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An International Agreement on Natural Resource Management: An overview of the opportunities and challenges



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An International Agreement on Natural Resource Management

An overview of opportunities and
challenges

Study Commissioned by the Public Waste Agency of Flanders (OVAM)

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List of Abbreviations

ACCTS	Agreement on Climate Change, Trade and Sustainability
CEAP	European Union Circular Economy Action Plan
CETA	Comprehensive Economic and Trade Agreement (Canada-EU FTA)
COP	Conference of the Parties
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DMC	Domestic Material Consumption
EU-Japan EPA	EU-Japan Economic Partnership Agreement
EU	European Union
EGD	European Green Deal
EU-UK TCA	EU-UK Trade and Cooperation Agreement
FTA(s)	Free Trade Agreement(s)
ProgRes	German Resource Efficiency Programme
GHG	Greenhouse Gas
GDP	Gross Domestic Product
ISO	International Organization for Standardization

IRP	International Resource Panel
MEA(s)	Multilateral Environmental Agreement(s)
OECD	Organization for Economic Co-operation and Development
ODS(s)	Ozone Depleting Substance(s)
POP(s)	Persistent Organic Pollutant(s)
RTA(s)	Regional Trade Agreement(s)
SDG(s)	Sustainable Development Goal(s)
UNCLOS	United Nations Convention on the Law of the Sea
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
WEF	World Economic Forum
WTO	World Trade Organization
AoA	WTO Agreement on Agriculture
SCM Agreement	WTO Agreement on Subsidies and Countervailing Measures
TBT Agreement	WTO Agreement on Technical Barriers to Trade

Samenvatting

The English Executive Summary follows the Dutch summary below

Er is dringend wereldwijde actie nodig om het niet-duurzame gebruik van natuurlijke hulpbronnen aan te pakken. Dit rapport verkent de toegevoegde waarde van een internationaal verdrag met betrekking tot het duurzaam beheer van natuurlijke grondstoffen.

De rationale voor een internationaal verdrag met betrekking tot het duurzaam beheer van natuurlijke hulpbronnen

Er zijn goede redenen om te streven naar een nieuw internationaal verdrag met betrekking tot het duurzaam beheer van natuurlijke hulpbronnen. Het huidige milieubeleid is meestal gericht op de gevolgen van de overexploitatie van natuurlijke hulpbronnen, zoals klimaatverandering, verlies van biodiversiteit, vervuiling, en afvalbeheer, maar niet op de oorzaak van deze milieuproblemen, namelijk de overexploitatie van natuurlijke hulpbronnen. Een internationaal verdrag met betrekking tot het beheer van natuurlijke hulpbronnen zou niet alleen maatregelen op mondiaal niveau kunnen stimuleren; het zou ook kunnen dienen als een instrument om bewustzijn te creëren, en zo het probleem rond het beheer van dergelijke hulpbronnen aan te pakken.

Niettegenstaande dat een aantal internationale organisaties en regeringen initiatieven hebben genomen die relevant zijn voor een efficiënt gebruik van natuurlijke hulpbronnen, zijn deze vaak ongecoördineerd en versnipperd. Een mondiale, gecoördineerde benadering van het beheer van hulpbronnen is van cruciaal belang, gezien het grensoverschrijdende karakter van het verbruik van deze hulpbronnen, en het feit dat het verbruik ongelijk verdeeld is over de verschillende landen. De argumenten voor een internationaal verdrag over het beheer van natuurlijke hulpbronnen zijn het sterkst indien deze ook wereldwijde doelstellingen en indicatoren bevat, die ervoor kunnen zorgen dat het wereldwijde gebruik van hulpbronnen binnen de planetaire grenzen blijft.

Multilaterale milieuverdragen en hun relevantie voor het bevorderen van het beheer van natuurlijke hulpbronnen

Om een aanzet te geven voor de structuur en het ontwerp van een internationaal verdrag met betrekking tot het beheer van natuurlijke hulpbronnen, bevat dit rapport een overzicht van bestaande multilaterale milieuverdragen (MEAs). Het constateert dat er een grote dekkingskloof bestaat tussen de bestaande MEA's en de doelstelling om de overexploitatie van natuurlijke hulpbronnen aan te pakken. De hiaten kunnen in drie verschillende categorieën worden ingedeeld: (i) het doel van de MEA is niet het efficiënt gebruik van grondstoffen, maar eerder de bescherming van het milieu, gezondheid, of iets anders; (ii) het toepassingsgebied van het verdrag betreft slechts één grondstof of een subset van grondstoffen; en (iii) het toepassingsgebied van het verdrag beslaat slechts een deel van de waardeketen (bijv. de extractie van grondstoffen, consumptie, of het einde van de levensduur van hulpbronnen).

Indien bestaande MEA's zouden worden samengevoegd tot een instrument om het gebruik van hulpbronnen te reguleren, zouden ze een onvolledige lappendeken vormen waarin biomassa relatief goed vertegenwoordigd zou zijn, maar een aantal andere hulpbronnen, zoals metalen, mineralen en fossiele brandstoffen niet, of slechts gedeeltelijk, gedekt zouden zijn. Bovendien bespreekt dit rapport een aantal inherente tekortkomingen in MEA's, waaronder het ontbreken van kwantificeerbare doelen, zwakke verplichtingen, en een gebrek aan implementatie.

Vrijhandelsverdragen en hun relevantie in het bevorderen van het beheer van natuurlijke hulpbronnen

Naast het analyseren van de overlap tussen MEA's en het duurzaam beheer van natuurlijke hulpbronnen, wordt in dit rapport ook gekeken naar de mate waarin vrijhandelsverdragen (Free Trade Agreements, "FTA's") betrekking hebben op het beheer van natuurlijke hulpbronnen, en gebruikt kunnen worden om het gebruik van hulpbronnen efficiënter te maken. Enerzijds stelt het vast dat er een grote kloof bestaat tussen handelsverdragen, die voornamelijk de handel willen vergemakkelijken, en de doelstellingen inzake het beheer van natuurlijke hulpbronnen, die ervoor moeten zorgen dat productie en consumptie binnen de planetaire grenzen blijven. In dit opzicht kunnen vrijhandelsverdragen de beleidsruimte van landen beperken om bepaalde soorten maatregelen te nemen die relevant zijn voor het beheer van natuurlijke hulpbronnen. Bovendien bevatten sommige regionale handelsverdragen (Regional Trade Agreements, "RTA's") bepalingen die bedoeld zijn om verstoringen van de energie- en mineraalvoorzieningsketens te verminderen, maar daardoor de extractie van natuurlijke hulpbronnen kunnen verhogen.

Anderzijds vindt dit rapport een groot aantal bepalingen, meestal in de context van RTA's, die trachten handelsverdragen als hefboom te gebruiken om bepaalde milieudoelstellingen te verwezenlijken, die, op hun beurt, relevant zijn voor het beheer van natuurlijke hulpbronnen. Zo kunnen RTA's die verwijzingen bevatten naar relevante MEA's, of bepalingen bevatten over duurzaam visserij- en bosbeheer of de vermindering van subsidies voor fossiele brandstoffen, een positief effect hebben op het duurzaam beheer van natuurlijke hulpbronnen. Daarnaast bevat een toenemend aantal RTA's bepalingen die relevant zijn voor het bevorderen van de circulaire economie – hetzij direct, door bepalingen inzake samenwerking in de circulaire economie, hetzij indirect door tarifaire en niet-tarifaire belemmeringen voor de handel in goederen en diensten te verminderen die relevant zijn voor de ontwikkeling van circulaire oplossingen en hulpbronnen efficiëntie. Hoewel deze bepalingen de groene transitie van landen trachten te vergemakkelijken en daarom relevant zijn om het leven binnen de grenzen van de planeet vooruit te helpen, is de impact die ze hebben op het gebruik van hulpbronnen complex: in het geval dat ze de ontwikkeling van hernieuwbare energie stimuleren, zouden ze de vraag naar fossiele brandstoffen kunnen verminderen, maar de vraag naar mineralen en metalen doen toenemen.

Bestaande bepalingen in RTA's die relevant zijn voor het beheer van hulpbronnen zijn onvolmaakte instrumenten om het beheer van natuurlijke hulpbronnen te bevorderen. Hun dekking van natuurlijke hulpbronnen is namelijk verspreid en willekeurig. Via bosbouw- en visserijbepalingen, evenals verwijzingen naar MEA's die relevant zijn voor de biodiversiteit, is

biomassa waarschijnlijk de natuurlijke grondstof die het meest wordt gedekt in RTA's. Er zijn weinig bepalingen die meteen relevant zijn voor mineralen en metalen. Bovendien is het beheer van natuurlijke hulpbronnen niet het hoofddoel van de geanalyseerde bepalingen. Er bestaat ook een dekkingslacune, aangezien de meeste bepalingen met betrekking tot natuurlijke hulpbronnen opgenomen zijn in slechts een handvol RTA's, die alleen van toepassing zijn op de partijen die het verdrag hebben ondertekend – meestal maakt de EU hier deel van uit. Andere tekortkomingen zijn, onder meer, het feit dat de geanalyseerde bepalingen meestal gericht zijn op een duurzame productie van hulpbronnen, maar niet op een duurzame consumptie ervan. Om binnen planetaire grenzen te blijven, is het echter van cruciaal belang om zowel productie als consumptie aan te pakken.

Daarnaast bevatten de bepalingen inzake de circulaire economie en hulpbronnen efficiëntie de volgende inherente zwakke punten: de bepalingen inzake samenwerking zijn zwak, niet specifiek, en vaak niet onderworpen aan een handhavingsmechanisme met slagkracht. Dit beperkt de doeltreffendheid van deze voorzieningen in het bevorderen van het beheer van natuurlijke hulpbronnen. Er is nood aan een meer holistische benadering om de principes van duurzaam hulpbronnen beheer – die economische groei zouden kunnen loskoppelen van het gebruik van natuurlijke hulpbronnen– in het handelsbeleid in te bedden.

Ontwerp en structuur van een internationaal verdrag met betrekking tot het beheer van natuurlijke hulpbronnen

Een internationaal verdrag over duurzaam beheer van hulpbronnen heeft het potentieel om heel wat van deze lacunes aan te pakken. Om te beginnen zou het beheer van natuurlijke hulpbronnen het hoofddoel van het verdrag moeten zijn, en niet slechts een bijzaak. Zo'n internationaal verdrag zou ook iets kunnen doen aan het feit dat veel natuurlijke hulpbronnen niet onder bestaande verdragen vallen, en dat de meeste verdragen geen kwantificeerbare doelstellingen bevatten. Hiaten die, op korte termijn, moeilijker aan te pakken zullen zijn, hebben betrekking op zwakke verplichtingen, aangezien dit op politiek niveau moeilijk kan liggen.

