000 annually
	covered costs for adaptation		1,000,000 annually
	non-covered costs for adaptation		5,000,000 annually
	support offered to other states		--
	further comments		--
	refused criteria		Climate Change Vulnerability Index

V. Conclusions

With the Paris Agreement and the Rulebook, the rules on differentiation have become even more open than they were in the UNFCCC and the Kyoto Protocol. The principle of CBDR is an open balancing concept prescribing that differentiation is necessary. The term 'equity' is a central term and used most frequently but the measure for equity differs depending on the context and is put into perspective to self-differentiation. The term 'climate justice' as used in the Paris Agreement aims at the inclusion of arguments, not at the pre-definition of universal criteria for differentiation. The term 'fair' is mentioned in subsequent decisions to the Paris Agreement aiming at making individual concepts for differentiation transparent. Hence, Contracting Parties can define the terms of differentiation individually. Capability is the most important operationalizing criterion in the Paris Agreement and subsequent decisions followed by vulnerability and responsibility. Yet, these categories are not specified in detail and their relative weight is not defined. Therefore, compliance with the criteria of differentiation as they are defined in the Paris Agreement is easy if developed countries formulate unconditional targets and do more than developing countries and if the other operationalizing criteria are considered at all.

However, the compliance with the vague rules of differentiation of the Paris Agreement does not lead to compliance with the overall aims of the Paris Agreement such as the 2 degrees target and, therefore, the emissions gap remains a problem. With non-specified rules of differentiation, difficulties to meet this target may not be referred to specific states but only to the Contracting Parties as a whole. Therefore, the paper sought precision of the rules and criteria of differentiation (including their weight) based on subsequent practice analysing how criteria for differentiation are specified in the NDCs.

The self-defined NDCs are neither binding nor is their non-fulfilment sanctioned. However, they reveal common perspectives in legal interpretation of rules on burden sharing and differentiation. Only representative criteria can qualify as subsequent practice and affect the interpretation of the Paris Agreement. Owing to the high relevance of self-differentiation, the criteria for subsequent practice were applied strictly. The paper made the first NDCs comparable elaborating relevant criteria for differentiation based on the NDCs of a sample and then analysed their frequency of these criteria.

In the first NDCs, the terms of differentiation were used to a different extent while the term 'fair' dominates the other terms of differentiation. The first NDCs do not provide a common definition of fairness or the other terms of differentiation so far. Only the general criteria of the Paris Agreement (capability, responsibility, vulnerability) can be confirmed.

Criteria to operationalize differentiation were used more frequently. The most accepted criteria are the categories of development, especially 'developed countries' and 'developing countries'. Quantifiable parameters that would allow defining thresholds from which a state belongs to these categories are only selectively used. Accordingly, almost all developed countries comply with Article 4(4) Paris Agreement formulating absolute and unconditional emission reduction targets whereas developing countries formulate conditional targets or modest unconditional targets. The aim of sustainable development is another criterion of capability that is broadly recognized across all groups of states. The responsibility for emissions and the own vulnerability are used as further criteria for differentiation. The most recognized parameter is emissions per capita. However, quantifiable parameters are not yet broadly recognised.

So far, the criteria of differentiation defined by the NDCs do not specify the rules of differentiation further but rather confirm the criteria of the Paris Agreement.[128] Only the recognition of emissions appears to be stronger than this criterion is mentioned in the Paris Agreement. However, the NDCs do also not specify how the different criteria are weighted and how they are put into perspective to the high discretion of the Contracting Parties to define their own criteria. Hence, it is not recommended to analyse

[128] See also *supra* Section II.

the first NDCs in more detail for the total population. The recognition of the more specific criteria of differentiation is too limited and the bar for subsequent practice is high.

Hence, rules for individual states are not defined so far, neither in the Paris Agreement nor in the NDCs. This is not surprising as consensus on such criteria was also not possible with the conclusion of the Paris Agreement.

Still, the comparison made in this paper has an added value making the acceptance of criteria transparent without changing the content of the NDCs and without judging the Contracting Parties for their commitments. It can strengthen the discourse on differentiation. Broadly recognized criteria that are not (yet) representative might become representative in the future agreements, decisions, and NDCs. The second NDCs provide an opportunity to react to all criteria provided. As soon as the specific criteria or their weight are recognized by more than 50 per cent of the sample, an analysis of all 186 NDCs could fallow.

