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Final report

Advancing multilateral cooperation on climate action

Ideas for new initiatives in four policy fields and how to use existing international venues as stepping stones

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Abstract: Advancing multilateral cooperation on climate change

Multilateral cooperation initiatives (or “climate clubs”) can generate some of the additional action that is needed to achieve the goals agreed in the Paris Agreement. An analysis of the state of collaboration in the four policy areas energy transition, synthetic fuels, food systems and forest protection identified several possible additional themes and formats for additional initiatives. A number of these are highlighted as particularly promising following specific analyses of opportunities provided in the context of the UNFCCC, the G7 and G20 and through the pro-climate action agenda of the Biden Administration in the US. Expert consultations have further highlighted the need for a focus on access to sustainable finance as a key horizontal topic for targeted multilateral collaboration and also pointed to the strategic consideration of a sequential use of political fora to promote new initiatives.

The analysis reveals diversity in the landscape of international cooperation across these policy areas. They differ in several ways: the extent to which countries are already cooperating, the scope of multilateral initiatives and what instruments are available to them vary. Those factors depend on the development of the policy area itself, but also on (perceived and real) political support for action. Thus, advancing multilateral cooperation on climate change in specific policy fields requires smartly addressing multiple channels and processes for which this report presents potential starting points.

Kurzbeschreibung: Wie multilaterale Zusammenarbeit im Klimaschutz gestärkt werden kann

Multilaterale Kooperationsinitiativen (oder "Klimaclubs") können einen Beitrag zu den zusätzlichen Klimaschutzmaßnahmen leisten, die notwendig sind, um die im Pariser Abkommen vereinbarten Ziele zu erreichen. Eine Analyse der aktuellen Zusammenarbeit in den vier Politikbereichen Energiewende, synthetische Kraftstoffe, Ernährungssysteme und Waldschutz ergab mehrere mögliche zusätzliche Themen und Formate für zusätzliche Kooperation. Einige von ihnen haben sich als besonders vielversprechend herausgestellt, nachdem sie im Kontext der Klimarahmenkonvention, der G7 und der G20 sowie der klimafreundlichen Agenda der Biden-Regierung in den USA analysiert wurden. Eine Expert*innenbefragung ergab zudem als zentrales Thema die Notwendigkeit, den nachhaltigen Zugang zu Finanzmitteln zu verbessern und wies zudem darauf hin, dass unter strategischen Gesichtspunkten eine sequenzielle Nutzung politischer Foren zur Förderung neuer Initiativen dienlich sein kann.

Derzeit unterscheidet sich die internationale Zusammenarbeit in den vier analysierten Politikbereichen in mehrfacher Hinsicht: Das Ausmaß, in dem die Länder bereits zusammenarbeiten, der Umfang der multilateralen Initiativen und die ihnen zur Verfügung stehenden Instrumente variieren stark. Diese Faktoren hängen von der Entwicklung des jeweiligen Politikbereichs selbst, aber auch von der (wahrgenommenen und tatsächlichen) politischen Unterstützung ab, die Klimaschutz in diesem Bereich erfährt. Um die multilaterale Zusammenarbeit zum Klimawandel in bestimmten Politikbereichen voranzutreiben, müssen daher mehrere Kanäle und Prozesse intelligent genutzt werden. Hierfür werden in diesem Bericht potenzielle Ansatzpunkte aufzeigt.

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List of abbreviations

AR5	Fifth Assessment Report
CCS	Carbon Capture and Storage
CCU	Carbon Capture and Use
CO_2	Carbon dioxide
CO2	Carbon dioxide
COP	Conference of the Parties
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
ETWG	Energy Transitions Working Group
EU	European Union
EU ETS	EU Emissions Trading System
FAO	Food and Agriculture Organisation
F-gases	Fluorinated greenhouse gases
FLEGT	Forest Law Enforcement, Governance and Trade
FLW	Food Loss and Waste
FTIP	Federal Transport Infrastructure Plan
G20	Group of 20
G7	Group of 7
GHG	Greenhouse gas
GSDP	Global supply-demand-partnership
H2ASP	Hard-to-Abate Sector Partnership
HGV	Heavy goods vehicle
HLPF	High- Level Political Forum on Sustainable Development
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
KJWA	Koronivia Joint Work on agriculture
KSBV	UBA study " Climate Change Mitigation in Transport until 2050" (German: Klimaschutzbeitrag des Verkehrs bis 2050 (KSBV)) [UBA, 2016a]
LTTG	Long-term temperature goal
MEF	Major Economies Forum
N_2O	Nitrous oxide (laughing gas)
NDC	Nationally Determined Contributions (in Paris Agreement)
NEDC	New European Driving Cycle
PJ	Petajoule (energy measuring unit)
PtG	Power-to-Gas (any power-based gaseous fuels)
PtL	Power-to-Liquid (any power-based liquid fuels)
RDE	Real Driving Emissions

REDD+	Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management o forests and enhancement of forest carbon stocks in developing countries
SDGs	Sustainable Development Goals
SeAMS	Sustainable e-fuel Alliance for Maritime Shipping
SeKA	Sustainable e-Kerosene Alliance
SFS	Sustainable Food Systems
TWh	Terawatt hours (measuring units for energy)
UNCBD	United Nations Convention on Biological Diversity
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
WLTP	Worldwide Harmonized Light-Duty Vehicles Test Procedure

Summary

Bi- and multilateral cooperation can be effective means to accelerate global climate action and increase ambition, which is why a broad range of specific initiatives (or 'clubs') for targeted collaboration between international partners already exist. **Additional action is urgently needed** prior to 2030 to keep the goals of the Paris Agreement within reach.

This report concludes the analytical work of the project 'Accelerating global climate action and raising ambitions by 2030[1].The analysis has identified concrete options for additional collaboration initiatives in the policy areas energy transition, synthetic e-fuels, sustainable food systems and forest protection. Moreover, it has also **identified the most promising additional initiatives** in the context of support through the UNFCCC negotiations, the G7 and G20 and the pro-climate action agenda of the Biden Administration in the USA – which could act as stepping stones for any new initiative.

The key insights are:

New **initiatives in the energy sector could be more easily implemented** than in other areas, due to the advanced state of technology and already existing cooperation. Especially the idea of a **"**Government level initiative for 100% renewables" and the "Supply Side Initiative" could have foundations in initiatives that have been announced by the US administration. The G7's 2021 Summit Communiqué's wording on transitioning away from coal and ending fossil fuel subsidies indicates that initiatives along these lines could be further considered in this context.

Cooperation on synthetic fuels is still in its infancy; however, as this topic is largely driven by innovation and research, it **can be framed in a politically attractive manner** by emphasizing economic co-benefits. Furthermore, it is possible to expand upon existing structures, such as the *LeadIT* initiative. This would be the aim of the idea of a "Hard-to-Abate Sector Partnership" and the "Global Supply and Demand Partnership". There is the opportunity to create political momentum for such an initiative, as the US has announced its plan to rejoin *LeadIT* and to participate in *Mission Innovation's* Clean Hydrogen Mission.

International cooperation in the forest policy area has several windows of opportunity in the near- to mid-term, with the increased focus of the G20 countries on 'climate-neutrality' giving the opportunity to strengthen the role of forest protection and restoration. Additionally, Italy's presidency of the G7 has put biodiversity high on the agenda. Both fora could serve as a booster for potential initiatives, especially any new initiative on increasing participation, which could also be in line with US President Biden's wish to increase stakeholder participation in climate issues.

Multilateral **cooperation on sustainable food systems has to overcome several difficulties**, as a shift away from meat-based diets is often seen as unpopular among the public. Yet, the topic of food waste reduction has been integrated in US policy and also in the G20 process through the framing of the issue as 'food security'. Additionally, the dedicated UN Food Systems Summit of September 2021 showed some indications of increased interest in the topic. Against this backdrop, the initiative idea "Ensure 12.3" and "ClimEat-Change", which would focus on links to the UNFCCC negotiations, would seem to be the most likely option to succeed.

The analysis of potential stepping stones has shown that **advancing topics through the formal channels of the UNFCCC will need to manoeuvre several obstacles** well, and might not be

[1] Previous outputs of the project can be accessed through a central entry page on the website of the Umweltbundesamt at www.umweltbundesamt.de/climate-action-2030

desirable in a lot of cases. However, in principle open to any topic or group is the function of gaining visibility through using the platform of the negotiating sessions and both informal and semi-formal channels to create attention.

Both the **G7 and the G20 are considerably more flexible than the UNFCCC** due to the smaller number of members and their informal nature. While the inclusion of all its member states is oftentimes politically unfeasible, smaller initiatives and coalitions can form to advance specific goals. The G20 as a bigger venue could furthermore facilitate a more holistic inclusion of different elements of the global supply chain. Finance is the central topic of the venue, thus, it is especially suitable of furthering sustainable finance topics. At present, there are several windows of opportunity, as progressive countries hold the presidency: The COP 26 that is co-chaired by Italy and the UK, Italy holds the G20 presidency in 2021 and in 2022, the G7 presidency will be hold by Germany.

Generally, expert consultation has shown that from a strategic perspective, those international **venues should not be considered on their own, but could also be approached sequentially**, by, for example, bringing forward an initiative first in the G7, then in the G20 and lastly connect it to the UNFCCC. Furthermore, other organizations, such as the OECD, could serve as catalysts.

Overall, **the analysis points out a range of opportunities** and possible political connections to existing processes. A strategic agenda for the further broadening and strengthening of collaboration in the four key policy areas needs to consider the complexity of the interactions of various political processes and the need to exercise effort at various levels and in different venues for more multilateral cooperation. Each policy area has its specific advantages political constellations and possible leverage points to launch specific new initiatives. Advancing multilateral cooperation on climate change across policy fields thus requires also addressing multiple channels and processes for which this report presents potential starting points.

Zusammenfassung

Bilaterale und multilaterale Zusammenarbeit kann ein wirksames Mittel sein, um die globalen Klimaschutzbemühungen voranzubringen und gemeinsam auf ehrgeizigere Klimaziele hinzuarbeiten. Aus diesem Grund gibt es bereits eine Vielzahl spezifischer Initiativen (oder "Klimaklubs") die eine gezielte Zusammenarbeit zwischen internationalen Partnern anstreben. Dennoch sind **bis 2030 dringend zusätzliche Maßnahmen erforderlich**, um die Ziele des Übereinkommens von Paris einzuhalten.

Dieser Bericht schließt die analytische Arbeit des Projekts "Accelerating global climate action and raising ambitions by 2030" ab. Die Analyse hat konkrete Optionen für zusätzliche Kooperationsinitiativen in den Politikbereichen Energiewende, synthetische E-Kraftstoffe, nachhaltige Ernährungssysteme und Waldschutz aufgezeigt. **In der Analyse wurden die vielversprechendsten zusätzlichen Initiativen ermittelt** im Kontext möglicher Sprungbretter - der Verhandlungen unter der Klimarahmenkonvention (UNFCCC), die G7 und die G20 sowie die klimafreundliche Agenda der Biden-Regierung in den USA.

Zentrale Erkenntnisse sind:

Neue **Initiativen im Energiesektor könnten leichter umgesetzt werden** als in anderen Bereichen aufgrund der Fortschritten in Leistung und Kosten für erneuerbare Energien und der bereits bestehenden Kooperationen in diesem Politikfeld. Insbesondere die Idee einer "Government level initiative for 100% renewables" und die "Supply Side Initiative" könnten anschlussfähig sein zu Initiativen, die bereits von der US-Regierung angekündigt wurden. Das Kommuniqué des G7-Gipfels 2021 mit seinen Formulierungen bezüglich eines Ausstiegs aus der Kohle und die Beendigung der Subventionen für fossile Brennstoffe deutet darauf hin, dass entsprechende energiebezogene Initiativen auch in diesem Kontext Rückhalt finden könnten.

Die **Zusammenarbeit im Bereich der synthetischen** Kraftstoffe steckt noch in den Kinderschuhen; da dieses Thema jedoch weitgehend von Innovation und Forschung bestimmt wird, **kann** es **durch die Betonung der wirtschaftlichen Vorteile politisch attraktiv gestaltet werden**. Darüber hinaus ist es möglich, auf bestehende Strukturen, wie die LeadIT-Initiative, aufzubauen. Dies wäre das Ziel der Idee einer "Hard-to-Abate Sector Partnership" und der "Global Supply and Demand Partnership". Es besteht die Möglichkeit, einen politischen Impuls für eine solche Initiative zu geben, da die USA angekündigt haben, LeadIT wieder beizutreten und sich an der Mission Clean Hydrogen Mission der Initiative *Mission Innovation* zu beteiligen.

Für die Stärkung der internationalen Zusammenarbeit **im Bereich der Forstpolitik gibt es kurz- bis mittelfristig mehrere Möglichkeiten**. Unter anderem bietet der verstärkte Fokus der G20-Länder auf das Ziel der Klimaneutralität die Gelegenheit, die Bedeutung des Waldschutzes und der Wiederaufforstung hervorzuheben. Außerdem hat die italienische G7-Präsidentschaft biologische Vielfalt hoch auf die Tagesordnung gesetzt. Beide Foren könnten als Impulsgeber für potenzielle Initiativen dienen, insbesondere für eine neue Initiative zur verstärkten Beteiligung. Darüber hinaus wäre dies im Einklang mit US-Präsident Bidens Bestreben, die Beteiligung von Minderheiten in Klimafragen zu erhöhen.

Die multilaterale **Zusammenarbeit im Bereich der nachhaltigen Ernährungssysteme muss besondere Hürden überwinden**, da eine Abkehr von einer fleischbasierten Ernährung in der Öffentlichkeit oftmals als unbeliebt gilt. Dennoch wurde das Thema der Reduzierung von Lebensmittelabfällen in die US-Politik und auch in den G20-Prozess integriert, indem das Thema im Kontext der "Ernährungssicherheit" eingebracht wurde. Darüber hinaus hat der VN-Gipfel zu Ernährungssystemen im September 2021 gezeigt, dass das Interesse an diesem Thema gestiegen

ist. Vor diesem Hintergrund scheint die Idee der Initiativen "Ensure 12.3" und "ClimEat-Change", die sich auf die Verknüpfung mit den UNFCCC-Verhandlungen konzentrieren, die größten Aussichten auf Erfolg zu haben.

Die Analyse der potenziellen Sprungbretter hat gezeigt, dass Kooperationsinitiativen die formellen Kanäle der Klimarahmenkonvention nur unter größeren Schwierigkeiten nutzen können, und dieser direkte Weg geringe Erfolgsaussichten hat. Grundsätzlich steht jedoch jedem Thema oder **jeder Gruppe die Möglichkeit offen, die Verhandlungssitzungen der UNFCCC als Treffpunkt und medialem Kristallisationspunkt zu nutzen**, und dabei informeller und halbformeller Kanäle zu verwenden, um Aufmerksamkeit für eine mögliche Initiative zu erregen.

Sowohl **die G7 als auch die G20 sind** aufgrund der geringeren Mitgliederzahl und ihres informellen Charakters **wesentlich flexibler als die UNFCCC** bezüglich der möglichen Nutzung als Sprungbrett für neue Kooperationsgruppen. Während die Einbeziehung aller Mitgliedsstaaten oft politisch nicht zu erreichen ist, können sich in diesem Kontext kleinere Initiativen und Koalitionen bilden, um bestimmte Ziele voranzutreiben. Die G20 als größeres Forum könnte darüber hinaus eine ganzheitlichere Einbeziehung verschiedener Elemente der globalen Lieferkette erleichtern. Darüber hinaus ist die G20 besonders geeignet ist, um nachhaltige Finanzierung als Thema zu platzieren, weil die globalwirtschaftliche Fragen und die Finanzwirtschaft zentrale Themen der G20 sind.