Dit rapport geeft voorlopige observaties met betrekking tot het ontwerp en de structuur van een verdrag over het beheer van natuurlijke hulpbronnen. Concreet gaat het over volgende aanbevelingen:

- **Toepassingsgebied**: het verdrag moet betrekking hebben op materiële hulpbronnen (biomassa, fossiele brandstoffen, metalen en mineralen) of op abiotische hulpbronnen. Door te focussen op abiotische hulpbronnen zou een overlap met bestaande verdragen worden vermeden en zou het politiek gemakkelijker worden om een draagvlak te creëren voor het verdrag. Een focus op materiële hulpbronnen zou echter veelomvattender zijn en ervoor zorgen dat rekening wordt gehouden met de wisselwerking tussen biotische en abiotische hulpbronnen.
- **Structuur**: dit rapport stelt voor om een geleidelijke aanpak te ontwikkelen, in verschillende fasen. Het uitgangspunt is het ontwikkelen van een kaderstructuur waarin algemene principes worden uiteengezet, later gevolgd door protocollen en bijlagen die engagementen vastleggen met betrekking tot een bepaald onderwerp of

grondstof. Deze aanpak is overgenomen door het Klimaatverdrag (United Nations Framework Convention on Climate Change, "UNFCCC"), het Verdrag inzake grensoverschrijdende luchtverontreiniging over lange afstand (Long-Range Transboundary Air Pollution Treaty, "LRTAP") en het ozonlaagbeschermingssysteem.

- Basisprincipes en verplichtingen: de kaderstructuur zou algemene beginselen bevatten, waaronder de verplichting om nationale maatregelen te nemen om de grondstoffenefficiëntie of het duurzaam beheer van hulpbronnen te verbeteren, of de overexploitatie van materiële hulpbronnen te verminderen. Het zou ook een algemene verwijzing kunnen bevatten naar het belang om binnen planetaire grenzen te blijven.
- Doelen en indicatoren: om ervoor te zorgen dat de gebruikte hulpbronnen de wereld in staat stellen binnen de planetaire grenzen te blijven, is het belangrijk om een globaal doel en bijbehorende indicatoren te ontwikkelen om de veilige exploitatieruimte voor natuurlijke hulpbronnen te identificeren. Hier is het belangrijk om een doelstelling te ontwikkelen die rekening houdt met verschillende ontwikkelingsniveaus en die het principe van gemeenschappelijke maar gedifferentieerde verantwoordelijkheden toepast. Dit kan door te streven naar "het verdubbelen van het jaarlijks tempo van de toename van de productiviteit van hulpbronnen tegen 2030" of door "de economische groei los te koppelen van het escalerende gebruik van natuurlijke hulpbronnen om een gemiddelde materiële consumptie-intensiteit per hoofd van de bevolking van 6/8 ton/capita/jaar in 2050 te behalen." Een dergelijke doelstelling zou ontwikkelingslanden in staat stellen een groeiend aandeel van de wereldwijde hulpbronnen te leveren, terwijl industrielanden de intensiteit van hun consumptie zouden moeten verlagen door te investeren in verhogingen van de hulpbronnenproductiviteit en veranderingen in consumentengedrag. Met betrekking tot indicatoren is de meest nauwkeurige de materiële voetafdruk, aangezien deze alle benodigde hulpbronnen in de hele productieketen omvat, inclusief geïmporteerde materialen waarvan de productie is uitbesteed. Om gemeenschappelijke maar gedifferentieerde verantwoordelijkheden tussen verschillende landen te weerspiegelen, is het ook belangrijk om doelstellingen en indicatoren per capita vast te leggen.
- Rapportage: De rapportagevereisten in een internationaal verdrag met betrekking tot het duurzaam beheer van hulpbronnen zijn afhankelijk van de verschillende fasen waarin het verdrag zich bevindt. Voor het aanvankelijke "kaderverdrag" kan de rapportage de vorm aannemen van jaarverslagen waarin de initiatieven en acties van de leden voor hulpbronnenefficiëntie, en duurzame consumptie en productie worden uiteengezet. Wanneer vervolgens protocol(len) worden aangenomen die substantiëlere reductievereisten bevatten, kunnen de rapportagevereisten uitgebreid worden, in lijn met het proces rond de nationaal bepaalde bijdragen (Nationally Determined Contributions, "NDC's") van het Akkoord van Parijs.
- Administratie en instellingen: het "kaderverdrag" moet een conferentie van partijen, een secretariaat en onderliggende wetenschappelijke en financieringsorganen oprichten. In dit opzicht zou er, net als de Intergouvernementele Werkgroep inzake

Klimaatverandering (Intergovernmental Panel on Climate Change, "IPCC"), een intergouvernementeel panel voor een duurzaam beheer van hulpbronnen moeten zijn om internationale actoren en wetenschappers samen te brengen, onder meer door het publiceren van rapporten. Het Internationaal Panel voor een Duurzaam Hulpbronnenbeheer (International Resource Panel, "IRP"), onder de auspiciën van het VN-Milieuprogramma (United Nations Environment Programme, "UNEP"), vervult reeds enkele van de functies die uitgevoerd zouden kunnen worden door zo'n intergouvernementeel panel. Hoewel het IRP de voor de hand liggende instelling zou zijn om als wetenschappelijk orgaan te dienen, moeten er een aantal mogelijke beperkingen worden aangepakt. Het is ook belangrijk om formele banden te ontwikkelen, om zo de coördinatie met de secretariaten van andere MEA's te verbeteren. Een andere optie zou zijn om het verdrag te koppelen aan de Algemene Vergadering van de VN.

Gevolgen voor landen die netto-hulpbronnen importeur zijn, hulpbronnenrijke ontwikkelingslanden, en ontwikkelingslanden met lage niveaus van hulpbronnen consumptie per hoofd

Het ontwikkelen van een internationaal verdrag over het beheer van hulpbronnen zal op politiek niveau erg moeilijk liggen. Naast het feit dat brede politieke acceptatie van nieuwe internationale verdragsverplichtingen sowieso onomstootbare wetenschappelijke onderbouwing vergt, vormen de erg diverse socio-economische realiteiten en belangen van toekomstige verdragspartijen een bijkomend obstakel voor politiek draagvlak. Enerzijds hebben netto-hulpbronnen importeurs, zoals de Europese Unie, goede redenen om geïnteresseerd te zijn in het bevorderen van de transitie naar de circulaire economie. Aan de andere kant zullen hulpbronnenrijke landen zich zorgen maken dat een dergelijke overeenkomst de exportvolumes van natuurlijke hulpbronnen zou verminderen. Ontwikkelingslanden met een laag consumptieniveau per hoofd van de bevolking zullen zich waarschijnlijk verzetten tegen elke overeenkomst die de materiële consumptieniveaus wil verminderen, op basis van economische overwegingen, maar ook van billijkheid en billijkheid.

Om steun te krijgen van hulpbronnenrijke ontwikkelingslanden, en afhankelijk van de export van dergelijke hulpbronnen, moeten voorstanders van een internationaal verdrag over het beheer van natuurlijke hulpbronnen trachten tot afspraken te bekomen die adequate financiering bieden om een overgang te stimuleren van inkomsten uit primaire hulpbronnen naar innovatieve manieren om alternatieve inkomstenbronnen te bekomen. Daarnaast is het belangrijk dat aanvullend onderzoek wordt gedaan om de implicaties van hulpbronnenefficiëntie beter te begrijpen met betrekking tot verschillende landen die rijk zijn aan hulpbronnen in het algemeen, en in het bijzonder ontwikkelingslanden die rijk zijn aan hulpbronnen. Aangezien de discussies over hulpbronnenefficiëntie momenteel worden gedomineerd door landen die arm zijn aan hulpbronnen, worden deze zorgen niet voldoende overwogen of bestudeerd.

Daarnaast is het belangrijk doelen en indicatoren per capita vast te stellen, die ervoor zorgen dat ontwikkelingslanden een eerlijk deel van de hulpbronnen taart krijgen. Hoewel dit ontwikkelingslanden in staat zou stellen een steeds groter aandeel van de mondiale

hulpbronnen te verwerven, zou het tegelijkertijd betekenen dat industrielanden de intensiteit van hun consumptie moeten verlagen door te investeren in een verhoging van de productiviteit van hulpbronnen en veranderingen in consumentengedrag. Andere bezorgdheden over gelijkheid en billijkheid kunnen worden aangepakt door indicatoren die zich richten op de materiële voetafdruk, in tegenstelling tot het binnenlandse materiaalverbruik, waarbij de grootste last van het verminderen van het hulpbronnengebruik wordt gelegd bij geavanceerde economieën met een hoog hulpbronnenverbruik, ongeacht de mate waarin het land de productie heeft uitbesteed aan ontwikkelingslanden. Daarnaast is het belangrijk om de economische en sociale voordelen te benadrukken die samenlevingen kunnen behalen door over te schakelen naar een meer hulpbronnen efficiënte economie.

Om ervoor te zorgen dat een internationaal verdrag over het beheer van natuurlijke hulpbronnen ook steun krijgt van hulpbronnenrijke ontwikkelingslanden, en ontwikkelingslanden met een laag materiaalverbruik per hoofd van de bevolking, is het noodzakelijk om rekening te houden met de economische en politieke zorgen van deze landen. Dit benadrukt het belang van een collaboratieve en inclusieve benadering bij de ontwikkeling van een internationaal verdrag over beheer van natuurlijke hulpbronnen.

Executive Summary

Urgent global action is required to address unsustainable material resource use. This Report explores the possibility, and analyses the implications, associated with developing an international agreement on the management of natural resources.

The rationale for an international agreement on natural resource management

There are good reasons to develop such an agreement. Current environment-related policies tend to focus on the consequences of the overexploitation of natural resources, such as climate change, biodiversity loss, and pollution and waste management, not on the driver of these environmental problems, i.e., natural resource exploitation. Not only could an international agreement on natural resource management incentivize action on a global level; it could also serve as an instrument to generate awareness to tackle the issue of resource management.