A contribution to further enhance the transparency on individual concepts of differentiation and to make an agreement on more specific criteria more likely is provided by the suggested standard form. It consists of the criteria that were most accepted in the first NDCs. A Contracting Party might choose, which cells to fill and which to leave open. The option to refuse criteria explicitly can help to get into the discourse on differentiation.

Finally, this contribution did not only make a suggestion on how to analyse the rules of differentiation in the NDCs. The approach might also be useful for analysing other aspects of the NDCs. Moreover, the approach to subsequent practice might be used in other fields of international law. Starting the analysis with a representative sample and going into detail only where criteria are highly recognized, might not only be a method to specify subsequent practice but also to analyse international customary law.

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Appendix

Annex I: Sample data (2014)

Country Name	Region[a], SIDS[b]	UN language as official language[c]	legal system[d]	absolute emissions in kt CO_2[a]	emissions per capita in t CO_2[a]	GDP in bn. US$, rate 16 October 2019[a]	HDI[e]	Total natural resources rents in % of GDP[a]	Forest area in % of land area[a]	ND-GAIN vulnerability score[f]
Australia	East Asia & Pacific	EN	co	361,261.84	15.39	1467.48	0.93	7.34	16.20	0.29
(Austria)	Europe & Central Asia	·	ci	58,712.34	6.87	442.00	0.90	0.20	46.86	0.32
(Belgium)	Europe & Central Asia	FR	ci	93,350.82	8.33	530.81	0.91	0.02	22.55	0.36
Belize	Lat. America & Caribbean, SIDS	EN	co	495.05	1.41	1.69	0.71	2.61	60.12	0.48
Brazil	Lat. America & Caribbean	·	ci	529,808.16	2.59	2455.99	0.75	4.14	59.17	0.38
Bulgaria	Europe & Central Asia	·	ci	42,416.19	5.87	56.81	0.80	1.58	35.06	0.34
Canada	North America	EN, FR	co	537,193.50	15.12	1801.48	0.92	2.11	38.17	0.30
China	East Asia & Pacific	ZH	ci/cu	10,291,926.88	7.54	10438.53	0.74	2.45	22.03	0.39
Croatia	Europe & Central Asia	·	ci	16,842.53	3.97	57.68	0.82	0.91	34.34	0.39
Cuba	Lat. America & Caribbean, SIDS	ES	ci	34,836.50	3.05	80.66	0.77	2.09	30.25	0.43
Cyprus	Europe & Central Asia	·	ci/co	6,061.55	5.26	23.36	0.86	0.07	18.69	0.36
Czech Republic	Europe & Central Asia	·	ci	96,475.10	9.17	207.82	0.88	0.33	34.51	0.31
(Denmark)	Europe & Central Asia	·	ci	33,498.05	5.94	352.99	0.93	1.02	14.46	0.34
Dom. Republic	Lat. America & Caribbean, SIDS	ES	ci	21,539.96	2.07	66.07	0.72	1.62	40.36	0.43
Equatorial Guinea	Sub-Saharan Africa	ES, FR	ci	5,346.49	4.73	21.74	0.59	30.90	56.31	0.47
(Estonia)	Europe & Central Asia	·	ci	19,519.44	14.85	26.62	0.86	1.43	51.35	0.37
(European Union)	Europe & Central Asia	·		3,241,844.35	6.38	18668.67	0.87	0.31	37.91	0.34
Ethiopia	Sub-Saharan Africa	·	ci/cu	11,598.72	0.12	55.61	0.45	13.11	12.46	0.57
Fiji	East Asia & Pacific, SIDS	EN	co	1,169.77	1.32	4.86	0.73	1.82	55.41	0.45
Finland	Europe & Central Asia	·	ci	47,300.63	8.66	272.61	0.91	0.59	73.11	0.31
France	Europe & Central Asia	FR	ci	303,275.57	4.57	2852.17	0.89	0.05	30.82	0.30
Germany	Europe & Central Asia	·	ci	719,883.44	8.89	3898.73	0.93	0.09	32.72	0.29
(Greece)	Europe & Central Asia	·	ci	67,318.79	6.18	237.03	0.86	0.18	31.22	0.35
Guinea-Bissau	Sub-Saharan Africa, SIDS	·	ci/cu	271.36	0.16	1.05	0.45	17.90	70.48	0.62