In 2021 und 2022 gibt es potenziell mehrere Möglichkeiten, neue Initiativen zu fördern, da vermeintlich progressive Länder den Vorsitz in relevanten Gremien innehaben: Die COP 26 der Klimarahmenkonvention wird von Italien und Großbritannien gemeinsam geleitet, die G20-Präsidentschaft hat im Jahr 2021 Italien inne und Deutschlands übernimmt die G7-Präsidentschaft im Jahr 2022.

Befragung von Expert*innen haben zudem gezeigt, dass diese **internationalen Foren aus strategischer Sicht nicht isoliert betrachtet werden sollten,** sondern auch nacheinander angegangen werden könnten, indem beispielsweise eine Initiative zunächst in der G7, dann in der G20 und schließlich im Rahmen der UNFCCC eingebracht wird. Darüber hinaus könnten andere Organisationen, wie etwa die OECD, als Katalysator dienen.

Insgesamt identifiziert die Analyse eine Reihe von Möglichkeiten und politische Verbindungen zu bestehenden Prozessen. Eine strategische Agenda für die weitere Ausweitung und Stärkung der Zusammenarbeit in den vier zentralen Politikbereichen muss die Komplexität der Wechselwirkungen verschiedener politischer Prozesse und die Notwendigkeit berücksichtigen, sich auf verschiedenen Ebenen und in verschiedenen Kontexten für eine stärkere multilaterale Zusammenarbeit einzusetzen. Jeder Politikbereich hat seine spezifischen Vorteile, politische Konstellationen und mögliche Hebelpunkte, um neue Initiativen zu starten. Um die multilaterale Zusammenarbeit zum Klimawandel in allen Politikbereichen voranzutreiben, müssen daher auch verschiedene Kanäle und Prozesse berücksichtigt werden, für die dieser Bericht potenzielle Ansatzpunkte aufzeigt.

1 Introduction and background

Bi- and multilateral cooperation can be effective means to accelerate global climate action and increase ambitions, which is why a broad range of specific initiatives for targeted collaboration between international partners exist. This report provides insights on how to further broaden and improve collaboration. The work presented draws on in-depth analysis of four key policy areas (energy transition, synthetic e-fuels, sustainable food systems and forest protection)[2], analysing their interactions and comparing their dynamics of multilateral cooperation. On this basis, it analyses three potential stepping stones for such new initiatives (the United Nations Framework Convention on Climate Change (UNFCCC); G7 and G20 and the Biden Administration in the US) and discusses how to advance specific proposals for multilateral cooperation that have been developed in previous parts of the project.[3]

The following sections describe the underlying rationale and motivation for this work, its overall context and the specific methodology applied to arrive at results.

1.1 Ambition gap for 2030

By ratifying the Paris Agreement, countries have committed themselves to taking action towards the achievement of the long-term temperature goal (LTTG). The Paris Agreement aims at "…limiting temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels…". Governments contribute to achieving this temperature goal through the adoption of emission reduction targets presented in Nationally Determined Contributions (NDCs), which should be updated and increased every five years.

In 2020, countries were expected to submit strengthened targets under the Paris Agreement, building upon the intended NDCs they had communicated in advance of ratification. These initial mitigation pledges had been acknowledged to be insufficient to deliver this long-term goal in 2015. Due to the pandemic-induced delay in the negotiations, some of these submissions were moved to 2021. While some NDC updates include stronger targets, the majority of pledges are still inconsistent with a 1.5°C temperature limit. This means countries have to step up in order to close the emissions gap between where targets take us in 2030 and where emissions would need to be to keep the LTTG within reach. Current warming estimates show that the world is on track for a 2.4°C temperature increase by end of the century. The gap is even larger when only considering the impact of current policies, with the latest estimates from the Climate Action Tracker showing a 2.9°C temperature increase (Climate Action Tracker, 2021a). The most recent UNEP Gap Report (2020) highlighted the continued growth of greenhouse gas emissions, leading to an annual emissions level of 59GtCO_2e in 2019.

The lack of sufficiently strong 2030 targets also has implications for the long-term goal of reaching net zero greenhouse gas (GHG) emissions globally by 2050. This goal will not be achievable unless governments take early and steeper near-term action. The IPCC SR1.5 report shows that the 1.5°C temperature limit is still within reach, but will require urgent action and economy-wide transformational changes. Key characteristics for sectoral transformations include (according to Climate Analytics, 2019).

[2] Previous outputs of the project can be accessed through a central entry page on the website of the Umweltbundesamt at www.umweltbundesamt.de/climate-action-2030

[3] The four policy papers were finalized in late 2020 and early 2021 respectively. The analysis for this report war largely concluded in the first half of 2021. While attempts have been made to update information were relevant and possible, political developments (e.g. conclusion of COP26) and the arrival of new data (e.g. re the amibition gap regarding the Paris Agreement) may make some aspects become outdated soon after publication.

- Large reductions in energy demand across all end-use sectors by 2030
- Large reductions of fossil fuel use and rapid increase of renewable energy
- Full decarbonisation of primary energy supply by mid-century
- Full decarbonisation of electricity generation by 2050
- Electrification of end-use sectors and decarbonisation of final energy other than electricity
- Land use emissions to reach net zero between 2025 and 2040
- Reduction of non-CO_2 emissions from industry, agriculture and waste

The updating of NDCs and development of long-term development strategies presents an opportunity for governments to plan and implement ambitious climate action that is transformational, enabling the 2030 emissions gap to be closed and setting countries well on track for full decarbonisation.

1.2 General context for multilateral cooperation on climate change

The beginnings of the decade have already seen geopolitical turbulences that might affect the international political landscape for years to come, as the COVID-19 pandemic that started in early 2020 is destabilizing economic and political structures across the globe. However, the widespread concern among environmentalists that the virus might bring international climate action to a halt seems to have proven unfounded. At least in Europe, the dynamic is unbroken: in the middle of the pandemic, legislators agreed on a new overarching legal framework that increases the existing 2030 climate target and makes climate neutrality by 2050 a binding objective for the EU as a whole (European Council, 2021). Also, a significant share of the recovery funding in the EU should go specifically to climate action (European Commission, 2021a), in the spirit of "building back better" after the economic downturn.

Momentum in internal climate cooperation was accelerating in 2021, greatly advanced by the new US administration, which is positioning itself as one of the main driving forces of climate cooperation on the international level. President Biden's stance on climate issues could not be more different from his predecessor's: he re-joined the Paris Agreement, convened the Leaders' Summit on Climate and raised the US's climate targets. The US's re-engagement, as well as the increase in pledges of several other big actors –including China, the EU, Japan and the UK- raise hopes for future cooperation. Nevertheless, the tensions between the US, Russia and China continue to rise, as the G7 Meeting in May 2021 has shown (Piper et al, 2021). This prompts the question: will the large economic powers be able to cooperate on the climate issue in spite of strained relationships?

The central venue for increasing climate ambition is the UNFCCC, through the processes established under the Paris Agreement that should ratchet up contributions over the time. The remaining ambition gap proves that the ultimate success of the framework still remains unverified. However, the process itself is in motion, and several countries have made updated NDC submissions in 2020 and 2021 (Climate Action Tracker, 2021b). The outcome of COP26 will provide further insight as to whether the international community is living up to the spirit of the Paris Agreement. One way or another, additional action is necessary and some of it may have to be organized and coordinated among interested parties collaborating on specific multilateral initiatives, as is the subject of this report.

1.3 Project background and methodology

Motivation for the project was the clear need for additional action – supplemental to and in support of efforts being triggered by the Paris Agreement – to make further progress in filling the ambition gap. Thus, the tasks of the project were to develop specific ideas for new multilateral cooperation initiatives with a focus on the G20 and to engage an expert audience to create a science-based input to relevant political and climate diplomacy processes.[4]

In the growing body of literature on such "groups of common interest" that come together to advance specific issues related to climate action, they are called climate clubs, which by definition have a less than global membership. They are defined as 'a small group of actors (that) take action outside the climate regime' (Falkner et al. 2021) and 'develop solutions on a global level' (Unger and Thielges 2021). They are largely seen as a 'friendly competition' to the UNFCCC and could – ideally- breathe life into the UNFCCC process (Unger and Thielges 2021). These multilateral climate clubs take on a variety of forms and functions: Facilitating dialogue, enabling negotiations for binding targets or involving a variety of governance levels (Falkner et al. 2021). Relevant in the context of this paper is also the potential of climate clubs for increased sectoral engagement (see Obergassel et al. 2019), as several of the proposed initiatives in this project coincide with this idea.

The first step of the project summarized existing analyses of technical mitigation options and developed criteria for the selection and evaluation of existing multilateral initiatives. The former was captured in the background paper "Key mitigation options to close the global 2030 ambition and action gap" (Fuentes et al., 2020), which includes an overview of technical mitigation options discussed in the current literature that can contribute to closing the ambition gap. It served also as a basis for identifying key policy fields for advancing global cooperation efforts. The evaluation criteria for the initiatives was defined in a second background paper „Methodology and criteria for assessing multilateral initiatives to close the global 2030 climate ambition and action gap"(Böttcher and Cames, 2021), which described the methodology for the assessment in further detail. On the basis of this methodology, analysis was carried out for four policy fields - energy transition (Görlach and Fuentes Hutfilter, 2021), synthetic e-fuels (Cames et al., 2021), sustainable food systems (Wunder et al., 2021) as well as forest protection (Böttcher et al., 2021) and captured in separate policy papers. For each of the policy fields, promising initiatives for intergovernmental cooperation among G20 countries and other actors were identified. These were discussed with experts from the four fields in separate virtual workshops before finalisation.

This report concludes the project's analytical work. It first synthesizes the policy area analysis (Chapter 2) and integrates its insights into a comparative assessment of their interactions against a set of key parameters (Chapter 3): real-world interactions, common gaps and weaknesses in existing cooperation efforts, venues and countries involved. On that basis, three potential stepping stones for additional climate initiatives were chosen for further evaluation (Chapter 4), discussing the possibility of some of the ideas for new initiatives being realised in these specific contexts. Based on the analysis of these three examples of supportive venues or political opportunities, the report concludes with a summary of the main insights generated.

[4] The project's outputs can be accessed through a central entry page on the website of the Umweltbundesamt at www.umweltbundesamt.de/climate-action-2030

2 Status quo of multilateral cooperation in the four policy areas

The following chapter presents a short overview of the four policy areas that have already been analysed: energy transition; synthetic e-fuels; sustainable food systems; and forest protection (see Görlach and Fuentes Hutfilter, 2021; Cames et al., 2021; Wunder et al., 2021; and Böttcher et al., 2021). Each section covers the state of play of multilateral cooperation in each policy area, including main gaps and the G20 countries most involved. Possible additional initiatives are developed for each policy area, which are the subject of further analysis in this report. An overview of the names of these ideas for additional initiatives is provided in table 1 below.

This information sets the stage for the analysis of the overlap between the policy fields in the following chapters 3 and 4.

Table 1: List of ideas for new initiatives developed in the four policy papers

Energy Transition	Synthetic e-fuels	Food systems	Forest protection
ET1: Global initiative for a Green Recovery (GIGR)	SF1: Global supply-demand-partnership (GSDP)	FS1: Biting back better	FP1: Options for increasing participation
ET2: Supply-side initiatives (SUPPLY)	SF2: Sustainable e-Kerosene Alliance (SeKA)	FS2: ClimEat-Change	FP2: Options for transparent monitoring
ET3: Government-level initiative for 100% renewables (Full-RE)	SF3: Sustainable e-fuel Alliance for Maritime Shipping (SeAMS)	FS3: Nutrition Guidelines for Future	FP3: Options for increasing private sector engagement
ET4: Dedicated institution for Energy Efficiency (IEENA)	SF4: Hard-to-Abate Sector Partnership (H2ASP)	FS4: Ensure 12.3	FP4: Options for increasing consistency of national targets
ET5: Alliance targeting the non-usual suspects (ABUS)			FP5: Options for green COVID-19 recovery

2.1 Energy Transition

2.1.1 Overview

The global energy transition is the **backbone of the fight against climate change**, as the development of zero carbon energy and a reduction in energy consumption will be essential for the successful decarbonisation of several key areas of the economy, like building, transport and industry.

The energy transition is **well established** in international politics as an area for multilateral cooperation. There is already an ever-expanding set of international organisations, initiatives, networks, partnerships, alliances and agencies, including several UN-led initiatives that address issues related to energy transition, and in particular the **promotion of energy efficiency, the uptake of renewable energies, access to energy and the phase-out of fossil fuels** (Sanderink, 2020). Out of those areas, especially the expansion of renewables has received attention, with the creation of IRENA as a dedicated agency in 2009. However, the phase-out of

fossil fuels has proven to be politically contentious, hence international cooperation in this area is subdued. Moreover, in the area of energy efficiency international cooperation is losing momentum, with initiatives being discontinued or awaiting an uncertain fate. This shows that there is still a need to broaden the field of countries engaging in multilateral cooperation.

2.1.2 Key G20 countries

The degree of engagement among G20 states on energy issues is broad - a few G20 Members have joined virtually all initiatives, whereas several G20 Members are involved in very few of them. Some central actors and actor groups for the success of international cooperation are:

- Countries that are fossil fuel dependent, such as **Chile**, **Germany**, **Canada**, **Japan** and the **UK**, that have had the realization that the shift away from fossil fuels is inevitable and are therefore open to expand upon multilateral cooperation tackling their supply.
- Countries that are reluctant to participate in the phasing out of fossil fuels, for example **Australia**, **China**, **Indonesia** and the **US**. However, in case of the US, there are some signs that the new administration will be more open towards a transition away from fossil fuels.
- Countries that are so-called 'hard nuts' (Görlach and Fuentes Hutfilter, 2021) , such as **Saudi-Arabia** and **Russia**, which are not convinced about the need to decarbonize, and for which (as exporting countries) a move away from fossil fuels would question their economic development model in its entirety.
- **Brazil** is in a unique position due to its abundance of natural resources. Even though it has one of the highest shares of renewable energy among G20 countries and has developed a considerable market for renewables, (IRENA, 2020), its current government has been less engaged in energy-related initiatives in recent years and voiced criticism against the Paris Agreement.

2.1.3 Proposed initiatives

The following ideas for new multilateral initiatives could stimulate additional collaboration. These ideas have been developed in a previous part of the project (see Görlach and Fuentes Hutfilter, 2021).

- **Global initiative for a Green Recovery:** This proposed initiative would foster exchange on COVID-19 recovery efforts and their alignment with the goals of the energy transition, and possibly provide coordination on some aspects. It would represent a unique opportunity with potentially high impact, yet would need to be enacted soon.
- **Supply-side initiatives**: This initiative would provide for engagement and exchange on strategies to reduce the supply of fossil fuels and to manage their consequences, including finance, just transition and re-aligning fossil value chains. The formation of a club of countries that have accepted the challenge of transforming their energy systems aiming for a fully renewable energy supply could send a strong signal.
- **Dedicated institution for Energy Efficiency:** This initiative could reignite political momentum for energy efficiency and fill the current void in the international policy sphere, possibly as an institution dedicated solely to promoting energy efficiency – an international energy efficiency agency.

- **Government-level initiative for 100% renewables:** similar to the existing club of private companies that have committed to a fully renewable electricity supply, this initiative would bring together states and sub-national entities that commit to such targets, as a knowledge forum for the challenges of transitioning to a fully renewable energy supply.
- **Alliance targeting the non-usual suspects:** This initiative would specifically target the countries that are less well represented in existing initiatives, by offering a framing and focus that is more commensurate with their political priorities and national circumstances.

2.1.4 Connection to ongoing processes

The G20 already has several links with the energy policy area, which could be used to stimulate debate on additional or expanded collaboration on one of the initiatives proposed.