Moreover, while a number of international organizations and governments have adopted some resource-efficiency relevant initiatives, these tend to be uncoordinated and fragmented. A global, coordinated approach to resource management is, however critical, given the transboundary nature of material consumption and the fact that resource consumption is unevenly distributed between countries. The case for an international agreement on natural resource management is the strongest if it includes global targets and indicators to ensure global resource use stays within planetary boundaries.

Multilateral Environmental Agreements (MEAs) and their relevance to advance natural resource management

To inform the structure and design of an international agreement on natural resource management, this Report includes a mapping exercise of existing international treaties and other relevant agreements. It finds that there exists a wide coverage gap between existing MEAs and the objective of addressing the overexploitation of natural resources. Gaps between what is covered by existing MEAs and a possible natural resources management agreement can be classified into three different categories: (i) the objective of the MEA is not resource efficiency, but rather the environment, health or something different; (ii) the coverage of the agreement concerns only one resource or a subset of resources; (iii) the coverage of the agreement concerns only a part of the value chain (e.g., resource extraction, resource efficiency, consumption, or end-of-life).

Should existing MEAs be pulled together as instruments to regulate resource use, they would form an incomplete patchwork in which biomass would be well represented, but a number of other resources, such as metals, minerals and fossil fuels, would not, or only partially, be covered. In addition, this Report found a number of inherent weaknesses in MEAs, including the absence of quantifiable targets; weak provisions; and an implementation gap.

Free Trade Agreements and their relevance to advance natural resource management

In addition to analyzing the overlap between MEAs and natural resource use, this Report also looks at the extent to which Free Trade Agreements (FTAs)² cover natural resource management and could be leveraged to enhance resource efficiency. On the one hand, it finds there exists a wide gap between trade agreements, which mostly seek to facilitate trade, and natural resource management objectives, which seek to ensure production and consumption stay within planetary boundaries. In this regard, FTAs can limit countries' policy space to adopt certain types of measures relevant to natural resource management. Moreover, some Regional Trade Agreements (RTA)s include provisions designed to reduce disruptions to energy and mineral supply chains and could thereby increase resource extraction.

On the other hand, it finds a large number of provisions, mostly within the context of RTAs, that seek to leverage trade agreements to advance certain environmental objectives, with relevance to natural resource management. For instance, RTAs that contain references to relevant MEAs, provisions on sustainable fisheries and forestry management, and provisions that seek to reduce fossil fuel subsidies, could have a positive impact on sustainable resource management. In addition, an increasing number of RTAs contains provisions relevant to advancing the circular economy – either directly, by circular economy cooperation provisions, or indirectly by reducing tariff and non-tariff barriers on trade in goods and services relevant to developing circular solutions and resource efficiency. While these provisions seek to facilitate countries' green transitions and are therefore relevant to advance life within planetary boundaries, the impact they have on resource use is complex: in the case of spurring the development of renewable energy, they could decrease demand in fossil fuels but increase demand in minerals and metals.

Existing provisions in RTAs relevant to resource management are highly imperfect instruments to advance natural resource management. Indeed, their coverage of natural resources is scattered and random. Through forestry and fisheries provisions, as well as references to MEAs that are relevant to biodiversity – biomass is probably the resource that is covered the most in RTAs. There are very few provisions, however, directly relevant to minerals and metals. Moreover, natural resource management is not the main objective of the provisions analyzed. A coverage gap also exist as most natural resource-related provisions are set out in only a handful of RTAs, which are applicable only to the Parties that have signed the agreement – most often including the EU. Other weaknesses include the fact that the provisions analyzed tend to focus on sustainable production of resources – but not on sustainable consumption. To stay within planetary boundaries, tackling both production and consumption would be more effective.

In addition, inherent weaknesses in circular economy and resource-efficiency-related provisions in RTAs analyzed in this section include the fact that cooperation provisions are weak, lack specificity, and are often not subject to an effective enforcement mechanism. This limits the effectiveness of these provisions to advance natural resource management. A more

² The term Free Trade Agreement (FTA) is used to describe both the WTO and Regional Trade Agreements (RTAs); whereas the term RTAs refers to trade agreements between two or more parties that have been agreed to outside the WTO.

holistic trade policy approach will be required to embed sustainable resource management principles – which could decouple economic growth from natural resource use.

Design and architecture of an international agreement on natural resource management

An international agreement on sustainable resource management has the potential to address some of these coverage gaps. To begin with, it would ensure that natural resource management would be the main objective of the agreement, and not just an afterthought. An international agreement on natural resource management could also address the fact that many resources are not covered by existing agreements; and that most agreements fail to provide for quantifiable targets. Other ways in which existing agreements are lacking, including their weak provisions and lack of enforcement mechanisms, will be more difficult to address by a new agreement, at least immediately. In any event, developing an international agreement on natural resource management will likely be a long process that would have to be approached gradually, and leave sufficient space to receive input from the members.

This Report provides preliminary observations with respect to the design and architecture of an agreement on natural resource management. Specifically, recommendations include:

- **Scope**: The international agreement should cover either material resources (biomass, fossil fuels, metals, and minerals) or abiotic resources. Focusing on abiotic resources would avoid overlap with existing agreements and make it politically easier to garner support for the agreement. Focusing on material resources would be more comprehensive and ensure that trade-offs between biotic and abiotic resources are taken into account. For each resource covered, it would be important that the international agreement would apply to all stages of the value chain.
- **Structure**: This Report suggests developing a gradual approach, that has various phases. The starting point would be to develop a framework structure that sets out general principles, followed by subsequent protocols and annexes that set out commitments with respect to a particular issue or resource. This approach was adopted by the UNFCCC, the Long-range Transboundary Air Pollution system (LRTAP), and the Ozone layer protection system.
- **Basic Principles and Obligations**: The framework structure would set out general principles, including the obligation to adopt national measures to enhance resource efficiency, sustainable resource management, or to reduce the overexploitation of material resources. It could also include a general reference to the importance of staying within planetary boundaries.
- **Targets and indicators**: To ensure that the resources used enable the world to stay within planetary boundaries, it would be important to develop a global target and associated indicators to identify the safe operating space for natural resources. It would be important to develop a target that would consider different levels of development and apply the principle of common but differentiated responsibilities. This could be done by seeking to “double the yearly rate of resource productivity increase by 2030” or by “decoupling economic growth rates from escalating use of

natural resources to achieve the average material intensity of consumption per capita of 6/8 tons/capita/year in 2050.” Such a target would enable developing countries to achieve a rising share of global resources, while industrial countries would have to lower the intensity of their consumption by investing in increases in resource productivity and changes in consumer behavior. With respect to indicators, the most accurate one is material footprint, as this includes all raw materials needed throughout the production chain, including imported materials the production of which has been outsourced. To reflect common but differentiated responsibilities between different countries, it would also be important to move towards adopting per capita targets and indicators.

- **Reporting:** The reporting requirements set out in an international agreement on sustainable resource management will depend on the different phases of the agreement. For the initial Framework Convention, reporting can come in the shape of annual reports that set out the initiatives and actions taken by the members for resource productivity and material intensity of consumption. Subsequently, when Protocol(s) are adopted that set out more substantive reduction requirements, the reporting requirements can become more extensive, mirroring the NDC process of the Paris Agreement.
- **Administration and institutions:** The Framework Convention should establish the Conference of the Parties (COP), a secretariat and subsidiary scientific and financing bodies. In this regard, similar to the role of the IPCC in climate change, an Intergovernmental Panel on Sustainable Resource Management would be important to bring together international actors and scientist, including by publishing reports. Specifically, the International Resource Panel (IRP) under the aegis of the United Nations Environment Programme already fulfills some of the suggested functions that would be carried out by the Intergovernmental Panel on Sustainable Resource Management. While the IRP would be the obvious institution to serve as scientific body, a number of potential limitations must be addressed. It would also be important to develop formal links to enhance coordination with the secretariats of other MEAs. Another option to consider would be to connect the agreement to the UN General Assembly.

Implications for net material importers, resource-rich developing countries, and developing countries with low levels of material consumption per capita

Developing an international agreement on resource management will be politically very difficult. Besides the fact that broad political acceptance of an international agreement on natural resource management necessitates widely accepted scientific foundations, the different socio-economic realities of different countries will form an additional obstacle to generate widespread political support.

On the one hand, net material importers, such as the European Union, have good reasons to be interested in advancing the circular economy transition. On the other hand, however, resource-rich countries will worry that such an agreement would reduce export volumes in natural resources. Similarly, developing countries with low per capita material footprints will

likely oppose any agreement that seeks to reduce material consumption levels, based on economic, as well as fairness and equity considerations.

To garner support from resource-rich developing countries, proponents of an international agreement on natural resource management should seek to develop provisions that would provide adequate financing to advance a transition away from primary raw materials towards innovating ways of securing alternative sources of income for countries dependent on material exports. In addition, it would be important that additional research is conducted to better understand the implications of resource efficiency with respect to different resource-rich countries generally, and in particular, resource-rich developing countries. Given the fact that resource efficiency discussions are currently being dominated by resource-poor countries, these concerns are not adequately considered or studied.

In addition, it would be important to adopt targets and indicators conducive to ensuring that developing countries receive their fair share of the resource pie, including by adopting per capita targets and indicators. While this would enable developing countries to achieve a rising share of global resources, it would mean, at the same time, that industrial countries would have to lower the intensity of their consumption by investing in increases in resource efficiency and changes in consumer behavior. Other important considerations to maximize equity and fairness concerns can be addressed by adopting indicators that focus on material footprint, as opposed to domestic material consumption, thereby placing most of the burden of reducing resource use on advanced economies with high levels of resource consumption – irrespective as to whether the country has outsourced production to developing countries. In addition, it would be important to highlight the economic and social benefits societies can obtain from shifting towards a more resource-efficient economy.

To ensure that an international agreement on natural resource management garners support from resource-rich developing countries and countries with low levels of per capita material footprint, it is imperative that an international agreement on natural resource management proactively reflects the economic and political concerns. This highlights the importance of adopting a collaborative and inclusive approach towards the development of an international agreement on natural resource management.