Guyana	Lat. America & Caribbean, SIDS	EN	ci/co	2,009.52	2.63	3.08	0.65	20.70	84.00	0.48
Haiti	Lat. America & Caribbean, SIDS	FR	ci	2,860.26	0.27	8.78	0.49	1.21	3.55	0.55
Hungary	Europe & Central Asia	·	ci	42,086.16	4.27	140.08	0.83	0.40	22.80	0.37
India	South Asia	EN	co/cu/m	2,238,377.14	1.73	2039.13	0.62	2.81	23.71	0.50
(Ireland)	Europe & Central Asia	EN	co	34,066.43	7.31	258.47	0.92	0.09	10.86	0.34
(Italy)	Europe & Central Asia	·	ci	320,411.46	5.27	2151.73	0.87	0.14	31.42	0.32
Japan	East Asia & Pacific	·	ci/cu	1,214,048.36	9.54	4850.41	0.90	0.03	68.46	0.37
Latvia	Europe & Central Asia	·	ci	6,974.63	3.50	31.34	0.84	1.04	53.97	0.39
(Lithuania)	Europe & Central Asia	·	ci	12,838.17	4.38	48.52	0.85	0.45	34.76	0.39
Luxembourg	Europe & Central Asia	·	ci	9,658.88	17.36	66.10	0.90	0.05	35.68	0.29
Madagascar	Sub-Saharan Africa	FR	ci/cu	3,076.61	0.13	10.67	0.51	11.22	21.47	0.59
Mali	Sub-Saharan Africa	FR	ci/cu	1,411.80	0.08	14.35	0.41	11.44	3.93	0.61
Malta	Mid. East & North Africa	EN	ci/co	2,346.88	5.40	11.28	0.86	0.00	1.09	0.35
Mauritania	Sub-Saharan Africa	AR	ci/m	2,709.91	0.67	5.37	0.51	31.03	0.22	0.56
Mexico	Lat. America & Caribbean	ES	ci	480,270.66	3.87	1314.56	0.76	5.01	34.02	0.38
Morocco	Mid. East & North Africa	AR	ci/m	59,863.78	1.74	110.08	0.65	2.06	12.64	0.38
Mozambique	Sub-Saharan Africa	·	ci/cu	8,426.77	0.31	16.96	0.43	13.56	48.51	0.54
Netherlands	Europe & Central Asia	·	ci	167,303.21	9.92	890.98	0.92	0.80	11.14	0.35
Niger	Sub-Saharan Africa	FR	ci/cu	2,126.86	0.11	8.23	0.35	13.77	0.91	0.68
Pakistan	South Asia	EN	co/m	166,298.45	0.90	81.08	0.55	2.19	1.97	0.51
Peru	Lat. America & Caribbean	ES	ci	61,744.95	1.99	200.98	0.75	7.44	57.92	0.43
(Poland)	Europe & Central Asia	·	ci	285,739.97	7.52	545.39	0.84	0.94	30.74	0.32
(Portugal)	Europe & Central Asia	·	ci	45,052.76	4.33	229.63	0.84	0.29	34.86	0.34
Romania	Europe & Central Asia	·	ci	70,003.03	3.52	199.63	0.80	1.44	29.52	0.41
Russian Federation	Europe & Central Asia	RU	ci	1,705,345.68	11.86	2059.98	0.81	13.27	49.76	0.33
Rwanda	Sub-Saharan Africa	EN, FR	ci/cu	839.74	0.07	8.02	0.51	6.40	19.18	0.56
São Tomé and Pr.	Sub-Saharan Africa, SIDS	·	ci/cu	113.68	0.59	0.35	0.57	2.96	55.83	0.48
Saudi Arabia	Mid. East & North Africa	AR	m	601,046.97	19.53	756.35	0.85	41.24	0.45	0.39
Slovak Republic	Europe & Central Asia	·	ci	30,678.12	5.66	100.95	0.85	0.44	40.35	0.36
Slovenia	Europe & Central Asia	·	ci	12,812.50	6.21	49.89	0.89	0.26	61.96	0.34
Solomon Islands	East Asia & Pacific, SIDS	EN	co/cu	201.69	0.35	1.17	0.54	17.34	78.26	0.66
South Africa	Sub-Saharan Africa	EN	ci/co	489,771.85	8.98	350.64	0.69	13.29	7.62	0.40
(Spain)	Europe & Central Asia	ES	ci	233,976.60	5.03	1376.91	0.88	0.08	36.75	0.31
Sudan	Sub-Saharan Africa	AR	co/m	15,364.73	0.30	82.15	0.49	6.57	·	0.62
Sweden	Europe & Central Asia	·	ci	43,420.95	4.48	574.41	0.92	0.57	68.92	0.30
Timor-Leste	East Asia & Pacific, SIDS	·	ci/cu/m	469.38	0.39	4.04	0.61	56.55	46.89	0.56
Tunisia	Mid. East & North Africa	AR	ci/m	28,829.95	2.59	47.63	0.73	4.87	6.63	0.39
(United States)	North America	EN	co	5,254,279.29	16.50	17521.75	0.92	0.67	33.87	0.34
Venezuela, RB	Lat. America & Caribbean	ES	ci	185,220.17	6.03	482.36	0.78	11.82	53.11	0.35
Zambia	Sub-Saharan Africa	EN	co/cu	4,503.08	0.29	27.15	0.58	15.42	65.65	0.54