- **Several energy related initiatives** have their origin in the G20 processes. They rarely achieve coverage of all members, but often involve up to three quarters of member states.
- **Stakeholder Engagement Groups**, such Cities 20, Business 20 and Think 20, give recommendations, including on the energy transition (Global Solutions, 2021).
- There is an **Energy Transitions Working Group** (ETWG), which will hold its sessions together with the Climate Sustainability Working group in 2021. They prepare, inter alia, for the Climate and Energy joint ministerial meetings (G20 Italia, 2021a).
- The most recent relevant programme is the '**G20 Hamburg Climate and Energy Action Plan for Growth'**, in which all G20 states -except the US- lay out measures for implementing the Paris Agreement and the Agenda 2030 (G20 Germany, 2017).
- **IRENA** is involved in G20 discussions but does not implement policy programs or plans.

In recent years climate policy has proven to be contentious, especially the phase out of fossil fuels. Hence, energy efficiency has long been a priority of the G20, as the topic has been less delicate than other aspects of climate policy and can be framed as means of promoting innovation and investment. Moreover, President Biden's first year in office showed that he is willing to advance the topic even further.

2.2 Synthetic e-fuels

2.2.1 Overview

The use of synthetic fuels is essential to achieve full decarbonisation of economies, especially where options for direct electrification of demand sectors are limited. In this context, synthetic fuels including hydrogen generated from renewable energy, so called electro-fuels or e-fuels, open the possibility of indirect electrification. At the same time the generation of such e-fuels can support integration of variable renewable energy (RE) and thus the transition to 100% renewable electricity supply providing options to enhance flexibility and reliability (Fuentes et al., 2020). Fuentes and colleagues (2020) identified an emerging policy area focusing on so called "hard-to-abate" sectors such as some industry processes, especially chemical industry, and freight and long-haul transport, where synthetic fuels produced from green hydrogen (from electricity generated with RE) play an important role. This policy area has been gaining momentum based on dynamic technology advances including technologies to produce hydrogen (electrolysers) and is therefore emerging as a key policy area for the achievement of long-term mitigation targets (Fuentes et al., 2020).

2.2.2 Key G20 countries

- Some countries striving to switch to hydrogen-based drives in road traffic (Japan).
- Hydrogen discussed as a seasonal storage and as an energy source for exporting RE from countries with high potential (Australia, Argentina, Saudi Arabia) to countries with lower potential and high demand (Japan, Korea).
- Strategic alliances between G20 countries for development of post-fossil fuels (e.g. Germany, Brazil, Argentina, Australia).
- Initiatives between G20 and non-G20 countries (e.g. Germany with Morocco referred to in the German National Hydrogen Strategy).

2.2.3 Proposed initiatives

In a previous part of the project, we developed and sketched four potential new initiatives aiming at accelerating the global uptake of synthetic e-fuels (see Cames et al., 2021). Three of these initiatives focus on one of the "hard-to-abate" sectors while the first initiative aims at integrating supply and demand for and from all these sectors:

- Global supply-demand-partnership (GSDP): The initiative would establish global supply and demand chains for e-fuels.
- Sustainable e-Kerosene Alliance (SeKA): The initiative would establish a global continuously increasing e-fuel mandate in the aviation sector.
- Sustainable e-fuel Alliance for Maritime Shipping (SeAMS): The initiative would aim to establish a GHG reduction certificate system with continuously increasing reduction requirements.
- Hard-to-Abate Sector Partnership (H2ASP): The initiative would aim to leverage LeadIT knowledge brokerage to achieve more specific commitments aiming at investments shifts.

2.2.4 Connection to ongoing processes

- The Global Supply and Demand Partnership should be pursued with high priority as a new initiative under the G20 and the other three options could be integrated into the GSDP.
- Both, the Sustainable e-Kerosene Alliance and the Sustainable e-fuels Alliance for Maritime Shipping could spur and accelerate existing discussions on the increased uptake of synthetic e-fuel in aviation and maritime transport under the International Civil Aviation Organisation and International Maritime Organisation, respectively.
- The Hard-to-Abate Sector Partnership could build on and increase the momentum of existing initiatives with the view to enhance the uptake of synthetic e-fuels and/or hydrogen in industrial sectors such as steel, cement and certain chemicals, particularly in developing countries.

2.3 Sustainable food systems

2.3.1 Overview

The food system area is a necessary component in reaching carbon neutrality by the middle of this century, as almost a quarter of global greenhouse gas emissions are related to food

production and consumption (IPCC, 2019). Furthermore, a shift in the food system also has the potential to unfold many other positive sustainability impacts, such as improved public health and increased resource efficiency. Within the transformation towards sustainable food systems, two aspects stand out as having a large climate mitigation potential, which is why they were the focus of the analysis: (1) Reducing food losses and food waste and (2) a dietary shift towards diets that are rich in plant proteins and low in animal products. However, there are still relatively few -and generally rather young- initiatives that deal with those topics. While policies that aim to reduce food loss and waste have a higher political acceptance and have led to a number of policy interventions since 2011, the year the FAO presented the first estimate on food loss and waste (FLW), the climate potential of reducing the consumption of animal-based foods remains a more or less neglected policy area. Attention for the opportunities for food system change has grown in recent years, but food system thinking is not yet mainstreamed in sectoral policies. Also, climate policies and initiatives are not (yet) a driver of food system transformation.

2.3.2 Key G20 countries

- **Brazil, US, ARG** have a strong protein-rich food production for domestic consumption and export and, correspondingly, a livestock sector with significant influence. At the same time, there is a high potential for reducing emissions through shifting diets. Nevertheless, these countries have been opposing the 'sustainable' diet framing in the past.
- **Germany** is part of some relevant initiatives and is also leading the "MACS-G20 Collaboration Initiative on Food Losses and Waste". There are domestic impulses pushing for international cooperation on the topic, such as a resolution published by the State Secretary Committee for Sustainable Development (a group of state secretaries from all federal ministries) in summer 2020, expressing the need to develop a common concept for sustainable food systems.
- **EU, UK and France** are the countries that are advancing the topic of a holistic food system approach, as they started to design national policies tackling the topic. The EU is taking on a pioneering role with its 'Farm-to-Fork' strategy. Nevertheless, even this ambitious strategy is still leaving out the topic of dietary change.

2.3.3 Proposed initiatives

The following ideas for new multilateral initiatives could stimulate additional collaboration. These ideas have been developed in a previous part of the project (see Wunder et al., 2021).

- "**Biting back better**": The setting up of a new international institution including a secretariat that assists in building appropriate national frameworks/ national strategies with a food system approach. It would organize exchange among countries and be assisted by a scientific advisory body akin to the Intergovernmental Panel on Climate Change (IPCC).
- "**ClimEat-Change**": An initiative to strengthen a food system approach in international climate policy and to make international climate policy a driver for food system transformation. To do this it would work through existing processes of the UNFCCC, such as the Nationally Determined Contributions (NDCs) of countries, the NDC Partnership, the Koronivia Joint Work on agriculture (KJWA) and could use the COP26 in Glasgow and the "Glasgow Food and Climate Declaration" that was launched in 2020.

- "**Nutrition Guidelines for Future**": A multilateral collaboration and exchange mechanism on how to implement and locally adapt the Planetary Health Diet requirements into National Dietary Guidelines (NDG).
- "**Ensure 12.3**": An initiative to set up an international food loss and waste accreditation scheme that helps to measure and manage FLW all along the value chain and allows policy makers to make better-informed decisions.

2.3.4 Connection to ongoing processes

- The way food systems are included in the G20 process in 2021 is through the topic of 'food security' and 'food-system resilience' in the context of the agricultural meetings (G20 Italia, 2021b). Thus, food loss and waste is also included in the discussion, according to Italy's Deputy Minister for Foreign Affairs and International Cooperation. Additionally, a cooperation with the FAO's 'Food Coalition' has been announced (FAO, 2021).
- National Dietary Guidelines in the G20 are not in line with the recommendations of the Planetary Health Diet and are not compatible with climate targets (Loken and DeClerck 2020).
- A G20 resolution could introduce the setup of a support mechanism, such as the institution proposed through the 'Biting Back Better' initiative or the 'Ensure 12.3' initiative.
- **Stakeholder Engagement Groups**, such Cities 20, Business 20 and Think 20, give recommendations, including on food security (Global Solutions, 2021).

2.4 Forest protection

2.4.1 Overview

In 2020 land use change, in particular forest conversion to other land uses, made up about 15 % of global anthropogenic CO_2 emissions (Global Carbon Project, 2020). However, the majority of mitigation pathways consistent with the 1.5°C temperature limit of the Paris Agreement (PA) achieve net zero CO_2 emissions from land use between 2025 and 2040 (Fuentes et al., 2020). This requires a steep reduction in emissions from deforestation alongside policies to conserve and restore land-based carbon stocks and protect natural ecosystems. A key challenge is the need to balance many competing demands for land: food production, human settlement, bioenergy and raw material supply, carbon sequestration, maintenance of biodiversity and other ecosystem services. Importantly, this sectoral transformation must not be used to offset the necessary fast decarbonisation of energy systems in order to reach an emissions pathway that is consistent with the PA 1.5°C temperature limit (Fuentes et al., 2020).

2.4.2 Key G20 countries

- The G20 countries Argentina, Australia, Indonesia and Brazil have high deforestation rates due to the high demand for timber production and agricultural expansion (Climate Transparency, 2019).
- Consumer countries, like US, EU, UK, China and others, need to address drivers of deforestation through making supply chains more sustainable and lowering land-based emissions.

- Germany together with other G20 member states strongly supports initiatives such as the Bonn Challenge which aims at globally restoring forests on 150 million ha of land by 2020 and 350 million ha by 2030.
- EU has established a policy framework to tackle illegal logging and related trade (called FLEGT).

2.4.3 Proposed initiatives

To close these gaps, we have developed and sketched out five sets of options for accelerating forest protection and restoration in a previous part of the project (see Böttcher et al., 2021).

- Increasing stakeholder participation, resolving land tenure issues and reducing information imbalances to improve ownership ("Options for increasing participation");
- Establishing a facility for providing a consistent global reference data set of land use emissions for reconciling national data and supporting the development of transparent national monitoring systems ("Options for transparent monitoring");
- Aligning jurisdictional approaches with certification and supply chain management standards to enhance private sector engagement and support longer-term commitments ("Options for increasing private sector engagement");
- Encouraging countries for coherent forest protection and landscape restoration pledges and improving representation of land use in NDCs ("Options for increasing consistency of national targets");
- Combining COVID-19 recovery with policies for forest protection and restoration to promote no-regret options ("Options for green COVID-19 recovery").

2.4.4 Connection to ongoing processes

Options do not constitute isolated blocks of activities. Instead, they should be regarded as teeth of a chain wheel that need to work together to make transformational change happen. There are several opportunities for international processes for taking up the suggested options:

- COP26 is considered to be decisive for governments to strengthen their contributions to the Paris Agreement. The event will already be used by several initiatives for gaining attention. Further, the UNFCCC campaign Race To Zero is an attempt to gather leadership and support from businesses, cities, and regions to build momentum for the decarbonisation of economies (UNFCCC, 2021a). Efforts should be spent to enhance multilateral cooperation, especially on options for increasing consistency and ambition of national targets.
- The UK plans to introduce a law to ensure that the supply chains of larger companies and their products are free from illegal deforestation. There could be a fueling effect for ambitious targets on reducing deforestation in supply chains by the rivalry of UK and EU after Brexit.
- Climate neutrality targets have been formulated recently by a number of G20 countries. Definitions and the role of forests in climate neutrality targets could be a concrete topic of bilateral exchange and cooperation.
- The COP15 meeting of the UN Convention on Biodiversity and the Shanghai Expo should be used as an opportunity to engage with China for a move towards sustainable supply chains

for key commodities. This could be through a South–South cooperation strategy with developing countries that are key exporters to China.

3 Interactions: Conflicts, trade-offs and synergies between policy areas

This chapter discusses the interactions between policy areas and the dynamics of the respective multilateral cooperation. The chapter starts with an assessment of interactions and linkages between the policy areas and resulting synergies and trade-offs that may occur. Subsequently, common gaps in multilateral cooperation are identified and compared. Lastly, it is analysed how the G20 countries and venues for international cooperation relate to the four policy areas. The insights gained from this chapter feed into the identification and in-depth analysis of relevant examples for further assessment.

3.1 Interactions and linkages

Implementing options for multilateral initiatives to close the global 2030 climate ambition and action gap is expected to generate synergies (mutually reinforcing positive effects) and trade-offs (accepting some negative effects) between them. Such interactions and linkages are more likely with a higher overlap of policy fields. Particularly in the land-use sector, trade-offs frequently arise. For example, increasing demand for energy from biomass reduces the land available for the protection of ecosystems or food production, and vice versa. Effects like these can become relevant at local and national level but can also, through international trade, affect other regions of the world.

Synergies and trade-offs between mitigation options have been identified by IPCC AR5 (IPCC 2014) that stated that a multi-objective approach to policy-making can help to manage them. Linkages between mitigation options and SDGs were more explicitly documented by IPCC SR 1.5 (e.g. de Coninck et al 2019) and IPCC SR Land (e.g. Smith et al. 2019) regarding land-related interactions. Based on such overarching literature we identified the following most essential overlaps and fields of interactions between the four identified policy areas:

- Competing land uses;
- Rural development and land tenure;
- Health and environment;
- Role of e-fuels in energy transition.

The following tables present more concrete examples of the main interactions and their nature.

Table 2: Field of interaction: Competing land uses

Policy areas interacting	Interaction	Synergies	Trade-offs
Synthetic e-fuels Energy transition Forest protection	Bioenergy production	Synthetic e-fuels can lower demand for biomass for biofuels and thus free land for other biomass production or nature protection	Synthetic e-fuel production on the basis of biomass but also other renewables could increase land competition with other uses of biomass or forests
Energy transition Forest protection	Charcoal production in Central and West Africa (Keenan et al., 2014)	Charcoal demand can lead to investments into restoration of degraded areas	Charcoal production can lead to deforestation and forest degradation.

Policy areas interacting	Interaction	Synergies	Trade-offs
Food systems Energy transition Forest protection	Reduction of consumption of land-intensive food	Reduced food waste/loss and change in diets can free agricultural land and reduce deforestation with benefits for biomass production or restoration and biodiversity protection	None
Forest protection Food systems	Agroforestry	Agroforestry can increase agricultural productivity (Brown et al, 2018) Agroforestry can diversify income sources	Reduces area that can be cropped, smaller scale management can decrease efficiency

Table 3: Field of interaction: Rural development and land tenure

Policy Areas interacting	Interaction	Synergies	Trade-off
Forest protection Food systems	Improved conditions for land tenure	Securing the land tenure status of farmers and forest owners can improve rural economic and environmental conditions	None
Forest protection Food systems	Rural development	Rural development can improve working conditions and support sustainable and fair agricultural and forestry production	Improved infrastructure and higher cost-efficiency of sustainable and fair production can create market pull

Table 4: Field of interaction: Health and environment

Policy Areas interacting	Interaction	Synergies	Trade-off
Forest protection Food systems	Protected forests as food sources	Forest protection maintains forests as food sources, especially important in indigenous communities	None
Forest protection Energy transition	Improved cooking stoves	Improved cooking stoves and fuel switches from biomass to gas or electricity improve health conditions and reduce pressure on forests	None

Table 5: Field of interaction: Role of e-fuels in energy transition

Policy Areas interacting	Interaction	Synergies	Trade-off
Synthetic e-fuels Energy transition	Sector coupling	E-fuels support decarbonisation of sectors that are hard to electrify (esp. aviation, shipping and some industries)	Focus on e-fuels might give an excuse to put off electrification/ renewables expansion

Policy Areas interacting	Interaction	Synergies	Trade-off
Synthetic fuels Energy transition	E-fuel production	Pushing for 'green' hydrogen supports the establishment of more renewables energy	Risk that hydrogen is partly produced from fossils
Synthetic e-fuels Energy transition	Carbon for e-fuels	Certain synthetic e- fuels require a carbon source that could be provided by biomass used for electricity or heat supply in the energy transition	Increasing demand for biomass can have risks for sourcing areas

Most interactions and linkages were found to be related to competing land uses. All four policy areas are interacting through land demand and occupation in one way or the other, making it a central topic of concern with largest challenges.