Introduction

Global use of natural resources – stocks of materials that exist in natural environment including land, water, air and materials – has increased dramatically over the last half century: between 1970 and 2017, the annual global extraction of materials has more than tripled – rising from 27 billion tons to 92 billion tons.³ This increase reflects a doubling of population growth and rising standards of living, resulting in an increase in global resource consumption. This has led to a fourfold growth in global economic activity since 1970s, as measured by Gross Domestic Product (GDP).⁴ As the global economy expands, current patterns of linear economic activity will require an ever-increasing output of materials, which is predicted to cause environmental degradation at an unprecedented scale.⁵

Urgent global action is required to address unsustainable material resource use. An important part of the solution includes raising resource efficiency by moving towards developing circular⁶ – as opposed to linear – economies. Today, different actors, including governments, businesses, and international organizations, are increasingly adopting measures that aim to reduce unsustainable resource consumption. These efforts, while important, are mostly uncoordinated and fragmented. What is lacking is a governance mechanism that addresses the unsustainable and linear use of natural resources at a global level, in a coordinated way and, thus, mitigating further countries' concerns of losing international competitiveness by acting unilaterally.

Acknowledging this gap, there is increased interest to explore the possibility of developing an international agreement on the management of natural resources. Initiatives and roadmaps focused on natural resource management are being developed both in international political fora such as the G7 and the G20, by the European Union, at national levels and in the private sector.

Against this backdrop, this report seeks to contribute to exploratory conversations on developing an international agreement on natural resource management. It proceeds as follows: Section I sets out the rationale for an agreement on natural resource management; Section II and III seek to understand the extent to which natural resources are currently covered under multilateral environmental agreements (MEAs) and Free Trade Agreements (FTAs), respectively. These sections inform Section IV, which sets out initial ideas and considerations vis-a-vis the structure, scope, and content of an international agreement on the management of natural resources. Section V analyzes the political implications of advocating for an international agreement on natural resource management, including

³ International Resource Panel, "Global Resources Outlook 2019: Natural Resources for the Future We Want" (International Resource Panel 2019); European Commission, Directorate General for Environment, "Leading the Way to a Global Circular Economy: State of Play and Outlook." (European Commission 2020).

⁴ International Resource Panel, "Global Resource Outlook 2019".

⁵ European Commission, Directorate General for Environment, 4; International Resource Panel, 'Global Resources Outlook 2019: Natural Resources for the Future We Want (Summary for Policymakers)' (International Resource Panel 2019) Report of the International Resource Panel, 12.

⁶ Specifically, a circular economic model aims to reuse, refurbish and recycle products instead of producing products on the basis of virgin materials.

through looking at the implications for a resource-rich and resource-poor countries, whereas Section VI provides concluding remarks.

This policy brief finds that developing an international agreement on natural resource management would fill an important gap in existing international treaties and initiatives and could be critical in reducing overexploitation of resources in the decades to come. It could galvanize coordinated action at a global scale, which would be important to avoid-free riding and to ensure global levels of material consumption remain within planetary boundaries. This report further finds that adopting a gradual approach to an international agreement on resource management would be the preferred course of action, by reaching, as a first step, an agreement to sign a framework convention that sets out general guiding principles and guiding obligations to advance resource management, followed by the negotiation of protocols that would contain more stringent obligations for specific resources.

I. The Rationale for an International Agreement on Natural Resource Management

A. Natural resources are at the heart of the economy, but put pressure on planetary boundaries

From building cars to producing food and making cement, the use of natural resources – including land, water, and materials (biomass, fossil fuels, metals, and non-metallic minerals) – is fundamental to our modern economy. Over the last half a century, and as illustrated in Figure 1 below, a global resource use has increased dramatically: between 1970 and 2017, annual global extraction of materials grew from 27 billion to 92 billion tons.⁷ The International Resource Panel (IRP) predicts that without drastic changes to our production and consumption patterns, global material use would more than double between 2015 and 2060 – reaching up to 190 billion tons.⁸ In its Global Material Resources Outlook to 2060, the OECD sketches a challenge of similar magnitude.⁹ This increase reflects not only a growing global economy and population growth, but also a rising middle class.

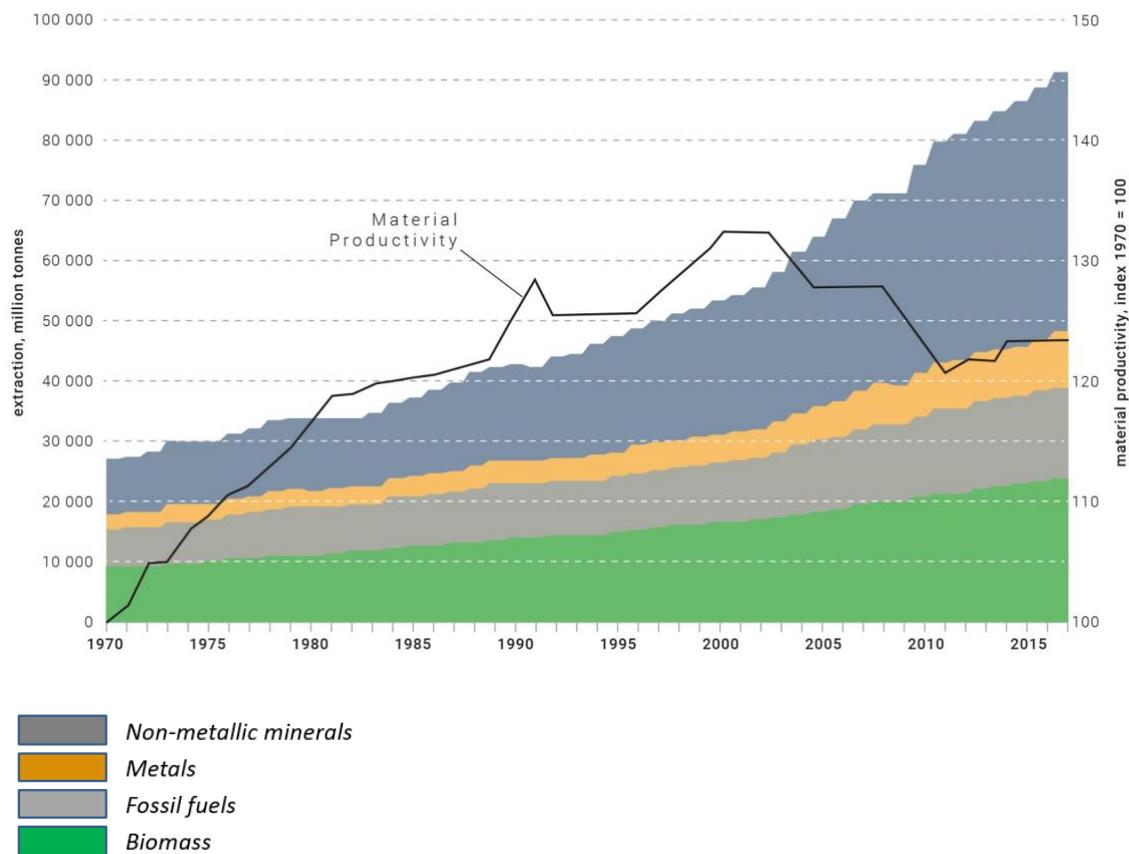
⁷ IRP, “Global Resource Outlook 2019”, 7-8.

⁸ IRP, “Global Resource Outlook 2019”, 27.

⁹ OECD, “Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences” (OECD Publishing 2019) 17–21.

Figure 1: Global Material Use and Material Demand per Capita¹⁰

Global material extraction and material productivity, 1970 - 2017



This is cause for alarm. The growing use of natural resources is the root cause of some of the most urgent environmental pressures including climate change, biodiversity loss, and (air) pollution,¹¹ thereby stretching the limits of the planetary boundaries beyond its safe operating space. Specifically, current levels of consumption, resource extraction and processing are responsible for over 90% of global biodiversity loss and water stress, and about half of greenhouse gas (GHG) emissions from the global economy.¹² The extraction and processing of metals and non-metallic minerals alone is responsible for around 20% of GHG emissions.¹³

The shift to resource efficiency, including through a circular economy, is thus crucial to achieving the Paris Climate Change Agreement goal of limiting temperature rise to 1.5

¹⁰ IRP, "Global Resource Outlook 2019"; Janez Potočnik, "Resource Management: Scientific backbone and some International related Implications". PPT Presentation, 7 December 2021.

¹¹ IRP, "Global Resource Outlook 2019", 9.

¹² This disregards emission from land use. IRP, "Global Resource Outlook 2019." World Economic Forum, "The Next Frontier: Natural Resource Targets Shaping a Competitive Circular Economy within Planetary Boundaries" (World Economic Forum 2019) White Paper, 8.

¹³ World Economic Forum, 2019 White Paper, 8; Energy Transitions Commission, "Mission Possible: Reaching Net-Zero Carbon Emissions from Harder-to-Abate Sectors" (Energy Transitions Commission 2018).

degrees.¹⁴ This is further the case as a transition to a low-carbon future will be heavily dependent on natural resources, in particular minerals and various metals. According to a World Bank report, the production of minerals, including graphite, lithium and cobalt could increase by almost 500% to respond to a growing demand for clean energy technology.¹⁵ For example, electric vehicles require six times the mineral inputs compared to conventional cars and an increase in integrated circuits.

Box 1: Planetary Boundaries

Climate change is the most well-known example of a systems change induced by humans that is deregulating the stability and resilience of the Earth system. It is, however, intrinsically linked with other essential Earth system processes that are considered vital for human survival, referenced as “planetary boundaries”. These are:

1. Climate change: the effect of carbon and methane emissions on increasing global warming
2. Ocean acidification: the effect of carbon emissions on increasing acidification on the ocean
3. Chemical pollution: the effect of toxic material released into natural environment
4. Biochemical flows, namely interference with the phosphorus and nitrogen cycles: the effect of fertilizer in natural environments
5. Freshwater use: the effect of depleting freshwater sources
6. Land system change: the effect of converting natural environments into land for economic activity
7. Change in biosphere integrity (driven by biodiversity loss): the effect of economic activity on reduction or extinction of species
8. Atmospheric aerosol loading: the effect of aerosol emission on the health of species and precipitations
9. Stratospheric ozone depletion: the effect of chemicals on the ozone layer

Additionally, the framework proposed precautionary quantitative planetary boundaries for most of the nine categories within which humanity can continue to develop. This is also called “a safe operating space.” Crossing these boundaries risks generating irreversible environmental changes with potentially catastrophic results for human development. Recent estimates suggests that humanity has already transgressed four of the nine boundaries: climate change, biodiversity loss, land systems change and biochemical cycles.