[a] World Bank, World Bank Open Data <data.worldbank.org> accessed 14 May 2019.
[b] United Nations, 'Sustainable Development Goals, Knowledge Platform' <sustainabledevelopment.un.org/topics/sids/list> accessed 28 October 2019.
[c] UN languages are abbreviated by ISO 639-1 code. The data can be found on University of Ottawa, JuriGlobe World Legal Systems Research Group, 'Alphabetical Index of Political Entities, Languages and Corresponding Legal Systems' <juriglobe.ca/eng/langues/index-alpha.php> accessed 27 February 2020.
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[e] United Nations Development Programme, 'Human Development Index' <hdr.undp.org/en/data> accessed 29 April 2020.
[f] Notre Dame Global Adaptation Initiative, 'ND-GAIN: Vulnerability Score' (University of Notre Dame) <gain.nd.edu/our-work/country-index/download-data> accessed 3 September 2019.

Annex II: Relative frequency of climate-based criteria

Criterion, class, interval		population 184		sample 63 (with 27 EU states)			sample 51 (with 16 EU states[a])		
		frequency	relative frequency in %	frequency	relative frequency in %	difference population-sample	frequency	relative frequency in %	difference population-sample
absolute emissions in kt CO_2									
very low	(11,001–300]	18	10.06	3	4.84	-5.33	3	5.88	-4.29
low	(300–1,800]	24	13.41	5	8.06	-5.49	5	9.80	-3.76
middle	(1800–10,000]	48	26.82	12	19.35	-6.63	12	23.53	-2.46
high	(10,000–200,000]	64	35.75	27	43.55	7.39	19	37.25	1.10
very high	(200,000–36,138,285)	25	13.97	15	24.19	10.07	12	23.53	9.41
emissions per capita in t CO_2									
very low	(0.04–0.5]	36	20.22	12	19.35	-0.53	12	23.53	3.64
low	(0.5–1.5]	32	17.98	5	8.06	-10.12	5	9.80	-8.38
middle	(1.5–4.5]	52	29.21	16	25.81	-3.17	14	27.45	-1.53
high	(4.5–7.5]	28	15.73	14	22.58	6.67	8	15.69	-0.22
very high	(7.5–45.24)	30	16.85	15	24.19	7.15	12	23.53	6.48
GDP in bn. US$, rate 16 October 2019									
very low	(0.037–5.00]	40	22.47	7	11.29	-11.44	7	13.73	-9.00
low	(5.00–20.00]	38	21.35	8	12.90	-8.12	8	15.69	-5.34
middle	(20.00–100.00]	43	24.16	16	25.81	1.94	14	27.45	3.59
high	(100.00–200.00]	10	5.62	4	6.45	0.77	4	7.84	2.16
very high	(200.00–17,521.75)	47	26.40	27	43.55	16.84	18	35.29	8.59
HDI									
very low	(0.35–0.55]	36	20.69	12	19.35	-0.99	12	23.53	3.18
low	(0.55–0.65]	27	15.52	6	9.68	-6.02	6	11.76	-3.93
middle	(0.65–0.75]	36	20.69	8	12.90	-8.03	8	15.69	-5.24
high	(0.75–0.85]	39	22.41	13	20.97	-1.13	11	21.57	-0.52