Interactions and linkages between options can both have an enabling but also a hindering effect. Careful design of policies is needed to make use of synergies and address trade-offs. This requires a coherent planning of policies and measures involving stakeholders in each policy field.

3.2 Horizontal themes that create interaction between policy fields

This section provides an overview over horizontal themes that are cross-cut all four policy areas and ways in which synergies and trade-offs emerge through them.

Table 6 Horizontal themes - Synergies and Trade-offs

Synergies	Trade-offs
(Sustainable) finance	
Sustainable finance policies (e.g. EU Taxonomy) can create synergies between different policy areas (e.g. sustainable agriculture and forestry through agroforestry projects)	Policy areas with a higher revenue stream might get disproportionally high funding (e.g. renewable energy versus forest protection options) Politically attractive options might receive funding more easily (e.g. the reduction of food loss and waste in comparison with projects supporting a dietary shift)
Covid19 pandemic/ Green recovery	
National recovery budgets might support green projects/Green recovery efforts may be steering financial systems into a more sustainable direction (e.g. more investments into nature-based solutions)	Budget cuts might decrease efforts in some policy areas (e.g. reduced forest protection) Overall economic downturn might reduce investments by private and public sectors in general
Certification systems (for sustainable supply chains)	
Certification systems can help to assure that various policy areas are considered in production processes (e.g. sustainability criteria for e-fuels or for biofuels that consider forestry feedstock)	Certification systems might divert sustainable products to markets covered by certification, reducing sustainability for other regions or markets (leakage effects)
Carbon market mechanisms	

Carbon market mechanisms can connect policy areas and thus increase understanding/ cooperation Carbon market mechanisms can provide funding for more sustainable practices (e.g. integrated agroforestry systems)	Carbon market mechanisms might lead to postponing progress in one policy area for investments in another (e.g. CORSIA scheme, offsetting aviation emissions instead of focussing on e-kerosene) Weak standards of carbon market mechanisms might reduce environmental integrity of options (e.g. insufficient consideration of non-permanence of avoided deforestation credits)
International trade	
Change in trade patterns might lead to a reduced environmental impact in countries producing goods for export (e.g. less protein rich food consumption in Europe lead to less deforestation in Brazil)	New dependencies and vulnerabilities might develop through the expansion of policy fields (e.g. Germany's dependence on Morocco for hydrogen production/ transit countries such as Mexico gain importance (O'Sullivan et al. 2017)
Legality and good governance	
Initiatives that aim at ensuring legality and improving governance of traded goods (e.g. EU FLEGT addressing legality of traded timber) can support legality for other products and value chains	Initiatives aiming at ensuring overall legality and improving governance might take longer and delay progress in specific policy fields

There are a number of horizontal themes establishing interlinkages between policy fields. Identifying synergies and trade-offs that these themes might have for policy areas can help pushing multilateral cooperation. Support for more general themes that are politically easier to promote can provide leverage for more specific initiatives. Especially themes like sustainable finance and certification for sustainable supply chains are potential vehicles for promoting activities under all four policy areas.

3.3 Comparing gaps found in multilateral action across policy fields

The analysis of international cooperation in the four policy areas identified reoccurring gaps and proposed potential solutions, which are briefly summarized in this subchapter.

3.3.1 Existing international cooperation initiatives need to include additional actors

Not all of the important stakeholders are currently represented in international initiatives. Thus, these stakeholders should either be included in existing initiatives or even participate in the international policy arena through the creation of new initiatives. For example, private companies could engage in forest initiatives to get a better understanding of the options of reducing their impact on global forests. In the field of synthetic e-fuels, the creation of a new initiative for the aviation sector could further transformation in the sector; suggested is a Sustainable e-Kerosene Alliance (SeKA).

Similarly, there has also been **a lack of inclusion of relevant governance levels** in some of the areas. For instance, in the food systems policy area, there are still few national governments pushing collaboration on food system transformation and, correspondingly, there is little cooperation between the national and the international level. Therefore, an initiative to enable multilateral cooperation on National Dietary Guidelines is proposed, called the 'Nutritional guidelines for future' initiative.

Apart from the inclusion of additional stakeholders, some policy areas are **lacking international, independent bodies** as a central interface for international action. For instance,

the food systems cooperation would greatly benefit from a dedicated scientific body on food systems that assists on building national frameworks and strategies. Furthermore, an international hub for data providers on forests would facilitate cooperation in the field.

3.3.2 There are missing links between existing cooperation to central international processes

Almost all policy field analysis called for a **stronger link between multilateral initiatives to the UNFCCC processes**. The process is essential for increasing the visibility and level of engagement for specific topics or initiatives. The channels available to influence the UNFCCC range from formal, such as the official agenda of the conference of parties (COP), to the informal, for example the networking events of the COP. However, using the UNFCCC to advance a cause could also come with certain downsides, as the process is already sluggish due to the width of topics discussed and the number of actors involved (for a more fleshed out analysis, see Chapter 4.1).

As the G20 countries are central to all policy areas, **the lack of connection to the G20 processes** was identified as a gap in most of them. The G20 process could be used as a stepping stone to further a cause, for example by connecting new alliances to the process, such as the proposed Sustainable e-Kerosene Alliance, or by using the procedural channels of the G20 meetings, like the engagement groups, to propose action items (see also 4.2).

Next to the connection to already established institutions, there is also the **need for a stronger tie of existing cooperation to the Green Recovery processes** currently happening all over the world. The window of opportunity is most likely short, which is why it is important to act in a timely manner. For instance, there could be increased efforts to direct the finance streams stemming from the recovery programs towards nature-based solutions.

3.3.3 Elements missing in the existing initiatives: certain topics, policy measures, and targets

In all areas, there **were gaps to be found in the thematic coverage**. An arguably essential piece was missing from the synthetic e-fuels policy area with the lack of initiatives focussing on synthetic e-fuels, not just on hydrogen. Another crucial gap could be found in the field of food systems: most policy agendas leave the topic of dietary changes out, most likely due to political resistance and low public support.

Similarly, in some fields a holistic perspective is missing; **not the whole supply chain is included in existing initiatives.** This is why in the synthetic e-fuels field, the creation of a supply and demand initiative is proposed, coupled with sustainability criteria.

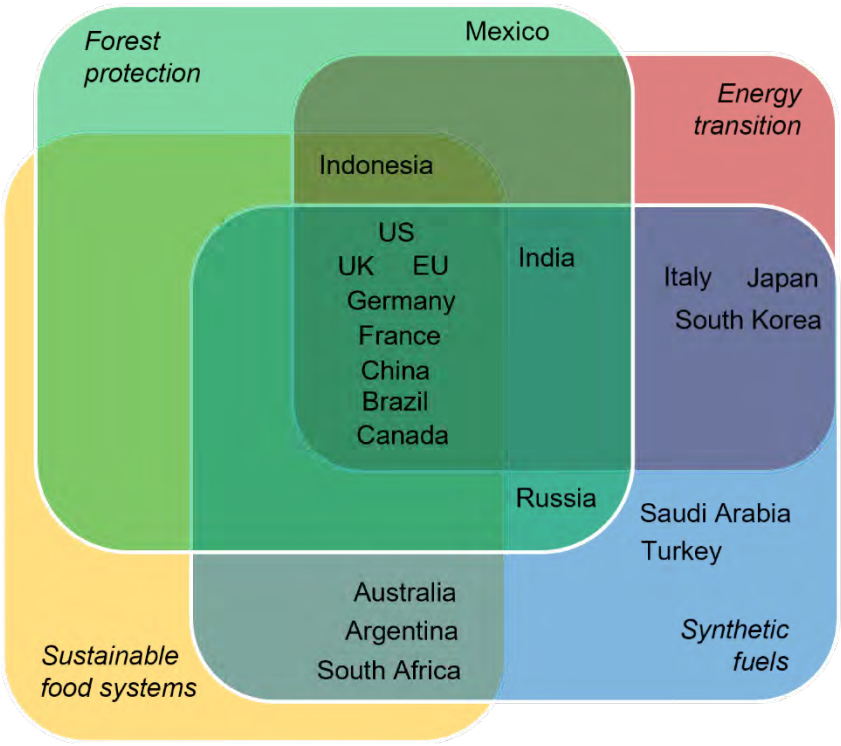
Additionally, in some fields, initiatives do **not use all available policy instruments.** This is especially relevant in the food systems area, where the focus is too strongly on soft measures, largely excluding financial and regulatory framework. Another example can be found in the forest policy field, whose initiatives should more strongly include jurisdictional approaches in their work. Similarly, **concrete targets are missing** in some areas, such as the almost complete absence of targets for synthetic e-fuels or reduction of meat consumption in international cooperation. Such additional targets could be introduced through the NDC process.

3.4 Key countries

In this section, we analyse key G20 countries with high involvement or relevance in the policy areas to develop an overview over their policy positions. Relevance can be created through a

country's declared position in a policy field, its engagement, its role as producer or consumer and its natural endowment. The list of countries is formed by the results of the four policy papers that analysed policy fields in detail.[5] Figure 1 provides the results of the analysis in a graphical format. The aim is to assess in which ways countries are promoting or hindering progress in the policy areas.

Figure 1: Visualization of G20 countries in relation to their relevance for specific policy areas



Source: own illustration, Öko-Institut

G20 countries that are found to be **relevant for all four policy areas**, are US, UK, EU, China, Brazil and Canada. In the **US,** President Biden has recently put forward an executive order committing to the 30% target and establishing a Civilian Climate Corps Initiative that tackles deforestation and carbon sequestration through agriculture (US Federal Register, 2021a). The US were –up until recently- opposing the coal phase-out in the G20 process. The Biden administration is sending clear signals that this position is changing. The country is developing a national hydrogen strategy and is participating in hydrogen initiatives. Currently it is unclear whether the country will more strongly engage in sustainable food systems. This is a policy field to be advanced. For an elaboration of the role of the US, please see section 4.3 below.

Both, **EU and UK** are pushing for progress in all four policy areas. The group includes several 'enlightened' fossil fuel producers, such as **Germany**, the Netherlands, Norway and the UK. The EU has a comprehensive policy program for renewable energy for which the European Commission recently proposed a revision (European Commission 2021b), a hydrogen strategy (European Commission, 2020a) and is dominant in the *LeadIt* initiative. The EU is also one of the few actors advancing the cooperation on sustainable food systems (European Commission, 2020b). Especially Finland, Norway, Sweden, **France** but also the UK are developing (supra-) national policies in this field.. Germany, The Netherlands, Denmark, France but also UK and

[5] The project's outputs can be accessed through a central entry page on the website of the Umweltbundesamt at www.umweltbundesamt.de/climate-action-2030. These serve as the source material for country-specific information in this section if not otherwise indicated with a separate reference.

Norway are collaborating to achieve 'deforestation-free supply chains' through the Amsterdam Declarations Partnership.

China as a large fossil fuel producer recently declared that it will start cutting coal consumption. This change in policy opens a window of opportunity for investments the country makes in other regions. China is heavily investing in renewable energy in African countries but has itself limited capacities to produce renewables and synthetic fuels. Being one of the biggest roundwood importers and producers, it has introduced the Forest Law amendment to include a nationwide ban on illegally sourced timber and increased traceability (ClientEarth, 2020). China has made substantial progress in restoring its own forests after a phase of overexploitation and forest degradation. Regarding the policy field of sustainable food systems, China is opposing the sustainable diet rhetoric in the development of international guidelines but has a high potential for GHG mitigation through shifting diets.

Brazil's current government is critical of the Paris Agreement. The country has a high synthetic fuel potential (Bracker and Timpe, 2017). However, it has also the highest deforestation rates and land use related emissions of the world. This is despite the fact that Brazil has an effective monitoring system for detecting deforestation that is necessary for establishing sustainable supply chains. As a larger bovine meat producing country, Brazil has a strong interest in sustainable food production but currently opposes the sustainable diet rhetoric in the development of international guidelines.

Canada launched the Powering Past Coal Alliance together with UK in November 2017 (COP23) and is also engaged in the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE) like other G20 member states. It is a larger supplier of timber to US and EU markets and similarly advanced in the revision of its National Health Guidances. It can therefore be considered a relevant actor in all four policy areas.

Some countries are **allocated to just two to three policy areas**. **India** would be an important actor to activate in a government-level alliance for 100% renewables given its leadership role and the importance of a transition in South and Southeast Asia. An important element of such an initiative is supporting the change of narrative away from perceptions such as "cheap, reliable coal", "clean coal" vs. renewable energy that is portrayed as expensive and yet unreliable and hard to integrate, an ideal that is particularly prevalent in Asia. It could also address the practical barriers and learning lessons from best practice at national, sub-national and regional level and a strong linkage to the benefits for sustainable development. India is also active in initiatives for synthetic fuels (LeadIT and industry transition initiative). Moreover, it is one of the largest timber importing countries that in the past has heavily overexploited its forests but has a high potential of almost 140 million hectares for forest protection and landscape restoration (Chaturvedi et al,. 2018).

Indonesia is pushing the topic of sustainable diets more than other Asian countries. It is also of highest relevance within the forest policy area, because of its role as one of the biggest roundwood producers and its significant tropical rainforest. Indonesia has high rates of tropical deforestation, especially on peat soils and for the conversion to oil palm plantations (Gaveau et al., 2021). Regarding forestry legality, there are first indications that Indonesia plans to tackle the issue; it is one of the few countries to issue FLEGT licenses under the EU Timber Regulation. Regarding the field of energy transition, it is opposing the coal phase out in the G20 process.

South Africa is advancing the topic of green hydrogen through the Hydrogen South Africa (HySA) programme, with an overall goal of developing and guiding innovation in hydrogen and fuel cell technologies (HySA Systems, 2021). The country is also a lead country in the Sustainable

Food Systems (SFS) Programme, a global multi-stakeholder initiative to accelerate the shift towards more sustainable food systems. Among its focus themes are the promotion of sustainable diets, the reduction of food losses and waste, and strengthening resilient and diverse food production systems.

Australia is among the countries found to be relevant for only two policy fields. Australia is a large fossil fuel producer and opposing the coal phase-out in the G20 process. It can be seen as an important player in the policy field of synthetic fuels, due to its large potential (Bracker and Time, 2017) and geographic proximity to high demand countries (such as China, South Korea and Japan, and potentially in the future Southeast and South Asia).

The goal of international cooperation should be to support a move to 100% renewable energy by interconnecting regions with more renewable energy supply than demand with other regions with less potential and high energy demand. Important demand countries that could play an active role are **Japan** and **South Korea**. They can also be considered potential key actors for technology development in particular with a focus on CCS and CCU in specific industry sectors such as cement.

Mexico has passed and implemented an emission reduction credits regulation for compliance with its carbon tax. When the tax was developed, it was expected to generate approximately US$1 billion per annum, however, its impact on the reduction of GHGs is still unclear. It has an advanced monitoring system for mapping forest degradation, deforestation and fire risk. It serves for REDD+ activities under UNFCCC and is partly funded by the UK. **Russia** hosts the largest boreal forest in the world that have acted as a strong carbon sink in the past (Schepaschenko et al., 2021) and has recently been negatively affected by severe natural disturbances, partly amplified by climate change (e.g. Watts, 2021a). It is a key producer for roundwood to the EU, and takes an increasing role in biomass supply for energy. However, Russia is largely underrepresented in options for multilateral cooperation discussed in the four policy papers. It is missing as a G20 country in the Mission innovation initiative that was found to be relevant in the policy field of synthetic fuels.