Source: Joint EEA/FOEN Report “Is Europe living within the limits of our planet?”, available at: https://unepgrid.ch/storage/app/media/Publications/Is_Europe_living_within_the_limits_of_our_planet.pdf

¹⁴ UNFCCC, "Shifting to a Circular Economy Essential to Achieving Paris Agreement Goals", Available at: <https://unfccc.int/news/shifting-to-a-circular-economy-essential-to-achieving-paris-agreement-goals> accessed 19 November 2021.

¹⁵Daniele La Porta et al., "Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition" (World Bank Group 2020) Working paper 7–8; Daniele La Porta et al., "The Growing Role of Minerals and Metals for a Low Carbon Future" (World Bank Group 2017) Working paper x–xii.

The resource-dependence of low carbon initiatives risks aggravating environmental pressures that these initiatives seek to address. It also makes access to resources a key priority, especially for resource-poor regions. Indeed, in its Green Deal, the European Commission notes that “[a]ccess to resources is also a strategic security question for Europe’s ambition to deliver the Green Deal. Ensuring the supply of sustainable raw materials, in particular critical raw materials necessary for clean technologies, digital, space and defense applications, by diversifying supply from both primary and secondary sources, is therefore one of the pre-requisites to make this transition happen.”¹⁶

To take pressure off resource supply systems, and mitigate the environmental pressures associated with resource extraction and use, it is imperative to develop policies that promote the sustainable use of natural resources. This could be done by decoupling economic growth from natural resource use – both in absolute and relative terms – through transitioning towards a circular economy.

Yet despite the critical importance of tackling natural resource use, current policy measures and commitments do not sufficiently focus on natural resources use. Rather, they focus predominantly on the consequences of the overexploitation of natural resources, such as climate change, biodiversity loss, and pollution and waste management. Not only could an international agreement on natural resource management incentivize action on a global level; it could also serve as an instrument to generate awareness to tackle the issue of natural resource management. Moreover, an international agreement on natural resource management could minimize the “circular economy rebound”, which happens when circular economy activities, which have lower per-unit production impacts, increase levels of production, thus undermining the products’ environmental benefits.¹⁷ Doing so would be important to achieve absolute decoupling.¹⁸

B. Growing political interest in addressing natural resource use

While natural resource use is not at the heart of most governments’ environmental and sustainability policies, there is increased recognition of the importance of the role of resource flows on climate change and biodiversity-related challenges. For many resource-poor countries, this interests directly relates to concerns about geopolitical risk associated with depending on a handful of importing countries for strategic natural resources that are critical to transition towards a green and circular economy. This is reflected in policy plans that seek to move towards a circular economy; initiatives and references to the sustainable use of a natural resources or to resource efficiency; or

¹⁶ European Commission, "A New Circular Economy Action Plan: For a Cleaner and More Competitive Europe" (European Commission 2020) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM (2020) 98 final 1.

¹⁷ Trevor Zink and Roland Geyer, ‘Circular Economy Rebound’ (2017) 21 *Journal of Industrial Ecology* 593.

¹⁸ Geyer, ‘Circular Economy Rebound’ (2017) 21 *Journal of Industrial Ecology* 593.

general principles to be respected in developing strategies. In particular, the EU has been at the forefront of focusing on reducing resource use and the associated environmental impact.

In its reflection paper *Towards a Sustainable Europe by 2030*, the European Commission refers to the “planetary boundaries” as a key principle to be respected by both the European Commission and the stakeholders.¹⁹ The European Green Deal (EGD) seeks to develop a “new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use.”²⁰ The European Union’s Circular Economy Action Plan (CEAP) states that the Commission will “explore the feasibility of defining a ‘Safe Operating Space’ for natural resource use and consider initiating discussions on an international agreement on the management of natural resources.”²² Likewise, the European Council invited the Commission to define a Safe Operating Space and launch a “global conversation on the governance of natural resources and options to improve the current situation, including through an international agreement.”²³ The EU Parliament has also called for an absolute decoupling of economic growth and resource consumption, in line with the EGD ambition from the European Commission.²⁴

At a national level, initial efforts are being made that address resource efficiency – with countries beginning to develop national circular economy roadmaps, resource efficiency programs, or embracing the concept of planetary boundaries.²⁵ For example, in 2012, Germany adopted the German Resource Efficiency Programme (ProgRes), making it among the first countries to determine targets, guiding principles and approaches to the conservation of natural resources.²⁶ A number of countries and regions, including Flanders²⁷

¹⁹ European Commission, ‘Towards a Sustainable Europe by 2030’ (European Commission 2019) Reflection Paper COM (2019)22 10; European Environmental Agency and Federal Office for the Environment, ‘Is Europe Living within the Limits of Our Planet? An Assessment of Europe’s Environmental Footprints in Relation to Planetary Boundaries’ (European Environment Agency 2020) Joint EEA/FOEN Report 01/2020 12–19.

²⁰ European Commission, ‘The European Green Deal’ (European Commission 2019) Communication from the Commission COM (2019) 640 final 1.

²¹ Other EU policies may also have significant indirect effects on resource management, including the promotion of active transport (cycling) or public transportation. EU policies related to the reduction of energy demand are dependent or synergetic with strategies that enhance systemic material efficiency and circularity.

²² European Commission, ‘A New Circular Economy Action Plan: For a Cleaner and More Competitive Europe’, para 7.

²³ Council Conclusions, Making Recovery Circular and Green 2020 para 82.

²⁴ Resolution on New Circular Economy Action Plan 2021 [2020/2077(INI)].

²⁵ World Economic Forum, 2019 White Paper.

²⁶ Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, ‘German Resource Efficiency Programme II: Programme for the Sustainable Use and Conservation of Natural Resources’ (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety 2016) 7; Bundesumweltministeriums, ‘German Resource Efficiency Programme (ProgRes) – an Overview. Available at: <https://www.bmu.de/en/topics/water-resources-waste/resource-efficiency/german-resource-efficiency-programme-progress-an-overview>> accessed 19 November 2021.

²⁷ Belgium, ‘Belgian Integrated National Energy and Climate Plan 201-2030: Section A- National Plan’ (2019) National Energy and Climate Plans; Flanders News, ‘Flemish Government Agrees Climate Plan That Should

Sweden, Switzerland and Finland, have developed targets to curb overconsumption of natural resources,²⁸ and/or regional circular economy roadmaps and strategies, as illustrated in Table 1 below.

Table 1: Summary of Selected National/Regional CE Roadmaps and Strategies²⁹

Country/Jurisdiction	Description of relevant circular economy plans and strategies
Netherlands	In 2016, it adopted “A circular economy in the Netherlands by 2050”, with the aim of developing a circular economy by 2050. As interim objective, it seeks to reduce the use of primary raw material (minerals, fossil fuels, and metals) by 2030.
Finland	Finland adopted a “Finnish roadmap to a circular economy 2016-2025”, in 2016 and an updated version in 2019. This set out four strategic cross-sectoral goals, including competitiveness and vitality, transfer to low-carbon energy, natural resources, and guiding consumer decisions.
Flanders	In 2019, the Flemish Government adopted the Energy and Climate Plan, which seeks to reduce the material footprint of consumption in Flanders with 30% by 2030.
France	In 2018, it adopted “the roadmap for a circular economy”, outlining 50 measures to deliver better production, consumption, and waste management. It also includes the goal to reduce natural resource use by 30% in relation to GDP between 2010 and 2030.
Japan	In 2020, Japan released the “Circular Economy Vision 2020” to encourage Japanese companies to shift to new business models with higher circularity and resilient resource circulation.
China	China’s 13 th five-year plan, which was adopted in 2016, refers to circular economy strategies, and China’s 14 th Five Year Plan (2021) includes emphasis on resource use efficiency through reduction and resource recovery.

Globally, agenda setting for resource efficiency is also advancing. The Sustainable Development Goals (SDGs) emphasize the importance of resource efficiency. Specifically, Target 8.4 aims to progressively improve global resource efficiency in consumption and production while decoupling economic growth from environmental degradation by 2030,

Reduce Carbon Emissions by 40%’, Available at: <<https://www.vrt.be/vrtnws/en/2021/11/05/flemish-government-agrees-climate-that-should-reduce-carbon-emis/>> accessed 19 November 2021.

²⁸ European Environment Agency 2020; Hy Dao and others, ‘Environmental Limits and Swiss Footprints Based on Planetary Boundaries’ (Swiss Federal Office for the Environment 2015) Final Report; Tina Häyhä and others, ‘Operationalizing the Concept of a Safe Operating Space at the EU Level – First Steps and Explorations’ (European Environment Agency 2018) Technical Report EEA/IEA/16/001.

²⁹ Smart Prosperity Institute, ‘Primary Materials in the Emerging Circular Economy’ Implications for Upstream resource producers and primary material exporters’ (2021). Available at: https://institute.smartprosperity.ca/sites/default/files/emerging_circular_economy_report.pdf.

whereas Target 12.2 proposes to achieve the sustainable management and efficient use of natural resources by 2030.³⁰ Resource efficiency is likewise embraced as a priority in other international fora. For instance, the G7 established the Alliance on Resource Efficiency in 2015, seeking to connect policymakers, businesses, researchers, and relevant stakeholders to advance regional and global resource efficiency. Under this Alliance, three guiding documents have been developed: The Toyama Framework on Material Cycles, which lays out a common vision to enhance resource efficiency and to promote the 3Rs; the 5-year Bologna Roadmap on Resource Efficiency (2017), which outlines priority actions for G7 countries to advance life cycle-based material management; and the Plastics Innovation Challenge (2018).³¹ Similarly, in 2017 the G20 established a Resource Efficiency Dialogue. In an Environment Communique from 2021, the G20 called upon the Resource Efficiency Dialogue to share information on relevant national indicators, targets, and best practices in areas relevant to policy developments.³²

Other international initiatives exist that also include developing countries. For example, in February 2021, at the Fifth UNEA, the Global Alliance on Resource Efficiency and Circular Economy (GACERE) was launched. GACERE aims to “provide a global impetus for initiatives related to the circular economy transition, resource efficiency and sustainable consumption and production, building on efforts being deployed internationally.” GACERE members, which include various developing country members, including Chile, Colombia, Kenya, Nigeria, Norway, Peru, Rwanda, and South Africa,³³ seek to do so by working together and advocating at the political level and in multilateral fora, in particular at the United Nations General Assembly (UNGA), the United Nations Environment Assembly (UNEA) and in G7/G20.³⁴

In Africa, a number of countries have developed the African Circular Economy Alliance (ACEA)³⁵, a collaborative platform that aims to spur Africa’s transition to a circular economy at country, regional and continental levels. Similarly, Latin America and Caribbean countries have adopted a Coalition on the Circular Economy, which seeks to facilitate countries’ transition towards a circular economy by enhancing inter-ministerial, multi-sectoral, and multi-stakeholder cooperation, increase knowledge and understanding, and provide capacity building and technical assistance for the development of public policies to advance a circular economy.³⁶

In October 2021, ASEAN countries adopted the Framework for Circular Economy for the ASEAN Economic Community, which aims to guide ASEAN countries in achieving a resilient economy, resource efficiency, and sustainable and inclusive growth.³⁷ Specifically,

³⁰ United Nations General Assembly, Resolution on Transforming our world: the 2030 Agenda for Sustainable Development 2015 [A/RES/70/1].