very high	(0.85–0.95)	36	20.69	23	37.10	16.17	14	27.45	6.52
natural resources in % of GDP									
very low	(0.00034–0.2]	38	21.35	12	19.35	-2.24	6	11.76	-9.83
low	(0.2–1]	24	13.48	11	17.74	4.67	8	15.69	2.62
middle	(1–5]	48	26.97	18	29.03	2.33	16	31.37	4.67
high	(5–20]	45	25.28	16	25.81	0.24	16	31.37	5.80
very high	(20–56.54848)	23	12.92	5	8.06	-5.00	5	9.80	-3.26
forest area in % of land									
very low	(0.00053–5]	27	15.08	7	11.48	-3.21	7	14.00	-0.69
low	(5–20]	36	20.11	10	16.39	-3.95	8	16.00	-4.34
middle	(20–35]	40	22.35	17	27.87	5.83	11	22.00	-0.03
high	(35–50]	33	18.44	10	16.39	-2.25	8	16.00	-2.64
very high	(50–98.30641)	43	24.02	17	27.87	3.58	16	32.00	7.71
ND-GAIN vulnerability score									
very low	(0.27–0.35]	29	17.26	20	32.26	14.79	12	23.53	6.06
low	(0.35–0.43]	58	34.52	20	32.26	-2.08	17	33.33	-1.00
middle	(0.43–0.51]	36	21.43	9	14.52	-7.17	9	17.65	-4.04
high	(0.51–0.59]	33	19.64	8	12.90	-6.98	8	15.69	-4.19
very high	(0.59–0.68)	12	7.14	5	8.06	1.44	5	9.80	3.18
continental area									
Europe & Central Asia		49	26.923	27	43.55	16.88	16	31.37	4.71
Latin America & Caribbean		33	18.13	9	14.52	-3.82	9	17.65	-0.69
South Asia		8	4.396	2	3.23	-0.66	2	3.92	0.03
East Asia & Pacific		29	15.93	6	9.68	-6.43	6	11.76	-4.35
Middle East & North Africa		15	8.24	4	6.45	-1.88	4	7.84	-0.49
Sub-Saharan Africa		46	25.27	13	20.97	-4.59	13	25.49	-0.07
North America		2	1.10	1	1.61	0.50	1	1.96	0.85
SIDS		39	21.20	10	16.13	-5.30	10	19.61	-1.82
UN language									
Arabic		20	15.50	5	13.51	-1.99	5	14.71	-0.80
Chinese		2	1.55	1	2.70	1.15	1	2.94	1.39
English		55	42.64	13	35.14	-7.50	12	35.29	-7.34
French		29	22.48	10	27.03	4.55	9	26.47	3.99
Russian		3	2.33	1	2.70	0.38	1	2.94	0.62
Spanish		20	15.50	7	18.92	3.42	6	17.65	2.14
legal system									
Civil law (ci)		75	43.60	33	55.00	11.47	23	46.94	3.41
Common law (co)		25	14.53	5	8.33	-6.37	4	8.16	-6.54
Customary law (cu)		0	0.00	0	0.00	0.00	0	0.00	0.00
Jewish law (j)		0	0.00	0	0.00	0.00	0	0.00	0.00
Muslim law (m)		3	1.74	1	1.67	0.49	1	2.04	0.86
ci/co/cu/m		2	1.16	0	0.00	-1.18	0	0.00	-1.18
ci/co/cu		5	2.91	0	4.90	1.96	0	0.00	-2.94
ci/co		8	4.65	3	5.00	0.29	3	6.12	1.42
ci/cu/m		7	4.07	1	1.67	-2.45	1	2.04	-2.08
ci/cu		17	9.88	9	16.67	6.67	9	18.37	8.37
ci/m		7	4.07	3	5.00	0.88	3	6.12	2.00
co/cu/m		5	2.91	1	4.90	1.96	1	2.04	-0.90
co/cu		12	6.98	2	3.33	-3.73	2	4.08	-2.98
co/m		4	2.33	2	3.33	0.98	2	4.08	1.73
cu/m		1	0.58	0	0.00	-0.59	0	0.00	-0.59
ci/co/j/m		1	0.58	0	0.98	0.39	0	0.00	-0.59

Own calculations