Together with **Turkey, Saudi Arabia** and **Mexico** it forms a group of countries that are much less represented in international initiatives and not convinced about the need to decarbonise. Especially for Russia and Saudi Arabia a move away from fossil fuels would question their economic development model in its entirety.

3.5 International venues and relevant international organisations

This section provides an overview of important international venues that tackle some or all of the analysed policy areas. This becomes relevant when connecting initiatives to policy processes in order to gather momentum for a cause.

There are two key venues that stand out as being relevant in all four policy fields. These are the **UNFCCC**, as the organising hub for international climate policy, and the **G20**, as a key forum for high-level international economic policy. Both are focal points for a variety of supporting processes and the origin of several initiatives. In the context of the UNFCCC, the political process surrounding the NDCs is essential. Therefore, initiatives such as the NDC Partnership (hosted by the World Resource Institute) try to strengthen countries in the process and shape the content of their NDCs in order to raise ambition. Furthermore, individual policy fields can be shaped through the decisions taken during the conferences. An example is the REDD+ process that established a market mechanism for forest protection and greatly influenced international cooperation in the field. In comparison to the UNFCCC, the G7 and G20 processes are less

formalized and do not have one strong overarching process such as the NDCs. Its working groups are also divided among thematic areas and can be used as an entry point for initiative proposals. Specifically, the topic of finance is salient, as the G20 Finance track, which gathers G20 Finance Ministers and Central Bank Governors, is a central element of the meetings, and includes a working group dedicated to Sustainable Finance. For more information on the G20 and UNFCCC venue, see chapter 4.1 and 4.2.

A potential addition to these international venues in the climate policy field were **the UN Climate Action Summit** (in 2019) and the **Leaders Summit on Climate** (in 2021). Both events had the aim to bring together central actors in order to announce increases in ambition in climate action. However, both events have happened only once so far, so it remains to be seen if events of that kind establish themselves to be trendsetting in the climate policy field.

Another venue where several different thematic strands converge is the **High-Level Political Forum on Sustainable Development (HLPF)**, a subsidiary body of the UN which is responsible, inter alia, for the monitoring of the Sustainable Development Goals (SDGs). Thus, it is relevant in all policy fields, with the possible exception of synthetic fuels, as they are not explicitly mentioned in the SDGs. In 2021, the HLPF's meeting focused on the topic of green recovery.

Similarly, the **United Nations Environment Assembly (UNEA)** is a venue where several topics are tackled simultaneously. It sets the agenda of the United Nations Environmental Program (UNEP) and catalyses government action. In 2021, the assembly could only happen virtually due to the pandemic, hence no major decisions were taken. Results showed that key topics will continue to be the fight against climate change, nature loss and pollution through, inter alia, circular economy, nature-based solutions and redirecting financing through a green recovery. In the context of the assembly, specific issues can be given more space, such as the topic of food loss and waste at UNEA 4 in 2019.

Especially in the policy fields influencing upon the use of land and the protection of ecosystems, namely food systems and forestry, the **United Nation Convention on Biological Diversity (UNCBD)** functions as a central forum. The next convention in Kunming (China) is expected to decide on the future beyond the Aichi biodiversity targets, and has thus been called the 'biggest biodiversity summit in a decade' (Greenfield, 2021). It is the first time China is leading a big environmental convention (ibid). Here, synergies between biodiversity protection and the protection of natural carbon pools and sinks could be brought forward.

The **Food and Agriculture Organisation (FAO)** is furthermore conducive on issues regarding the policy areas food systems and forestry. Besides being a central data provider for land cover and agriculture, it hosts several central venues, such as the Committee on World Food Security, the FAO conference and, most importantly, the **UN World Food Summit**. The latter will be held again in 2021, with five different action tracks chaired by different organizations. One of those – action track 2: Shifting to sustainable consumption patterns - concerns itself with dietary change, thus could be potentially relevant for the food policy area.

4 Analysis of potential stepping stones

The analysis in Chapter 3 has yielded several key insights on how multilateral cooperation in different policy areas overlap and influence each other. In summary, theseare:

Synergies and trade-offs between the policy areas were found in several contexts: Rural development and land tenure: health; the energy transition and land use, the latter connecting all areas (see 3.1). Moreover, there are several **horizontal themes** that are relevant for all policy areas (see 3.2), namely finance, green recovery, certification systems, carbon market mechanisms, trade patterns and good governance. On the one hand, the analysis showed that actions in one of those elements can benefit several policy areas, for instance comprehensive carbon market mechanisms that include the energy, forest and agricultural sector. On the other hand, policy areas could cannibalize each other in regards to some elements, an example being renewable energy attracting most of the sustainable finance streams.

The analysis of the **common gaps** in existing multilateral collaboration (see 3.3) showed that there are some deficits that can be found in most policy fields, mainly the absence of important stakeholders, the missing link between central international processes, the lack of attention to certain topics or the absence of important policy instruments.

From the analysis of the **respective relevance of the G20 countries** for multilateral collaboration in the four policy areas (see 3.4), two conclusions stand out. First, the variety of actors involved in each policy area and the strength of engagement differs among policy areas: While almost all countries are involved, to some degree, in international initiatives concerning renewable energies, the area of synthetic fuels or food systems receives less attention. Second, some countries seem to be the driver of cooperation (e.g. UK, EU), as an engaged part in the majority of policy areas, whereas some are significantly more withdrawn (e.g. Russia, Indonesia).

Lastly, the evaluation of **common venues** in which international cooperation in the policy areas is advanced (see 3.5) underlined the importance of G20 and the UNFCCC as platforms relevant for all policy fields. Furthermore, it showed the extent and sometimes redundancy of the international climate policy landscape.

To assess how the analysis of these interactions can help inform future cooperation, Chapter 4 provides **a deeper analysis of three specific instances** of the interaction points that seem particularly relevant for future policy-making. It aims at providing guidance on which of the ideas for multilateral initiatives from the project could be realised in international climate policy (for an overview, see Table 1). These three examples were chosen because they address key processes and are especially relevant for the international landscape in the analysed policy areas. Each of the case studies can be roughly split into two parts: First, an analysis on the relevance of the overlaps between policy areas determined in chapter 3, whereby the most salient points are identified and briefly analysed. Second, they are evaluated in the context of the examined policy areas and the most promising out of the initiatives proposed are discussed with regards to their strategic advancement through the respective specific interaction point example. In order to validate the results, we conducted an expert workshop in August 2021 to discuss the analysis of the UNFCCC and the G20 as central venues and its potential use as stepping stones for (new) multilateral initiatives.

Table 7 Overview of interactions covered per parameter in each of the three analyses

	CS1: UNFCCC	CS2: G7 and G20	CS3: US
Interactions and linkages	Competing land uses Health and environment	Role of e-fuels in energy transition Rural development and land tenure	Agroforestry
Horizontal common elements	Carbon mechanism	Sustainable finance Certification systems	Sustainable finance
Gaps in existing cooperation	Missing links between existing cooperation to central international processes/ certain topics, policy measures, and targets	Additional actors/ link between existing cooperation/lack of G7 andG20 action tracker	Additional Stakeholders/ Additional policy options/Supply chains
Most relevant countries	Mainly the G20, but relevant to all countries	"Troika" of G20: Saudi Arabia (2020), Italy (2021), Indonesia (2022), India (2023), Brazil (2024). G7 presidencies: UK (2021), Germany (2022), Japan (2023), Italy (2024).	Brazil
Common venues	UNFCCC	G7 and G20	G7 and G20

4.1 The UNFCCC and NDC formulation and implementation

4.1.1 Introduction

Is the UNFCCC[6] a suitable platform to facilitate the creation and implementation of additional multilateral initiatives to support stronger climate action? The UNFCCC as the central multilateral institution on climate action could serve as a lever for new initiatives and processes that advance the reduction of greenhouse gas emissions, enabling the adoption of successively more ambitious NDCs. It could also serve as a forum to discuss potential areas of interaction between different policy areas and goals, in order to maximize synergies and minimize trade-offs. However, there is currently a limited number of visible connections between the UNFCCC process and multilateral initiatives, thus the potential could still be expanded upon.[7]

The potential to create synergies and an increase in efficacy of the climate governance has been pointed out by Hermwille (2018). The author argues that the UNFCCC creates periodic political moments that can shape policy streams and furthermore help to develop a common understanding of climate issues. Effective initiatives, on the other hand, could bring nation states closer to reaching the emission reductions proposed in the NDC. Thus, even though the framework

[6] As the starting point of institutionalized climate negotiations, the UNFCCC is taken here to be synonymous with the climate regime in general as well as the processes under the Paris Agreement.

[7] An example of a specific initiative that is more closely linked to the UNFCCC is the NDC partnership, which was founded after the Paris Agreement with the aim to provide developing countries with the resources to implement their NDCs. It has grown to more than 180 members (NDC Partnership, 2021).

has no formal power over the multilateral initiatives, it has been ascribed an 'orchestrating' role (see also Kuyper et al. 2018).

More specifically, one can identify different functions that the UNFCCC could play in relation to advancing multilateral action initiatives. It can be used 1) to generate visibility for a topic or an initiative, or 2) as a networking platform that can bring like-minded actors together, but also 3) to set an agenda and create a reference point, or even 4) to create actual obligations on UNFCCC Parties that influence their actions.

4.1.1.1 Opportunities

In what ways can an interaction between the UNFCCC and other multilateral initiatives take place? We identify three types of connections based on their degree of formal connection to the UNFCCC process – formal, semi-formal connections and informal channels.

- Formal connections (Least likely to succeed)
  - Mention of an initiative or topic in decision taken in a Conference of Parties (COP) (e.g. influencing NDCs). This is the least likely option to succeed. However, the inclusion of a topic in a formal decision would increase the negotiation power of relevant stakeholders in national policy processes and thus increase pressure to implement action.
  - The inclusion of a topic in the COP agenda can initiate relevant policy processes. An example would be the successful inclusion of the loss and damages thematic by the Alliance of Small Island States (AOSIS) despite considerable opposition. The group managed to first include the topic in a variety of agendas at the COP and thus increased its political momentum, culminating in the development of the Warsaw International Mechanism in 2013 (Roberts et al., 2018).
- Semi-formal connections
  - Marrakesh Partnership for Global Climate Action, a process during which so-called 'champions' are appointed, that aims at strengthening the connection between the UNFCCC and existing initiatives. This includes the connection between initiatives and national actions plans, such as the NDCs. Under the umbrella of the Marrakesh Partnership, the Regional Climate Weeks and the Technical Expert Meetings (TEM) as well as meetings at the COP are organized. The latter include meetings with a thematic focus and high-level events (UNFCCC, 2019a).
  - Under the joint auspices of SBI and SBSTA, the TEM offer an entry point for non-state actors to examine potentially impactful policy options. There are two strands; the TEM for adaptation and the TEM for mitigation, both examining relevant policy options (UNFCCC, 2021a).
  - Mandated events are set by the UNFCCC decisions and include meetings of thematic committees and panels (UNFCCC, 2021b). Those can offer an entry point, especially for new impulses that are very topic specific.
  - Side Events of the conference offer a room for exchange. An example of a successfully launched initiative in such a context would be the Powering Past Coal Alliance, which was announced at the COP in 2017 (Climate Action Network, 2017). Furthermore, exhibition booths give the opportunity to showcase (Kuyper et al., 2018).

- The UNFCCC Secretariat's Non-State Actor Zone for Climate Action (NAZCA) is a portal that allows non-state actors, including initiatives, to present their cause and announce their commitments (UNFCCC, 2021c).

- Informal channels
  - As many relevant actors (and high-level representatives for them) are present at the COP, it offers a space for informal multilateral engagement and exchange. There are already several informal dinner settings that have been institutionalized over the years, convening groups around topics of interest or other common features. An example of an initiative that increasingly organizes itself around the COP would be the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC), which is a voluntary partnership that focusses on the reduction of short-lived climate pollutants. It often holds their High Level Assemblies in margin of the COP, supports countries who wish to include short-lived climate pollutants in their NDCs and participated in the development of the Marrakesh climate action agenda (Unger et al., 2020).
  - Generating visibility through the platforms provided by the UNFCCC.
    - Media attention is high around climate summits and COPs, the additional reporting could help to generate more publicity around specific issues.
    - The Action Hub is an event space for non-party stakeholders, such as international initiatives, to stage a variety of events and thus gain attention for their issue (UNFCCC, 2019b).
    - The event itself is oftentimes used to announce new initiative and therefore profit from the attention of politics and media. An example could be the "Business Ambition for 1.5°C — Our Only Future" campaign that was announced in the climate conference in 2019 (UNFCCC, 2019c).

4.1.1.2 Potential obstacles

Despite the various potential functions that the UNFCCC could provide for additional multilateral initiatives through the channels described above, there are considerable hurdles that would need to be overcome, especially considering the formal and the semi-formal connection options. The political nature of the UNFCCC should not be underestimated. Efforts to use the UNFCCC platform to profile and seek wider endorsement of specific multilateral initiatives might instead:

- distract from the current UNFCCC focus on country level mitigation pledges, the measurement and reporting of emissions and removals, and implementation support,
- be perceived by some countries as an effort by proponents or donors to get additional political recognition for these initiatives without greater expenditure, or as an effort to mask insufficient domestic efforts in other areas
- lead to politicisation of these initiatives outside the process
- call attention to unequal membership, to unequal access or to any disparity in benefits to be derived from these initiatives across countries
- lead to conflicts and debates over the proper forum for taking decisions, or the appropriate principles for taking action (e.g., as has happened within the International Maritime

Organisation (IMO) over whether to use UNFCCC or IMO principles in the regulation of GHG emissions from shipping)

4.1.2 Analysis of interaction points

4.1.2.1 Interaction and linkages

Several of the interlinkages identified in 3.1 are relevant in the UNFCCC context.

Competing land uses: According to the IPCC 1.5 pathways, negative emissions will most likely be key in limiting warming to 1.5°C. Some countries may decide to rely on bioenergy with carbon capture and storage (BECCS) as a negative emission technology to counterbalance emissions to reach their net zero targets. Used at larger scale, this would require large tracts of land for mass tree-plantations for BECCS feedstock. Large-scale BECCS deployment is expected to cause competition between energy crops and other land uses such as food crops and conservation of biodiversity.

Health and environment: forest protection, also covered in section 3.1. Under the UNFCCC all Parties have committed to promote the sustainable management, conservation and enhancement of GHG sinks and reservoirs, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems. Carbon dioxide removal, including the expansion of sinks, will be necessary to limit warming to 1.5°C. Limiting warming to 1.5°C in turn will have beneficial impacts for delivery of the Sustainable Development Goals. But at the same time, large scale afforestation and reforestation as Carbon Dioxide Removal (CDR) options can have positive or negative impacts on different SDGs in different locations, depending on scale (Honegger, 2021). Equally, financial incentives created under Articles 5 (results-based finance) and 6 (cooperative approaches), in connection with funding for forest protection, may have positive or negative impacts on local communities and on sustainable development.

4.1.2.2 Horizontal element

The most relevant horizontal element for UNFCCC processes is *carbon market mechanisms*. Article 6 of the Paris Agreement addresses voluntary cooperative approaches pursued by Parties in the implementation of their NDCs. The term cooperative approaches include market-based cooperation under Articles 6.2 and 6.4, and non-market-based cooperation under Articles 6.8 and 6.9.