³¹ ‘Resources’ (*G7 Alliance on Resource Efficiency*) <<https://www.g7are.com/resources>> accessed 19 November 2021.

³² G20 Environment Communique 2021.

³³ UNIDO (2021), “Launch of the Global Alliance on Circular Economy and Resource Efficiency”, Available at: <https://www.unido.org/news/launch-global-alliance-circular-economy-and-resource-efficiency-0>.

³⁴ https://ec.europa.eu/environment/international_issues/gacere.html

³⁵ African Circular Economy Alliance, available at: <https://www.aceafrica.org/>.

³⁶ Coalition on Circular Economy: Latin America and the Caribbean. Available at: <https://www.coalicioneeconomiciacircular.org/en/elementor-7/inicio-english/>.

the Framework has identified five strategic priorities, including the harmonization of standards and mutual recognition in the context of circular products and services; trade openness and trade facilitation in circular goods and services, enhanced role of innovation, digitalization, and emerging green technologies, competitive sustainable finance, and efficient use of energy and other resources.

In sum, a large number of initiatives and frameworks have emerged to facilitate a transition towards a circular economy, suggesting increased recognition of the importance of moving towards resource efficiency. However, these initiatives and frameworks consist mostly of political pledges and contain non-binding recommendations and action frameworks. They do not have sufficient visibility or political weight, and lack concrete targets that would incentivize a global circular economy transition. Moreover, they are too fragmented and uncoordinated to enable concerted global action which is required to address the management of natural resources at a global scale.

C. The importance of developing a coordinated, global approach to resource management

Current approaches to natural resource management are geographically limited. Because planetary boundaries are global in nature, staying within these boundaries would require collective effort from a sufficiently large number of countries and stakeholders. It would not be possible to tackle overexploitation of natural resource management absent a coordinated, global approach. Moreover, failure to agree on global commitments and targets would risk free riding by those countries that do not want to take responsibility.

In addition, material consumption is not only transboundary; it is also unevenly distributed across countries and regions. Indeed, high-income countries have a per capita material footprint that is thirteen times higher than low-income countries, at 27 and 2 tons per capita, respectively.³⁸ Yet, while high-income countries are consuming most natural resources per capita they tend to experience less adverse consequences linked to the overexploitation of resources as much of the extraction of natural resources takes place in middle and low-income countries.

This can be attributed to international value chains underpinning the global economy, with high-income countries outsourcing resource-intensive activities – and thereby its environmental footprint - to middle and low-income countries.³⁹ Approximately one-fifth of

³⁷ Framework for Circular Economy for the ASEAN Economic Community, Available at: <https://asean.org/asean-adopts-framework-for-circular-economy/>.

³⁸ IRP, Global Resource Outlook 2019, 27.; Jennifer Bansard and Mika Schröder, 'The Sustainable Use of Natural Resources: The Governance Challenge' (International Institute for Sustainable Development 2021) Brief 16.

³⁹ World Economic Forum, 2019 White Paper, 12–13.

all global merchandise trade is in natural resources.⁴⁰ This means that tackling the overexploitation of natural resources requires a transboundary solution to be effective.⁴¹

Initiatives are being developed that seek to adopt such a coordinated, global approach for specific resources. Most relevant in this context are the ongoing discussions to push for a global treaty to tackle the plastic crisis. In February 2022, at the United Nations Environmental Assembly (UNEA), ministers will be discussing, and voting on such a resolution. The draft resolution, which was presented by Peru and Rwanda in September 2021, explains the need for a global treaty on plastics: “owing to the nature of global supply and value chains, trade in plastic waste and the flow of plastic in the ocean, the challenge of plastic pollution and marine litter is transboundary and global in scope. Current approaches, which are limited geographically and consider only part of the life cycle of plastics, have proven insufficient.”⁴²

The ongoing discussions to advance a global treaty on plastics is encouraging but insufficient. From a resource perspective, it is critical to develop a coordinated, global approach – as opposed to developing approaches that are material-specific. Indeed, the sustainable use of natural resources is critical to ensure we stay within planetary boundaries. Materials do not, however, operate in isolation from other materials, and often have implications for more than one planetary boundary. Adopting a global approach would enable the identification of trade-offs and synergies between different natural resources, to adopt an optimal approach that minimizes strain planetary pressure. Similarly, seeking to optimize one resource flow in isolation from others – e.g., replacing plastics, cement, and fossil fuels through bio-based materials – could generate inefficient results at current consumption trends, as it does not focus on the demands and use limitations of different resources.

Without further developing the concept of global resource use in quantitative and qualitative terms, it will remain unclear to ascertain whether globally, the world economy is developing within planetary boundaries.⁴³ Certainly, developing indicators and targets as part of an international agreement for material resource use, accompanied with adequate qualitative guidelines, would facilitate monitoring natural resource flows globally and guide the transition towards a sustainable economy. It would also facilitate knowing whether we are at risk of exceeding the safe operating space vis-à-vis different materials and enhance our understanding of what constitutes “sustainable resource use” in quantitative terms. Indeed, SDG 12 on Sustainable Consumption and Production fails to specify a clear method or path to global natural resource monitoring or outline sustainable levels of resource use aligned with planetary boundaries. Rather, it focuses on indicators that countries can adopt to measure material footprint and domestic material consumption.⁴⁴ While important, as highlighted global targets and indicators can serve as a “safety check” for businesses and politicians with respect to their policies and strategies. Moreover, global resource use targets

⁴⁰ Michele Ruta and Anthony J Venables, ‘International Trade in Natural Resources: Practice and Policy’ (2012) 4 Annual Review Resource Economics 31.

⁴¹ IRP, Global Resource Outlook 2019, 27.

⁴² Michelle Langrand, ‘Ministers push for tougher treaty on plastics’, Geneva Solutions (2021). Available at: <https://genevasolutions.news/climate/ministers-push-for-tougher-treaty-on-plastics>.

⁴³ World Economic Forum, 2019 White Paper, 6.

⁴⁴ United Nations, Global Indicator Framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. A/RES/71/313.

could encourage shared understanding of the issue and help develop consensus with respect to priority areas. Setting targets could also unleash and guide more systematic innovations.⁴⁵ In this regard, and as noted by the World Economic Forum (WEF), “setting targets for smart and sustainable use of natural resources is the next big frontier in understanding how to reach a livable future – and how to be economically competitive in it.”⁴⁶

Thus, the case for an international agreement on natural resource management is the strongest if it includes global targets and indicators to ensure global resource use would stay within planetary boundaries. However, even without the benefit of specific quantitative targets, an international agreement on natural resource management would still be an important step in the right direction. Such a convention could, for instance, establish certain general principles of natural resource management or create a common approach to value chain transparency and footprint reporting, building momentum for more ambitious protocols with quantitative targets to be added later in the process. Moreover, it could provide an opportunity to bring together different pieces of sustainable resource management that are at present scattered across various international treaties and policy initiatives.

With these considerations in mind, the remaining sections of this report will identify and assess gaps in existing international frameworks; propose options for the design and architecture of the agreement; and analyze relevant political implications.

⁴⁵ *ibid.*

⁴⁶ *ibid.*

II. To what extent do multilateral environmental agreements cover natural resources and natural resource management?

A. Introduction

To inform the structure and design of an international agreement on natural resource management, this section conducts a mapping exercise of existing international treaties and other relevant agreements. Specifically, it seeks to understand the extent to which existing international treaties cover natural resource use - as well as the way in which these resources are covered – and the extent to which existing international agreements fail to do so.

While several voluntary and legal non-binding initiatives exist that could be relevant to the study at hand, this section focuses on traditional legally binding treaties and conventions. Moreover, an analysis of other public international law bodies (e.g., investment treaties) as well as customary international law or general principles of international law⁴⁷, are beyond the scope of this report. Specifically, the analysis in this report is limited to the following MEAs, which have been selected based on their relevance to natural resource management:

- The United Nations Framework Convention on Climate Change (UNFCCC);
- The Convention on Biological Diversity
- The Vienna Convention for the Protection of the Ozone Layer (and its subsequent Protocols and amendments)
- The United Nations Convention to Combat Desertification (UNCCD)
- The Convention on Long-range Transboundary Air Pollution (and its Protocols)
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)
- The Rotterdam Convention
- The Stockholm Convention

⁴⁷ The reason for this exclusion is that the treaties covered in this analysis codify these principles in their text. For example, the Rotterdam Convention constitutes the most representative codification of the general principle of prior-informed consent. Similarly, the duty of cooperation or the principle of prevention that constitute customary rules of international law have been incorporated in various MEAs. See: Pierre-Marie Dupuy and Jorge E Viñuales, *International Environmental Law* (Second edition, Cambridge University Press 2018).

- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- The International Tropical Timber Agreement
- The Minamata Convention on Mercury
- The Strategic Approach towards Chemicals Management
- Convention on Protection and Use of Transboundary Water Courses and International Lakes (the Water convention)
- The United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses
- The United Nations Convention on the Law of the Sea (UNCLOS)
- The United Nations Straddling Fish Stocks Agreement
- The FAO Agreement to promote Compliance with International Conservation; and
- The Management Measures by Fishing Vessels on the High Seas.

The present section examines the extent to which multilateral environmental agreements (MEAs) – international environmental agreements that are open to all countries – cover natural resources and natural resource management. In addition, it analyzes other ways in which existing MEAs fall short of being a suitable foundation to regulate natural resource management, with a focus on the nature of the obligations – hortatory versus mandatory; quantifiable or non-quantifiable – set out in MEAs.

From the analysis set out in Annex A and in Table 2 below, we find that none of the MEAs reviewed in this report deals directly with natural resource management or provides a framework that could be used as a basis for the sustainable management of natural resources. Gaps between what is covered by existing MEAs and a possible natural resources management agreement can be classified into three different categories: (i) the objective of the MEA is not resource efficiency, but rather the environment, health or something different; (ii) the coverage of the agreement concerns only one resource or a subset of resources; (iii) the coverage of the agreement concerns only a part of the value chain (e.g., resource extraction, resource efficiency, consumption, or end-of-life). In addition, the analysis highlights intrinsic weaknesses in MEAs, including the lack of quantifiable targets and indicators, and a general focus on best endeavor obligations.

Table 2: Overview of scope and substance limitations of MEAs relevant to natural resource management

Multilateral Environmental Agreement	Resource efficiency not main objective	Covers one or subset of resources	Covers only part of the value chain	Limited country coverage	No quantifiable Targets
<i>Convention on Long-Range Transboundary Air Pollution (+Additional Protocols)</i>	X	X		X	
<i>Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (and amendments)</i>	X	X	X		X
<i>Minamata Convention on Mercury</i>	X	X			X
<i>Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade</i>	X	X	X		X
<i>Stockholm Convention on Persistent Organic Pollutants</i>	X	X			
<i>The Paris Agreement</i>	X	X			
<i>UN Framework Convention on Climate Change (UNFCCC)</i>	X	X			
<i>Convention on Protection and Use of Transboundary Water Courses and International lakes (the Water Convention)</i>	X	X		X	X
<i>International Tropical Timber Agreement</i>	X	X		X	
<i>London Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter</i>	X	X	X	X	

<i>UN Convention on the Law of the Sea (UNCLOS) and the Agreement on the Implementation of Part XI of the 1982 Law of the Sea Convention</i>	X	X			X
<i>Convention on International Trade in Endangered Species of Wild Fauna and Flora</i>	X	X	X		
<i>Convention on the Conservation of Migratory Species of Wild Animals</i>	X	X			X
<i>FAO Agreement to promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas</i>	X	X		X	
<i>International Treaty on Plant Genetic Resources for Food and Agriculture (International Seed Treaty)</i>	X	X			X
<i>United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa</i>	X	X			
<i>Convention on Biological Diversity (CBD)</i>	X	X			
<i>Montreal Protocol on Substances that deplete the Ozone Layer, under the Vienna Convention for the Protection of the Ozone Layer (any subsequent amendment of the Protocol)</i>	X	X			

B. Analysis

Based on the analysis set out in Annex A⁴⁸, the MEAs covered in this analysis do not focus on achieving sustainable resource management as the main objective.⁴⁹ Instead, they either focus on reducing different types of environmental harm; seek to enhance fairness in resource sharing; and/or focus on protecting human health. For example, with respect to environmental objectives, the Paris Agreement, Kyoto Agreement and UNFCCC focus on combatting climate change; the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered species of wild fauna and flora (CITES), and the Convention on the Conservation of Migratory Species of Wild Animals focus on reducing the rate of biodiversity loss; whereas the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention); Rotterdam Convention and the Minamata Convention on Mercury focus, in part, on waste management and pollution.

MEAs that seek to protect human health include the Minamata Convention on Mercury, which focuses on protecting human health and the environment from mercury; the Basel Convention, which seeks to protect human health and the environment from the adverse effects of hazardous waste by regulating cross-border movement of waste; and the Convention on Long-Range Transboundary Air Pollution, which addresses air pollution.

MEAs that focus on fairness of benefit sharing include UNCLOS, which aims to distribute fairly revenue opportunities related to mineral resources in the sea; the International Treaty on Plant Genetic Resources for Food and Agriculture (International Seed Treaty), which focuses on guaranteeing food security; and the Convention on Biological Diversity (CBD), which includes as objective the fair and equitable sharing of benefits from utilizing genetic resources.

While the MEAs analyzed do not focus on resource efficiency or sustainable resource management per se, some of the agreements could incentivize – either directly or indirectly – efficient resource use. For example, the Basel Convention sets out strict rules for the disposal of certain types of wastes, which could incentivize governments and businesses to generate less waste. Similarly, by regulating the production of ozone depleting substances (ODS), the Montreal Protocol Convention could reduce the production of resources that unleash ODS, just like the Stockholm Convention on Persistent Organic Pollutants (POPs) could lead to reductions in metal production and other processes that unleash POPs. The Mercury Convention, by seeking to stop the use of mercury, has a high potential of reducing its use – even though the Convention does not cover all relevant industrial processes. To keep global temperature increases below 2 degrees Celsius, the Paris Agreement incentivizes countries to reduce their reliance on fossil fuels. The Convention to Combat Desertification

⁴⁸ To get a sense of the relevance of existing MEAs vis-à-vis natural resources, Annex A analyzes selected MEAs based on the following criteria: (i) the type of natural resource covered; (ii) whether the agreement concerns the entirety of the value chain or covers only a part; (iii) whether the agreement contains soft obligations or a relevant quantified target; (iv) coverage of the agreement (numbers of parties involved); (v) whether the agreement is legally binding or not; (vi) whether a strong compliance mechanism exists; and (vii) whether there is any evidence of implementation or compliance.

⁴⁹ Additional mapping exercise in: Ralph Bodle and others, 'Options under International Law to Increase Resource Efficiency' (German Environment Agency 2021) Final Report FB000437/ENG 81–132.

incentivizes the sustainable use of land – even though that’s not its main purpose. While these MEAs could thus serve as a lever to induce efficient resource use, this is mostly tangential to achieving other objectives.

Another important limitation to highlight is the limited coverage of MEAs. As set out in Annex 1, some agreements cover only one resource (e.g., the Minamata Convention which covers only Mercury) or a group of resources (e.g., the Convention on Biological Diversity, which focuses on biological resources but not abiotic resources; the Convention on Long-Range Transboundary Air Pollution, which focuses on resources related to air pollution; or the UNCLOS, which focuses on mineral resources related to a specific geographical area). Not one MEA covers resources comprehensively. And even where an MEA covers only one resource, like the Minamata Convention, the scope is further limited as it contains various exceptions.

Some natural resources are more extensively covered than others. Indeed, many existing conventions⁵⁰ cover biomass resources– all biotic resources/organic materials derived from living plants and animals, and their waste form and products. In contrast, only a handful of MEAs cover a subset of metals and mineral resources.

MEAs are also limited as they often apply to only a segment of the value chain. For example, the Basel, Stockholm, and Rotterdam Conventions only apply to waste management in the context of transboundary movement – they do not cover the production of such waste, through encouraging circular economy processes. Similarly, the London Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes only focuses on water disposal – production processes and waste recovery are covered only indirectly. Further, it regulates only particular activities (dumping or incineration at sea of wastes) and substances with a view to prevent pollution of the maritime environment. Another example is the International Convention for the Prevention of Pollution from Ships (MARPOL), which regulates pollution caused by particular activities (accidental pollution and pollution from routine operations) and particular substances as set out in the various Annexes of MARPOL.

Another way in which MEAs generate only partial coverage concerns the number of countries that are parties to different MEAs. Some agreements enjoy broad coverage, such as UNCLOS, the Paris Agreement, the Basel Convention. Yet other MEAs have more limited coverage. For example, the LRTAP, which is related to the planetary boundary of atmospheric aerosol loading has been ratified by only 51 parties. Likewise, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, which is relevant to addressing global freshwater use, only has 45 members. The London Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, or the International Timber Agreement also have limited membership. It is also important to note that for some

⁵⁰ The CBD Convention; the Cartagena Protocol on Biosafety to the CBD Convention; the Nagoya Protocol on Access and Benefit Sharing to the CBD Convention; the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the Convention on the Conservation of Migratory Species of Wild Animals; the UN Convention on the Law of the Sea; the UN Straddling Fish Stocks Agreement; the FAO Agreement to promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas; International Tropical Timber Agreement; Convention on Protection and Use of Transboundary and International lakes; United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa.

MEAs with almost universal membership, the United States has been reluctant to join several MEAs, including UNCLOS and the Rotterdam, Stockholm, and Basel Conventions.

In addition, there are several weaknesses inherent to existing MEAs that would render them ineffective instruments to regulate natural resource use. Indeed, only a handful of MEAs contain quantifiable targets/indicators, including the UNFCCC, which seeks to keep global temperature increase well below 2 degrees; the Convention on Biological Diversity (CBD), which contains qualified targets on relevant parameters; the Montreal Protocol on Substances that deplete the Ozone Layer, which contains phase-out targets and bans; and UNCLOS which has introduced a maximum sustainable yield for fish stock. Yet most other MEAs, do not set quantifiable targets and/or indicators. This makes them less effective as instruments to address environmental issues generally.

In addition, most MEAs contain relatively weak provisions. For example, UNCLOS restricts the sovereign right of states to exploit its natural resources only considering their duty to protect and preserve the marine environment.⁵¹ However, Coastal States maintain large discretion to exploit natural resources in the maritime zones under their jurisdictions, without imposing any objective limitation. Indeed, the agreement only imposes obligations with regards to the generation and distribution of revenue from the exploitation of resources.⁵² Likewise, the UNCCD mentions that countries should introduce national action programs to combat desertification by taking into account sustainable management of natural resources and efficient use of energy sources.⁵³ However, the UNCCD does not impose any particular obligation on the parties. Similarly, the Paris Agreement contains largely procedural obligations, leaving members with large amounts of discretion as to the measures to adopt to achieve the stated objectives in the agreement.

In addition, as set out in Annex A, most existing MEAs have poor implementation records. This is in part the result of weak provisions, coupled with a lack of compliance mechanisms and the lack of enforcement. Indeed, in contrast to trade agreements, failure to comply with MEAs does not generally result in dispute settlement provisions.

Likewise, not all nine planetary boundaries are addressed by the existing MEAs or are addressed equally: while one or more MEAs analyzed address, to different degrees, climate change, chemical pollution, the rate of biodiversity loss, and stratospheric ozone depletion; atmospheric aerosol loading, land systems change, marine ecosystem health, and freshwater use, other planetary boundaries such as ocean acidification and biochemical flows - namely interference with phosphorous and nitrogen cycles - remain largely unaddressed. And those two MEAs that are relevant to atmospheric aerosol loading and freshwater use, have limited country coverage.