Market-based approaches are intended to be an integral part of the transition to low carbon economies for many countries, by lowering the cost of compliance with pledged reductions in buying countries and supporting investment into low-carbon technologies in host countries. Guidance and rules for cooperative approaches are still under negotiation. Given the world needs to urgently reduce emissions, and given the potential role that markets could play in this process, there is pressure on governments to finalise Article 6 negotiations at the upcoming COP26 session in Glasgow, at the end of the year. Article 6 rules are also important as a basis for national and regional policies. With many countries already developing or implementing carbon trading schemes, internationally agreed rules could connect policy areas in various countries. For example, domestic trading systems could permit covered entities to use Article 6.4 emission reduction credits toward their obligations. Linked emission trading systems could use Article 6.2 accounting rules to reconcile international transfers for purposes of NDC achievement.

4.1.2.3 Gaps

The *missing links between existing cooperation to central international processes* is an obvious gap linked to the UNFCCC processes, leading to uncoordinated response and missing the

opportunity to a much wider and more impactful response. Although it is not possible for the UNFCCC to have a link to all international processes, there are opportunities missed in not having a link to groups like the G20 – a group of major economies, responsible for around 75% of global greenhouse gas emissions (Climate Transparency, 2020), and most with economies that are strong enough to accelerate transitions to zero carbon. This is a group that will be important in the global action to address climate change, and having its programmes linked to the UNFCCC would have the necessary effect on NDC implementation. The starting point could be increased cooperation between the G20 (and its working groups e.g. WG on climate change), with the UNFCCC. This could also have a positive impact on how the G20 sets its agenda. At the moment, it mainly depends on the G20 presidency – for example, there are no guarantees that the WG on Climate Change will be carried forward to the next G20 presidency. So, by having a standing cooperation with the UNFCCC could ensure that the item is carried forward, with potential to follow up on action and commitments.

4.1.3 Policy field analysis

4.1.3.1 Energy transition

The UNFCCC currently does not have work programme focusing directly on energy transition or specifically tracking progress in this regard. However, as countries are expected to fully decarbonise their energy supplies by mid-century and rapidly increase renewables, it will be necessary that all available options are explored to support and facilitate the energy transition. This does not have to be facilitated within the UNFCCC, but could be accelerated through other existing initiatives.

Promising initiatives:

- Government level initiative for 100% renewables: The best way to bend countries' emission curves is to increase the uptake of renewables. Although recent analysis shows that global renewable generation capacity has increased by around 10% in 2020, there are still large gaps, as renewables share of total generation capacity reached only 37% in 2020 (IRENA, 2021). Some countries include their renewables targets in their NDCs, but some of these targets are not consistent with 1.5 pathways. A handful of countries have committed to 100% renewables, and this grouping needs to be expanded to include many national governments. Creating an initiative like this one to support governments and sub-national actors through the sharing of knowledge on scaling up of renewables is likely to catalyse action towards transitions to 100% renewables. Some areas for immediate attention could start with addressing country-specific barriers and undertaking broad analytical work to address information gaps of integrating renewables in electricity generation. This could also be a programme built to support countries in determining Paris-aligned fossil fuel phase-out dates which could be included in NDCs as part of sectoral targets. This would be useful input to inform governments' just transition plans - also clearly outlining co-benefits of transitions to low carbon economies

4.1.3.2 Synthetic e-fuels

As countries phase out fossil fuels, the demand for alternative, clean fuels will continue to grow. This would require various initiatives working together to fast-track the supply of fuels such as green hydrogen. Various initiatives exist but none look comprehensively at the post-fossil fuels alternative for global supply and demand. This is an opportunity for a new initiative to close the gap, and the Global Supply-Demand Partnership (GSDP) recommended in the Synthetic e-fuels policy paper is one such promising initiative (Böttcher et al, 2021).

Promising initiatives:

- Global supply-demand-partnership (GSDP): This initiative could be used to support the uptake of synthetic e-fuels and/or hydrogen. Specifically, with regards to green hydrogen, the UNFCCC could play a role in boosting its uptake through a decision that encourages creation of a programme on green hydrogen for the benefit of developing countries, with funding to be provided by the GCF. Also, the UNFCCC's Climate Technology Centre Network, hosted by UNIDO, to promote the deployment and implementation of sustainable technologies could undertake an analysis of the economic and emission reduction potential of green hydrogen, with the aim of coming up with an action plan to support countries in its implementation (Brescia et al., 2021). To kick-start the process, the G20 is best placed to initiate the process of establishing this partnership and leading its implementation, with the UNFCCC as a partner to support its implementation.

4.1.3.3 Sustainable food systems

There is very little happening at an international level to promote a food systems approach in climate policy. Given the political gap, the UNFCCC (in collaboration with other UN bodies) could be a platform to catalyse policy interventions necessary to reduce emissions in this sector. The UN Food Systems Summit to be held during the UN General Assembly in September 2021 weakly indicated some development in the area. However, still falls short of the profound action that would be necessary to advance the topic. .

Promising initiatives:

- ClimEat-Change: A food system approach in international climate policy: This initiative could create a connection to the UNFCCC through both formal and semi-formal processes. The UNFCCC has held a few roundtables/dialogues on food systems, in connection with the Koronivia Joint Work on Agriculture (KJWA). These workshops and expert meetings that take into consideration the vulnerabilities of agriculture to climate change and approaches to addressing food security, but there has not yet been anything formal on the UNFCCC agenda to address emissions associated with food consumption. Parties have been invited to make proposals on topics for the KJWA's future work and this could be the opportunity to strengthen action by including the topic of food systems under this existing work stream. This could give a food system approach greater profile within the UNFCCC and could catalyse the introduction of this topic in NDCs. Semi-formally, this topic could be followed through the NDC Partnership - a partnership open to both countries and international organisations working on NDC implementation, could create a platform for tool development and knowledge sharing (e.g. guidelines development) that could drive action at a policy level.

4.1.3.4 Forest protection

Forest protection has been on the UNFCCC agenda for many years. This has resulted in the implementation programme of the Warsaw Framework for REDD+ (UNFCCC, 2016b). This was created to "guide activities in the forest sector that reduces emissions…" in developing countries. The Warsaw Framework has enabled many countries to improve their forest monitoring capacities and develop national REDD+ strategies and action plans, although deforestation driven forest loss has continued (Curtis et al, 2018). There are still opportunities to encourage Parties to address forest protection explicitly in the context of their NDCs or to provide greater detail on the role of forest protection in planned NDC achievement. The land sector has been included in over 120 NDCs, but in most cases there is substantial ambiguity over how this sector will contribute in the country's emissions reductions (Fyson and Jeffery, 2019).

Promising initiatives:

- Options for increasing consistency of national targets - Encouraging countries for coherent forest protection and landscape restoration pledges and improving representation of land use in NDCs. As countries move towards implementation, it is important that their national targets are transparent, with clear indications of what forestry contributes to these targets. The role of land-based mitigation also needs to be clarified in LTS and net zero targets. The delays in the submission of NDC updates by many countries create an opportunity to improve data submitted in NDCs. Any future CMA decision acknowledging the Secretariat's NDC Synthesis report could encourage Parties to clarify or include separate targets, sub-targets and pledges related to forest protection in their future NDC communications, and explain how they plan to protect or expand forested areas. For example, governments could be encouraged to explain the extent to which terrestrial removals will be used to meet their targets, while also clarifying what this means for national forestry and land-use policy.

4.1.4 Conclusions

There are several potential functions that the UNFCCC could provide for additional multilateral initiatives through the channels described above. However, there are considerable hurdles that would need to be overcome, especially considering the formal connection options. Inserting a new topic or formally creating a space for an objective being pursued by an initiative in the UNFCCC process is much harder and requires elaborate political strategy and political capital – or a critical mass of countries to be in favour of such an initiative (or a hook in the process that does not trigger substantial opposition).

The UNFCCC can be a useful forum for giving profile to new multilateral initiatives, but it is not going to be a workable and flexible forum in which to identify, develop and implement new multilateral initiatives, particularly those that are endorsed only by a subset of UNFCCC Parties. Rather, a link with the UNFCCC process may focus on using semi-formal and informal channels – such as some existing initiatives currently use them. Any significant push that **multilateral climate action initiatives might receive from the UNFCCC will need to manoeuvre the obstacles well**.

4.2 Drive from G7 and G20 processes for multilateral cooperation

4.2.1 Introduction

Since its formation in 1999 as a meeting of finance ministers (Chodor, 2020), the G20 (or Group of Twenty) has developed into an intergovernmental forum addressing major issues related to the global economy, climate change mitigation, and sustainable development. Composed of the world's largest economies, including both industrialized and developing countries, the group has considerable global influence in all the analysed policy fields. Its members account for around 80 % of gross domestic product (GDP), 75 % of international trade, 60 % of the world's population, and about half of the world's land area (G20 Italia, 2021c). Presidency of G20 in 2021 is with **Italy**. The last summit was held in Rome. In 2022 **Indonesia** will take over presidency, followed by **India** (2023) and **Brazil** (2024).

The Group of Seven (G7) consists of Canada, France, Germany, Italy, Japan, UK and the US and thus the world's largest economies forming about one third of global GDP but just 10 % of the world's population. It has developed from its formation in 1973 into a discussion forum of global political issues related to economics, trade, security and climate change. Presidency of G7 in

2021 is with **UK**. The last summit was held in Carbis Bay, England. In 2022 **Germany** will take over presidency, followed by **Japan** (2023) and **Italy** (2024).

The G7 and G20 groups differ considerably in their agendas and ambition level regarding the four policy fields. However, they are chosen in this report as interaction points as they can be considered adequate fora for advancing multilateral cooperation among strong economies with partly similar but also opposing interests. It has been characterized as a bargaining club by Falkner et al. (2021), meaning that it can provide a forum to mitigate conflicts and allow for more ambitions international agreements. Thus, there is some hope that difficult decisions, which have proven impossible under the UNFCCC, could be more easily agreed in the more limited circle of the G7 or G20.

The G20 agenda and activities are established by the rotating presidencies. A "Troika", represented by the country that holds the presidency, its predecessor and its successor, works to ensure continuity within the G20. However, the agenda setting can be dominated by the presidency, bearing the risk that initiatives are not followed by succeeding chairs.

4.2.2 Analysis of interaction points

4.2.2.1 Interaction and linkages

The identified interactions and linkages in section 3.1 of the report include the *role of e-fuels in energy transition* as a challenge for G20 countries. The group of G20 is composed of both developed and developing countries, high potential supply and high demand countries as well as countries at very different stages of the energy transition. The diverse starting situations of G20 countries but common interests and established economic and scientific exchange can be used for mutual learning.

The topic of *rural development and land tenure* instead will be difficult to be addressed through G20 processes as it might be considered an issue of sovereignty, especially in north-south exchanges between G20 members. Therefore, the topic should rather be part of south-south dialogues that can also form outside G20. A vehicle for improved land tenure can also be established by consumer countries among G20 through regulations for sustainable supply chains (see Horizontal elements below).

4.2.2.2 Horizontal elements

Sustainable finance is an overarching topic of G20, that is relevant in all policy areas, and currently relatively high on the G20 agenda (e.g. through the Finance track). The Italian G20 presidency re-established the Sustainable Finance Study Group (SFSG) within the G20 Finance track and agreed to elevate it to a working group. The group aims at developing a climate-focused sustainable finance roadmap in specific priority areas. These include climate change and its asymmetrical impact on countries, recovery from the COVID-19 crisis to give countries room to continue working on the transition to a sustainable economy.

International financing organisations, like the World Bank Group, are still in the process of greening their portfolios. G20 member states, as important shareholders in these institutions, are in a position to exert their influence to ensure a level playing field and consistency in approaches between different actors. A concrete opportunity through the G20 Finance track involves the meetings held among Finance and Economy Ministers, Central Bank Governors, Vice Ministers and negotiators designated by the respective economic ministries.

A number of G20 consumer countries have started initiatives for sustainable and deforestation-free supply chains, including *certification systems* (e.g. UK, EU, and Germany). Such systems can

help to assure that various policy areas are considered in production processes (e.g. sustainability criteria for biofuels that consider forestry feedstocks, but also issues of land tenure and right of indigenous peoples). However, certification systems might not be comprehensive and therefore exclude concerns of other policy areas. Moreover, for more effectiveness they should go beyond multilateral cooperation and be established between larger groups of countries, e.g. the entire G20.

4.2.2.3 Gaps

An important identified gap in multilateral cooperation that are common for different policy fields is the *need to include additional actors*, especially from civil society, private sector and scientific community. The legitimacy of the G20 process is regularly challenged, especially also for its exclusivity. G20 allow for regular participation of some international organizations, like IMF, ILO, and WTO etc. For broader inclusion and participation, the G20 established fora for the involvement of societal actors, who regularly meet as G20 Engagement Groups. These groups address many areas of key relevance for G20 countries and may submit formal recommendations to the G20 presidency. The G20 might thus be a good venue for the integration of important stakeholders. The upcoming presidencies of Indonesia and India offer the opportunity to engage much more civil society and stakeholders of the policy fields of concern in these countries, e.g. regarding forest protection (Indonesia) and energy transition (India).

Another gap are *missing links between existing cooperation to central international processes*. The G20 is not formally connected to the UNFCCC and does not form a negotiating block at the climate conferences. Even though the G20 are not formalized, first connections have been made through the form of communiqués concerning the COP (Unger et al. 2021).

There is an opportunity to strengthen G20 linkages to UNFCCC with the UNFCCC COP 26 in November 2021 that will be co-chaired by UK (G7) and Italy (G20). COP26 is considered to be decisive for governments to strengthen their contributions to the Paris Agreement. The event will already be used by several initiatives for gaining attention. Further, the UNFCCC campaign Race To Zero is an attempt to gather leadership and support from businesses, cities, and regions to build momentum for the decarbonisation of economies (UNFCCC, 2021). Efforts should be spent to enhance multilateral cooperation, especially on options for increasing consistency and ambition of national targets, being mindful of the need to protect forest ecosystems from unsafe levels of warming.

Overall, there is *a lack of a G7 and G20 action tracker* that transparently and independently tracks progress on agreed targets and initiatives. The G7 summit in 2021 at least included a commitment to review progress against the signed Compact regularly within G7 after five years to explore options for accelerating actions and increasing ambition.

4.2.2.4 Countries

The agenda-shaping "Troika" of G20, represented by the country that holds the presidency, its predecessor and its successor, should be in the focus of multilateral cooperation. Presidency of G20 in 2020 was with *Saudi Arabia,* in 2021 it is held by *Italy*. In 2022 Indonesia will take over presidency, followed by *India* (2023) and *Brazil* (2024). Presidency of G7 in 2021 is with *UK*. In 2022 *Germany* will take over presidency, followed by *Japan* (2023) and *Italy* (2024).

4.2.3 Policy field analysis

4.2.3.1 Energy transition

Already in 2009, at their summit in Pittsburgh, the G20 agreed to phase out "inefficient fossil fuel subsidies that encourage wasteful consumption" in the medium term, with little progress as stated by observers (Merrel and Funke, 2017). The G7 summit at Carbis Bay in June 2021 agreed on a Summit Communiqué that urges to accelerate the international transition away from coal (G7, 2021). It stresses that international investments in unabated coal must stop and that countries need to commit to ending direct government support for coal power generation by the end of 2021. The declaration states that such a transition needs to be complemented by support through the Energy Transition Council, a UK initiative of 2020 to support COP26. The Council agreed to explore specific opportunities for collaboration to make clean power technologies the preferred option for countries investing in new power generation, with the aim of doubling the rate of investment in clean power by 2030 and support actors heavily reliant on the coal economy to transition to clean power and other economic opportunities.

The summit also reaffirmed the G7 commitment to eliminating inefficient fossil fuel subsidies by 2025. Under the current Italian presidency of G20, the country tries to align action in the Climate Sustainability and the Energy Transition Working Group. During its presidency the country will focus on the future of sustainable cities, on smart grids and innovative clean technologies.

Promising initiatives

- **Global initiative for a Green Recovery:** This proposed initiative would foster exchange on COVID-19 recovery efforts and their alignment with the goals of the energy transition, and possibly provide coordination on some aspects. It would represent a unique opportunity with potentially high impact. Despite the fact that the COVID-19 pandemic hit many countries hard, including G7 and G20, there is little international exchange, let alone coordination, on the green recovery efforts of different countries. Due to its global relevance, recovery initiatives need to be foremost coordinated by international bodies. However, especially the G7 countries have the economic and technological power to make the recovery a transition to sustainable energy systems. As they are economically well integrated, the effects of stimulus and recovery measures has highest potential to be reaching out to trade partners. They are also in the best position to share information, experiences and best-practices. The G7 and G20 could form the venue for agreeing on format and criteria for green recovery that are also needed to ensure that financial support for recovery by economically well-situated countries is fostering the energy transition.

- **Government-level initiative for 100% renewables:** similar to the existing club of private companies that have committed to a fully renewable electricity supply, this initiative would bring together states and sub-national entities that commit to such targets, as a knowledge forum for the challenges of transitioning to a fully renewable energy supply. The G7 and G20 can serve as a venue improve conditions for countries towards 100% renewables. This includes broadening access to transmission grids for a better integration of variable renewable energy. Especially G7 could further be frontrunners in establishing coordinated standards for electric mobility, heating and cooling, for green hydrogen and other synthetic fuels based on renewable electricity.

4.2.3.2 Synthetic e-fuels

Many G20 countries only focus on expanding the deployment of biofuels. While 15 of the G20 members have mandatory biofuel targets and three more have set non-mandatory biofuel

targets, only ten have mandatory sustainability criteria (Vieweg et al. 2018). Synthetic fuels were addressed more prominently by the G20 presidency of Saudi Arabia. The Think20 Engagement Group proposed a dedicated institution that allows G20 to coordinate national policy responses to support green and blue hydrogen applications (Michaelowa et al. 2020).

The G7 in June 2021 recognized the importance of early action to decarbonise hard-to-abate industrial sectors such as iron and steel, cement, chemicals, and petrochemicals, to ensure that emissions across the entire economy reach net zero by 2050. To achieve this, G7 commit to targeting greater levels of innovation funding to lower the costs of industrial decarbonisation technologies, including the use of synthetic fuels.

Promising initiatives

- **Global supply-demand-partnership** (GSDP): The initiative would establish global supply and demand chains for e-fuels. Similar to the coordination for facilitating global supply of hydrogen, G7 and G20 could support the generation of e-fuels globally much more. The G20 as venue for the GSDP could especially facilitate the development of global supply chains for e-fuels. A coordination of the development of regulation and market structures is needed to create comparative advantages for the technology. This requires also a close involvement of the private sector that have already established fora for the involvement of private actors, through G20 Engagement Groups to generate practical experience through international pilot projects. Candidates among G20 to be involved would be France, Germany, Great Britain, Italy on the demand side and Australia, China and Saudi Arabia on the supply side.
- **Sustainable e-Kerosene Alliance** (SeKA): The initiative would establish a global continuously increasing e-fuel mandate. To ensure that plane operators do not escape the regulations under such an initiative, it is important that the initiative covers major economic players. G20 countries cover the large majority of global aviation traffic and would therefore be a good venue for the initiative and could make it effective at an early stage already. The G20 would jointly also create the momentum needed to install quota under ICAO.

4.2.3.3 Sustainable food systems

The report “Diets for a Better Future“ investigates current food consumption patterns and the efficacy of National Dietary Guidelines (NDGs) in G20 countries in comparison to the Planetary Health Diet (Loken and DeClerck 2020). A G20 resolution could introduce the setup of a support mechanism for improving NDGs. There are a number of G20 Stakeholder Engagement Groups, such as Cities 20, Business 20 and Think 20 that give recommendations on food security.

The way food systems are included in the G20 process in 2021 is through the topic of ‘food security’ and ‘food-system resilience’ in the context of the agricultural meetings under the Italian presidency. Through this, food loss and waste are also included in the discussion, according to the Italy's Deputy Minister for Foreign Affairs and International Cooperation. Additionally, a cooperation with the FAO’s ‘Food Coalition’ was announced.

Promising initiatives:

- **Nutrition Guidelines for Future**: They foresee multilateral collaboration and exchange mechanism on how to implement and locally adapt the Planetary Health Diet requirements into National Dietary Guidelines (NDG). Existing guidance, like the FAO’s Food based dietary guidelines or Planetary Health Diet are not yet adapted to local food cultures. The G20 reflect a large variety of different food cultures that are not in line with existing recommendations. If the G20 would elaborate National Dietary Guidelines in agreement with recommendations

and national climate protection targets, this would cover already a large share of food-based emissions and also provide a role model for other countries.

- **Ensure 12.3**: An initiative to set up an international food loss and waste accreditation scheme that helps to measure and manage loss and waste all along the value chain and allows policy makers to make better-informed decisions (reference to SDG 12.3). Based on existing protocols and indices, the G20 could serve as a venue for setting up an institution that is observing and funding activities aiming at establishing a food loss and waste accreditation scheme.

4.2.3.4 Forest protection

At the G7 summit in June 2021, the UK has put tackling climate change and preserving the planet's biodiversity high on the agenda. In the G7 2030 Nature Compact, the countries commit to tackling deforestation, including by supporting sustainable supply chains as part of the pillar one of the declaration that aims at a transition to sustainable and legal use of natural resources. More concretely, G7 plan to actively support the COP26 Forest, Agriculture and Commodities Trade dialogue. This includes increasing collaborative effort between consumer and producer countries to advance global and regional sustainable supply chains, protecting, conserving, and sustainably managing forests and other ecosystems. Similarly, G7 agreed to support and drive the protection, conservation and restoration of ecosystems critical to halt and reverse biodiversity loss and environmental degradation, and to tackle climate change. Investing in nature and driving a nature positive economy is a G7 initiative to increase investment in nature to ensure nature is accounted for and mainstreamed in economic and financial decision-making.

In 2022, the G7 presidency will be with Germany while the presidency of G20 will pass from Italy to Indonesia. For the tropical forest country, the topic is important and can thus form a window for opportunity for potential initiatives. The topic of forests has not been a priority of the Italian presidency that far, while it was pushed by G7 under UK's presidency.

The UK G7 presidency in 2021 together with the Italian G20 presidency can provide leverage for many of the identified options. For the G7 summit in June 2021, the UK has put tackling climate change and preserving the planet's biodiversity high on the agenda. The UNFCCC COP 26 in November 2021 will be co-chaired by UK and Italy.

Promising initiatives:

- Options for **green COVID-19 recovery:** In 2022, the G7 presidency will be with Germany while the presidency of G20 will pass to Indonesia. There is an opportunity to launch initiatives and support existing ones that address options for **green COVID-19 recovery** and put forest protection and forest restoration prominently on the agenda of G7 and G20.

- Options for **transparent monitoring:** Germany has currently (2020-2022) the presidency of the Financial Action Taskforce (FATF), an inter-governmental body to fight global money laundering and terrorist financing. The institution sets international standards that aim to prevent illegal activities causing harm to society. Forest or land sector related environmental crimes have so far not been addressed by FATF but could have an important leveraging effect for forest protection and restoration.

- Options for **increasing participation**: An entry point to G20 and G7 processes can be the Engagement Groups that were established for broader inclusion and participation of social actors and exist, among others, for businesses (Business 20/Business 7) and think tanks (Think 20/Think 7) where specific land-related actions can be promoted. This could be used for pushing actions related to options for increasing participation.

4.2.4 Conclusions

The G20 agenda and activities are established by the rotating presidencies. Success of G7 or G20 initiatives depends on diplomatic skills of the presidency but also on the general political situation. Conflicts among member countries on one policy area can hinder agreements and declarations on other fields. But there is also the challenge to include countries with fundamental economic boundaries in policy areas, like the resistance of fossil-fuel based economies to renewable energies (e.g. Australia, Saudi Arabia, Russia) or countries heavily relying on their forest and agriculture sectors (e.g. Russia, Brazil).

To conclude, despite differences in their agendas and issues with continuity under annually shifting presidencies, G7 and G20 processes have a high potential for providing a venue for advancing multilateral cooperation in specific fields. A limitation might be that advancements can be achieved only on specific topics with the right allies among members due to the diverse interests and starting points, especially of G20 countries.

4.3 US – A new diplomatic impulse

4.3.1 Introduction

The US is a relevant actor in all policy areas covered (see 3.5) that has the ability to influence international policy agendas. Moreover, the new administration that started work in early 2021 was expected to employ a more proactive and collaborative foreign policy, including a pro-climate action agenda – and as of September 2021 it has delivered on this promise. The opportunities resulting from this context for additional multilateral cooperation on climate policy are the subject of this case study.

Already a few months after President Biden took office, it has become apparent that his course in climate politics deviates notably from his predecessor's: He strives to assume leadership in the fight against climate change and is sending new impulses, domestically as well as internationally. He decided to re-join the Paris Agreement on his first day in office (US Department of State, 2021a) and, correspondingly, resubmitted the US's NDC; in it, set the target to halve carbon emissions by 2030, while always emphasizing the connection between climate action and employment generation (UNFCCC, 2021b). The Biden administration furthermore institutionalized climate protection in several ways. Domestically, the White House Office of Domestic Climate Policy was established, which coordinates the policy making process in regard to climate action, as well as a National Climate Task Force, consisting of key ministries and aiming to facilitate implementation of climate policies. Concerning foreign policy and international cooperation, the position of Special Presidential Envoy for Climate (currently held by John Kerry) was created and a Climate Change support office, an entity dedicated to the US' bilateral and multilateral engagement for the climate crisis and supporting the Envoy for Climate, was established (Federal Register, 2021b). While Biden administration's swift action has been praised by environmentalists, he faces strong opposition from parts of the private sector, a share of the public and the Republican Party (Gardner and Resnick-Ault, 2021). Thus, it remains to be seen if he manages to tackle climate change in a comprehensive manner, also including less politically attractive issues, such as reducing meat consumption.

4.3.2 Analysis of interaction points

In the following subsection, the case of the US is analysed by looking at how the administration deals with the different overlaps identified in Chapter 3, in order to gain a better understanding

of the overall position of the country. For the analysis to be concise, only the most salient overlaps were analysed in more detail.

4.3.2.1 Interaction and linkages

There are already some signs that the US is making use of some of the possible synergies, for example by pushing *agroforestry* through its strategic framework on agroforestry (US Department of Agriculture, 2019). However, there is still currently no data as to how much of the land is used for agroforestry (US Department of Agriculture, 2021a). Furthermore, the Biden administration's possibilities of directly changing land-use are restricted, as only 27.4% of all land is, on average, federal land (Vincent et al., 2020).

4.3.2.2 Horizontal elements

Out of the horizontal elements, the Biden administration actions are most prominent on the subject of *sustainable finance***.** This is in line with the president's ambition to combine climate protection with economic growth, as he wants to strengthen investment into sustainable sectors such as renewable energy and railway transportation. He proposed to invest 1.7 trillion USD over the next ten years into 'clean energy and environmental justice' (Biden-Harris, 2020a), at the same time declared to end fossil fuel subsidies by 2022 (Federal Register, 2021b, Sec 209) and to develop a strategy determining the financial need of the climate transition. The administration also intends to carry this new finance approach over to the international playing field. The Biden administration has proposed to restart the contribution to the Green Climate Fund again (GCF, 2021). Furthermore, before taking office, then-candidate Biden made the commitment to integrate the end of financing for fossil fuels and the reduction of CO2 emissions of the Belt and Road Initiative into future agreements between the US and China (Biden-Harris, 2020a). Consequently, in a joined statement on the climate crisis, the two countries declared their commitment to a finance transition towards low-carbon energy. However, they are limiting this ambition specifically to developing countries (US Department of State, 2021b).

The trade-offs outlined in chapter 3.2 concerning finance could apply here; the main focus of the restructuring of investment, as outlined in Biden's Clean Energy Plan and its Executive Orders, seems to be the deployment of renewable energies and the corresponding infrastructure as well as cushioning the effect of the energy transition for communities that are economically dependent on fossil fuel production. This might take the focus away from the investments necessary in other policy areas, such as agriculture and forestry. An additional indication could be the infrastructure plan then-candidate Biden proposed on the end of March of 2021, named the 'American Jobs Plan', that focusses on employment generation by, inter alia, supporting the electric vehicle market, improving the electricity grid and supporting renewables, but largely stays silent on concrete measures concerning agriculture and forest (White House, 2021a).

4.3.2.3 Gaps

The US has the power to close some of the gaps in international cooperation that have been identified in chapter 3.3. The Biden administration has already shown that it is able and willing to bring *additional stakeholders* to the table. For example, the Leaders Summit on Climate the US hosted incited commitments and new initiatives from a great variety of state actors. Furthermore, the Lowering Emissions by Accelerating Forest finance (LEAF) coalition was announced, which could close the gap of lacking *private sector engagement* in forest protection by including central actors such as Amazon, Airbnb and Nestlé (Marchant, 2021).

Nevertheless, as most initiatives announced by the Biden administration are not established yet, there are still no indications if and which *additional policy options* will be used and if *supply*

chains are going to be considered in a more comprehensive manner, for example when cooperating on e-fuels.

4.3.2.4 Countries

President Biden has shown that he is willing to use his political power to further international cooperation and to engage other countries more strongly in climate action. Two examples are salient: First, the Biden administration co-signed a statement reiterating the US' commitment to combatting climate change together with *China*, in spite of tensions between the two countries (Lee Myers, 2021; US Department of State, 2021b). Second, he tried to negotiate a commitment from *Brazilian* president Jair Bolsonaro to fight deforestation of the Amazon rainforest in exchange for financial assistance Nugent, 2021). However, this example also shows the limits of the US' influence, as commitments of Brazil are largely seen as lacklustre. Furthermore, details of a deal have not been agreed upon, possibly due to the lack of confidence in the Brazilian administration's compliance (Watts, 2021b; Battistello Espindola, 2021).

4.3.2.5 Venues

Out of the venues listed in Chapter 3.5, President Biden specifically named the *G20 and G7 Forum* in his executive order 'Tackling the climate crisis at home and abroad' as a venue he wants to integrate climate concerns into, with the Special Presidential Envoy for Climate responsible for promoting multi-stakeholder initiatives (US Federal Register, 2021a). Even though the US is not chairing the event this year or the next, this could influence the direction of negotiations. It could furthermore open the possibility of linking already existing initiatives more strongly to the G20 processes.

Besides using existing venues, the Biden administration created an additional forum for exchange of the leaders of 17 major economies as he reconvened the Major Economies Forum (MEF) [8] on Energy and Climate by hosting the Leaders Summit on Climate in April of 2021 (US Department of State, 2021c). Next to several announcements of commitment increases of several of the participants, there were also a series of international initiatives launched. It remains to be seen to what extent this event will be repeated. If it is repeated, the thematic breakout sessions could be an entry point for bringing up specific topics and initiatives.

4.3.3 Policy field analysis

4.3.3.1 Energy transition

The Biden administration heavily focusses on the deployment of renewable energy as one core aspect of their climate policy. The administration has pledged to reach zero emission electricity by the year 2035 (UNFCCC, 2021b), to end fossil fuel subsidies by 2022 (Federal Register, 2021a, Sec 209) and made the decision to stop oil and gas drilling on federal land (affecting 9% of onshore sites in the US; Eaton, 2021). Furthermore, according to analysist, his decision to halve carbon emissions by 2030 implies a coal-phase until the end of the decade (Nilsen, 2021).

Promising initiatives:

- **Supply-side initiative/Alliance Beyond the Usual Suspects**: The Biden administration's decision of stopping oil and gas drilling on federal land, its ambitious climate targets as well as its commitment to end fossil-fuel subsidies could indicate that the US would be a suitable partner for both initiatives. The basis for both initiatives could be the Net-zero Producers

[8] The MEF was founded upon initiative of then US President Obama in 2009 in preparation for COP15 in Copenhagen (see Archive of US State Department Website at https://2009-2017.state.gov/e/oes/climate/mem/index.htm - last accessed October 3, 2021). It was convened in several forms until the adoption of the Paris Agreement in 2015, but discontinued under President Trump.

Forum that was established at the Leaders Summit on Climate. It aims at developing net-zero strategies and the uptake of corresponding technologies, advancing circular economy as well as the 'diversification from reliance on hydrocarbon revenues'. For now, it includes Canada, Norway, Qatar, Saudi Arabia and the US, making up about 40% of global oil and gas production (US Department of Energy., 2021).

- Similarly, the **Government level initiative for 100% RES** would fit in well with the Biden administration's agenda and could already be based in the announced Greening Government initiative. The initiative has already set itself the target of 100% clean electricity, a zero-emission fleet and a zero-emission economy. It will be co-chaired by the US and Canada (White House, 2021b).

4.3.3.2 Synthetic e-fuels

The US already has an extensive hydrogen infrastructure and considerable potential to expand upon green hydrogen, so far mainly limited through the opposition of the fossil-fuel industry (Piria, 2021). Thus, whereas the commitment to renewables is more fleshed-out at the time of writing, there are some indications pointing towards increased engagement from the US administration on hydrogen. In its resubmitted NDC, the administration states that it plans to incentivize hydrogen, specifying that it should be produced from renewable energy, nuclear energy or waste (UNFCCC, 2021b). Before being elected president, Biden announced in both his as well as in his proposal to create 10 million jobs from clean energy that he wants to support green hydrogen technologies through the establishment of an Advanced Research Projects Agency (ARPA-C), in order to lower production costs of green hydrogen to the level of regular hydrogen (Biden-Harris, 2020a; Biden-Harris, 2020b). He furthermore declared to tackle the decarbonisation of the aviation sector with, inter alia, zero-carbon fuels, and to reduce emissions in shipping to net-zero until 2050 (Biden-Harris, 2020a; White House, 2021c). Nevertheless, a notable gap is the mentioning of synthetic e-fuels specifically; hence it remains to be seen to what degree the Biden administration will advance this topic.

In international cooperation, a central vehicle to further cooperation on research in the hydrogen area is the initiative *Mission Innovation*, of which the US is a founding member. It serves as an inter-state forum for the promotion and coordination of research and development for 'clean energy', with two focus points being shipping and hydrogen (Mission Innovation, 2021).

Promising initiatives:

- **Sustainable e-Kerosene Alliance (SeKA)** and **Sustainable e-fuel Alliance for Maritime Shipping (SeAMS)**: As the US administration announced that it would be building on partnerships such as the Aviation Sustainability Center (ASCENT), International Civil Aviation Organization (ICAO) and the International Maritime Organisation (IMO) (WhiteHouse, 2021d). Thus, it is possible that the Biden administration would support initiatives that develop through those organisations. A further entry point could be the Zero Emission Shipping Mission, which is part of Mission Innovation and co-chaired by the US. It aims at increasing the amount of zero-emission vessels through, inter alia, private sector engagement and the inclusion of the whole value chain. For now, only a limited number of countries have joined, Germany not being one of them.
- **Hard-to-Abate Sector Partnership (H2ASP):** The initiative's goal is to leverage *LeadIT* knowledge brokerage to achieve more specific commitments aiming at investments shifts. As the US announced it would be joining *LeadIT* (WhiteHouse, 2021d), there might be a window of opportunity for further engagement. Another possibility could be the US co-lead the

Mission Innovation's Clean Hydrogen Mission, which aims at reducing costs for hydrogen production and improving technological processes by creating hydrogen valleys. Here, additional structures that further the investment shift and benefit emerging economies could be added.

4.3.3.3 Sustainable food systems

In their NDC, the United States announced their support of carbon sequestration through the agricultural sector as well as the scaling of climate smart agricultural practices, rotational grazing, and nutrient management practices (UNFCCC, 2021b). Nevertheless, the US is one of the biggest producers of animal products and meat consumption is high (OECD/FAO, 2020; see also 3.4) as is internal resistance by private actors and the general population to a change towards a more plant-based diet. This is why, as a reaction to false news, the US Agricultural Secretary had to confirm in a statement that there would be no effort from the administration's side to reduce meat consumption (McCrimmon, 2021). Thus, it is very unlikely that Biden's government would participate in international initiatives concerning the topic.

Similarly, the administration has stayed silent on new measure to reduce food loss and waste. The topic is mentioned in the 90-Day Progress Report on Climate Smart Agriculture and Forestry, which aims to build a base for the planned agricultural and forestry climate strategy. In it, the goal of reducing food waste by 50% is reconfirmed, together with the continuation of already existing efforts (US Department of Agriculture, 2021b).

A possible way food waste and loss could be tackled is through framing it as an issue of food security. Food security is an issue that Biden tackled domestically, through his Covid-19 relief programs (US Department of Agriculture, 2021c), as well as internationally, through his announcement of the Leading the Agriculture Innovation Mission for Climate. The initiative aims to catalyse investment into agricultural research and development with the bigger aim of support low-carbon technology and increasing food security, which could make it an entry point for potential engagement. It will be advanced at the UN Food Systems Summit and should be launched at COP 26 in November US Department of State, 2021d).

Promising initiatives:

- Against the backdrop of the current lack of effort in the areas of food waste and loss and dietary change, none of the proposed initiatives seem especially suitable. However, the ones focused on the politically more feasible topic of food loss and waste, namely **Ensure 12.3**, seems more likely to succeed.

4.3.3.4 Forest protection

The Biden administration has tackled the forest policy area through various angles. As was a campaign promise of his (Biden-Harris, 2020a), President Biden set motions in place to support nature conservation with the target of reaching 30% protection target by the end of the decade. Furthermore, the US aims to halt deforestation by 2030, as it has signed the New York Declaration on Forests (UNFCCC, 2021b; New York Declaration on Forests, 2021). Central instruments that have been set in motion for nature protection and forestry are the 'Civilian Climate Corps', which is supposed to create employment through conservation activities, reforestation and increased carbon sequestration; the initiative 'America the Beautiful', which has launched with a conservation plan (US Agencies, 2021); as well as announced agricultural and forestry climate strategy. In terms of international cooperation, most notable is the Biden administration announcement of the Lowering Emissions by Accelerating Forest finance (LEAF) Coalition at the Leaders Summit on Climate (White House, 2021c). It is a partnership between state actors and private actors that aims to mobilize 1 billion USD in 2021 in order to establish

an incentive mechanism for tropical and subtropical countries for the reduction of forest emissions. Important corporate actors that announced their participation in the initiative were Nestlé, Amazon, Airbnb and Bayer (Jessop, 2021).

Promising initiatives:

- **Option for increasing participation**: Especially the idea of mobilizing and engaging specific stakeholder groups goes in line with Biden's wish to increase stakeholder participation in COP 26 (White House, 2021c) and the general emphasis of his administration to combine nature conservation with more stakeholder participation. The conservation plan 'America the beautiful' furthermore shows a refined consciousness for land rights issues of indigenous communities (US Agencies, 2021).
- **Options for increasing private sector engagement:** The LEAF Coalition could provide an entry point for this initiative, as there are already important private actors involved. Even though the focus right now is clearly on financing, there might be the opportunity to expand on the thematic area, for example supporting comprehensive jurisdictional approaches.

4.3.4 Conclusions

The new US administration has already shown that it is willing to use its political weight to advance international cooperation on climate change and that even more action may be expected in the near future. President Biden especially seems to push the overarching topic of sustainable finance through various channels, including the G20. However, some policy areas receive more attention than others; while renewable energy, that already has considerable political and economic momentum, is one of the key focus areas of the new administration, engagement in the food systems area is rather lacklustre as of now.

As the US has shown that it is able to bring a great variety of actors to the table and has already started a series of relevant initiatives, it offers ample room of opportunity to develop international initiatives further. It is therefore important to keep up with the actions of the administration, in order to identifying further points of entry for more international climate cooperation.

5 Insights for enhancing climate action through multilateral cooperation

As climate change impacts intensify and the window for reaching the long-term temperature goal is closing, several governments are increasing their climate ambition (including key countries and regions, such as the US, China and the EU). Whether this ambition is impactful and translates into transformation of economies and societies will depend on the implementation of concrete measures in different policy areas. The IPCC's Working Group report of 2021 shows that we still have the opportunity to limit temperature increase to 1.5°C.

This report has identified opportunities around different political fora and a central actor that could be used to strengthen multilateral cooperation on climate action by creating new initiatives and bolstering existing ones. To make use of these opportunities, it has also analysed commonalities and potential conflicts between the state of collaboration in a set of four specific policy areas (energy transition, synthetic e-fuels, sustainable food systems and forest protection).

At present, **the landscape of international cooperation of these policy areas differs** in several ways: the extent to which countries are already cooperating, the scope of multilateral initiatives and what instruments are available to them vary. Those factors depend on the development of the policy area itself, but also on (perceived and real) political support for action. For example, the novelty of synthetic e-fuels may correspond to the low level of cooperation on the topic. In comparison, the lack of strong multilateral initiatives on animal protein reduction in diets is likely mostly due to the topic being politically unattractive thus far.

Overall, the inclusion of central players that are reluctant to engage in climate action remains an overarching difficulty. Even though the new US administration has included climate policy in their multilateral endeavours, the potential for cooperation with actors such as Russia or Brazil is limited. Largely **missing from current cooperation is also the link between initiatives and central international processes**. For example, the G20 has still ample room to increase its support for the implementation of the Paris Agreement and set the stage for the negotiations of the UNFCCC in a smaller circle (Slaughter et al. 2017).

Sustainable finance has been identified in the expert consultation as one of the most relevant overarching topics, which **is largely bypassed in the context of multilateral climate policy**. For a successful transition in all sectors, political will has to be accompanied by the corresponding finance streams. This is especially relevant in developing countries, which need economic support to finance the transition to climate neutrality. Access to financing is a key prerequisite for the additional investments into transformative climate policy that are required.

The analysis of potential stepping stones has shown that advancing topics through the formal channels of the UNFCCC would require manoeuvring around several obstacles, and might not be desirable in a lot of cases. However, informal channels are open for use by any group of actors, and so at the very least the UNFCCC can provide visibility, especially through the use of the negotiating sessions.

Both the G7 and the G20 are considerably more flexible than the UNFCCC due to the smaller number of members and their informal nature. While the inclusion of all member states is oftentimes politically unfeasible, smaller initiatives and coalitions can form to advance specific goals. The G20 as a bigger venue could furthermore facilitate a more holistic inclusion of different elements of the supply chain. Finance is the central topic of the venue, thus, it is especially suitable of furthering sustainable finance topics. Furthermore, the voice of

stakeholders can be integrated into the G20 process through inputs to its agenda via engagement groups, a potential that still can be expanded upon (Slaughter et al. 2017; Chodor, 2020). At present, there are several windows of opportunity, as seemingly "progressive" countries hold the various presidencies: COP 26 that is co-chaired by Italy and the UK, Italy holds the G20 presidency in 2021 and in 2022, the G7 presidency will be hold by Germany.

Generally, the expert consultation carried out under this project has shown that those venues should not be considered on their own, but could also be approached sequentially, by, for example, bringing forward an initiative first in the G7, then in the G20 and lastly in the UNFCCC forum. Furthermore, other organizations, such as the OECD, could serve as catalysers.

During the analysis of the use of potential stepping stones, a few specific ideas for new initiatives stood out to be more suitable for implementation. The following table gives a short overview.

Table 8 Overview of most promising initiatives

	Energy transition	Synthetic e-fuels	Sustainable food systems	Forest protection
Most promising initiatives UNFCCC	Government level initiative for 100% renewables	Global supply-demand-partnership	ClimEat-Change	Options for increasing consistency of national targets
Most promising initiatives for G7 and G20	Global initiative for a Green Recovery Government-level initiative for 100% renewables	Global supply-demand-partnership (GSDP) Sustainable e-Kerosene Alliance (SeKA)	Nutrition Guidelines for Future Ensure 12.3	Options for increasing participation Options for transparent monitoring Options for green COVID-19 recovery
Most promising initiatives US	Government level initiative for 100% RES Supply-side initiative/Alliance Beyond the Usual Suspects	Sustainable e-Kerosene Alliance (SeKA) Hard-to-Abate Sector Partnership (H2ASP)	Ensure 12.3	Option for increasing participation Options for increasing private sector engagement

When looking more in detail into the previously analysed policy areas and their proposed initiatives, several conclusions can be drawn:

New **initiatives in the energy sector could be more easily implemented** than in other areas, due to the advanced state of technology and already existing cooperation. Especially the Government level initiative for 100% renewables and the Supply Side Initiative could have foundations in initiatives that have been announced by the US administration in the beginning of 2021, namely the 'Greening government' initiative and the 'Net Zero Producers Forum', which both already include aims similar to the proposed initiatives (US Department of Energy 2021; White House, 2021b; Görlach & Hutfilter, 2021). The G7's recent Summit Communiqué on transitioning away from coal and ending fossil fuel subsidies indicates that these initiatives could be further advanced in this context (G7, 2021). Even though efforts in that direction have

rather stalled in the context of the G20 (Merril, and Funke, 2017), the renewed interest in the climate topic could open up the discussion again.

Cooperation on synthetic fuels is still in its infancy; however, as this topic is largely driven by innovation and research, it **can be framed in a politically attractive manner** by emphasizing economic co-benefits. Furthermore, it is possible to expand upon existing structures, such as the LeadIT initiative. This would be the aim of the Hard-to-Abate Sector Partnership and the Global Supply and Demand Partnership. There is the opportunity to create political momentum for such an initiative, as the US has announced its plan to re-join LeadIT and to participate in Mission Innovation's Clean Hydrogen Mission. Furthermore, as the G7 has recognized the importance of early action to decarbonise hard-to-abate industrial sectors and Saudi Arabia's presidency in 2020 addressed the topic of synthetic fuels more prominently. This could only be sustained if the G20 thematic areas are linked to other multilateral institutions such as the UNFCCC, where the agenda will not only be determined by the G20 presidency, as currently is the case.

International cooperation in the forest policy area has several windows of opportunity in the near- to mid-term, with the increased focus of the G20 countries on 'climate-neutrality' giving the opportunity to strengthen the role of forest protection and restoration . Additionally, Italy's presidency of the G7 has put biodiversity high on the agenda. Both fora could serve as a booster for potential initiatives, especially any on increasing participation, which could also go in line with US President Biden's wish to increase stakeholder participation in climate issues.

Multilateral **cooperation on sustainable food systems has to overcome several difficulties**, as a shift away from protein-rich diets is seen as unpopular among the public. Yet, the topic of food waste reduction has been integrated in US policy and also in the G20 process through the framing the issue as 'food security'. And the UN Food Systems Summit of September 2021 showed some indication of increased interest in the topic. Against this backdrop, the initiative Ensure 12.3 and ClimEat-Change would seem to be the most likely option to succeed.

Overall, the analysis points out a range of opportunities and possible political connections to existing processes. A strategic agenda for the further broadening and strengthening of collaboration in the four key policy areas needs to consider the complexity of the interactions of various political processes and the need to exercise effort at various levels and in different venues for more multilateral cooperation. Each policy area has its specific advantages political constellations and possible leverage points to launch specific new initiatives. Advancing multilateral cooperation on climate change across policy fields thus requires also addressing multiple channels and processes for which this report presents potential starting points.

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