In sum, this analysis has demonstrated that there exists a wide coverage gap between existing MEAs and the objective of addressing the overexploitation of natural resources. Indeed, existing MEAs, to the extent to apply natural resources, only address the objective of resource

⁵¹ Article 193, United Nations Convention on the Law of the Sea 1982 (1833 UNTS 397).

⁵² Part XI of *ibid.*

⁵³ Articles 3,4 and 5, United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa 1994 (1954 UNTS 3).

efficiency indirectly. Other limitations include the fact that they cover only a subset of natural resources, with biomass resources being widely covered, but metals and mineral resources less so; they do not cover the entire value chain; and do not have universal membership. Should existing MEAs be pulled together as instruments to regulate resource use, they would form an incomplete patchwork in which biomass would be well represented, but several other resources, such as metals, minerals, and fossil fuels, would not, or only partially, be covered. In addition, this section has identified a number of inherent weaknesses in MEAs, including the absence of quantifiable targets; weak provisions; and an implementation and enforcement gap.

III. To what extent do Free Trade Agreements (FTAs) cover natural resources and natural resource management?

A. Introduction

In addition to analyzing the overlap between MEAs and natural resource use, it is also important to analyze the extent to which Free Trade Agreements (FTAs)⁵⁴ cover natural resource management and could be leveraged to enhance resource efficiency. Indeed, as set out in Section 1, due to the uneven distribution of natural resources globally, trade plays an important role in existing patterns of consumption and production of natural resources.

Specifically, this section explores the interaction between FTAs and resource efficiency by looking both at the rules and jurisprudence of the World Trade Organization (WTO), and the rules set out under a subset of Regional Trade Agreements (RTAs). Generally, trade rules are relevant for natural resources and resource efficiency in two different ways: on the one hand, by setting out global trading rules, FTAs can impede a country's ability to adopt relevant measures to advance natural resource management. On the other hand, RTAs can be leveraged to advance certain resource-efficiency and circular solutions – including through removing tariff and non-tariff barriers on goods and services relevant to advancing the circular economy and resource efficiency. Recent developments both at the WTO's ongoing negotiations as well as in RTAs reflect an increased focus on ensuring that trade rules are aligned with, and support resource efficiency.

⁵⁴ The term Free Trade Agreement (FTA) is used to describe both the WTO and Regional Trade Agreements (RTAs); whereas the term RTAs refers to trade agreements between two or more parties that have been agreed to outside the WTO.

B. The WTO and natural resources

i. WTO Rules

The WTO is a system that sets out the rules of multilateral trade. In this sense, it covers natural resources to the extent these are being traded – not the whole value chain. For example, this would be the case for lumber that has been cut down; fish that has been caught; or extracted coal, oil, or other mining products.⁵⁵ WTO rules may also have implications for natural resources before they are extracted or harvested, although only in certain circumstances.⁵⁶

The analysis with respect to the interaction between WTO rules and natural resource management is conceptually different compared to the previous section on MEAs. Indeed, the starting point of the WTO rules is to ensure non-discriminatory trade between countries – not to advance a specific environmental objective. In this sense, WTO rules regulate the types of measures countries can pursue that are relevant to trade, including to advance resource efficiency. For example, with respect to trade in goods, the WTO requires that countries do not levy tariffs that exceed their bound tariff rates; do not discriminate between “like” products; and do not impose import or export restrictions, other than duties and taxes.⁵⁷ These provisions could be relevant for countries’ policy space to manage natural resources. For instance, natural resources tend to be more frequently subject to export taxes compared to other sectors.⁵⁸ Likewise, to enhance resource efficiency, a country may be interested in importing sustainably produced products only and keep unsustainably produced products out.

Acknowledging that there might be a situation in which certain measures that would otherwise run counter to WTO rules should nevertheless be allowed, Article XX of the General Agreement on Trade in Tariffs (GATT) sets out a number of exceptions. Specifically, GATT Article XX contains subparagraphs relevant to natural resources: subparagraph (g) allows for exceptions – subject to certain conditions⁵⁹ – when a measure “relat[es] to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production and consumption”, whereas subparagraph (j) allows for an exception when a government can demonstrate that the measure adopted “is essential to the acquisition or distribution of products in general or in local short supply” subject to additional number of requirements; and sub-paragraph (b) allows measures that are

⁵⁵World Trade Organization, ‘World Trade Report 2010: Trade in Natural Resources’ (World Trade Organization 2010) World Trade Report 2010 44–70, 162–175.

⁵⁶ *ibid* 162–175.

⁵⁷ Nicolas F Diebold (ed), *Non-Discrimination in International Trade in Services: ‘likeness’ in WTO/GATS* (Cambridge Univ Press 2013).

⁵⁸ WTO, World Trade Report 2010, 11, 183–184.

⁵⁹ The WTO Appellate Body has found that for a measure to benefit from protection under Article XX, a member must demonstrate (i) that the measure is covered by one of the subparagraphs; (ii) that the measure is not applied in a manner that would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail; and (iii) that the measure is not a disguised restriction on trade. (Appellate Body Report, *US- Shrimp*, paras. 118-121).

“necessary to protect human, animal or plant life or health”, again, subject to numerous conditions.

The jurisprudence has found a number of different measures relevant to natural resource management to fall within the scope of one of these sub-paragraphs set out in GATT Article XX, including: an import ban imposed to reduce exposure to human health risk arising from the accumulation of waste tyres (*Brazil– Tyres*); export restraints imposed to conserve national resources such as bauxite, fluorspar and magnesium (*China – Raw materials and China – Rare Earths*); import restrictions on certain types of gasoline to reduce air pollution (*US – Gasoline*); import measures related to the preservation of dolphins in the harvesting of tuna (*US – Tuna*); import prohibition on shrimp from countries that had not used a certain turtle friendly net in catching the shrimp (*US – Shrimp*).⁶⁰ While these measures were all found to fall within one of the relevant subparagraphs of GATT Article XX, none of them was found to comply with the other conditions necessary in order to benefit from a justification of a WTO violation. This means that while the WTO jurisprudence confirms that countries may adopt certain measures relevant to natural resource protection under GATT Article XX, in practice, countries invoking a GATT Article XX defense have a high evidentiary burden to meet.⁶¹

Other WTO agreements are relevant with respect to natural resource management. For example, to enhance resource efficiency, including through adopting circular economy policies, countries might be considering imposing different types of process and production standards on imported goods. For example, such standards could require that products comply with energy efficiency requirements; or standards related to mandatory recycling of products; or standards that demonstrate that food commodities were produced without causing deforestation. Treating products differently on the basis of the way they have been produced, also known as process and production methods (PPMs), could raise WTO-consistency questions under GATT, as well as under the WTO’s Agreement on Technical Barriers to Trade (TBT Agreement).⁶² While such measures can be applied to fulfill an environmental purpose, they cannot be “more trade restrictive than necessary”. Other provisions in the TBT Agreement encourage the harmonization of technical requirements and standards with international standards, such as standards set by the International Organization for Standardization (ISO), wherever possible. While, the provisions of the TBT Agreement thus limit countries’ options in adopting standards to enhance resource-efficiency, they could also be seen as enablers of trade in products that are sustainably produced. Indeed, these types of provisions ensure that standards and labels do not hinder market access that could be caused by the proliferation of schemes across jurisdictions that impose different requirements. In doing so, they could facilitate trade in sustainably produced natural resources, or in products that are resource efficient.

Other relevant provisions with respect to natural resource management concerns the Agreement on Agriculture (AoA). This Agreement covers agricultural products, including

⁶⁰ For more information about these cases, please visit the WTO website.

⁶¹ For more: Peter van den Bossche and Werner Zdouc, *The Law and Policy of the World Trade Organization: Text, Cases and Materials* (Cambridge University Press 2017) ch 8.2.

⁶² For more: Mitsuo Matsushita and others, *The World Trade Organization: Law, Practice, and Policy* (Third edition, Oxford University Press 2015) ch 13.

certain wood products and raw materials. The Agreement seeks to limit export subsidies as well as domestic support that is trade-distorting. To the extent that the Agreement on Agriculture has indeed impacted global agricultural production, the AoA could have implications for resource efficiency.⁶³

In some circumstances, the provision of subsidies could exacerbate the overexploitation of natural resources. For example, subsidizing greenhouse gas-emitting fuels makes them cheaper, thereby creating an incentive to produce more.⁶⁴ In this regard, the Agreement on Subsidies and Countervailing Measures (SCM), which disciplines the use of subsidies by WTO Members, could incentivize resource efficiency of fossil fuels. Conversely, the SCM Agreement could also hinder adopting subsidies to develop a renewable energy industry. There are, however, ways in which subsidies could be designed to fall within the SCM provisions. For example, in *Canada – Renewable Energy*, the Appellate Body found that where a WTO Member creates a new market for renewable energy like solar panels and wind turbines as part of a feed-in tariff scheme, it does not necessarily amount to a subsidy.⁶⁵

In sum, while the WTO delineates the options countries have to adopt certain measures that could advance natural resource management and resource efficiency, nothing in the agreement prevents countries from pursuing the development of an international agreement on natural resource management.

ii. WTO negotiations

In addition to the implications of existing rules on countries' ability to adopt measures that incentivize resource-efficiency, the WTO is also seeking to negotiate new rules that would have a more direct bearing on natural resources use. For instance, it has been conducting fisheries negotiations for the last two decades, with the goal of prohibiting certain types of fisheries subsidies that contribute to overcapacity and overfishing. These negotiations directly correspond to SDG 14 and address the planetary boundary that seeks to reduce the rate of biodiversity loss. While Members sought to finalize an agreement by the Ministerial Conference originally set to take place in December 2021, but which has been postponed due to developments relevant to COVID-19. This reflects developments that have taken place in the context of FTAs, with many recently negotiated agreements including provisions that discipline harmful fishery subsidies that contribute to overcapacity and overfishing.⁶⁶ Another ongoing initiative that would be potentially relevant to resource efficiency concerns reducing fossil fuel subsidies. During the 2017 WTO Ministerial Conference, a sub-set of WTO Members adopted the Fossil Fuel Subsidies Reform Ministerial Statement, which called for further WTO action to discipline fossil fuel subsidies.

⁶³ WTO, World Trade Report 2010, 15, 165, 167–169.

⁶⁴ United Nations Environment Programme and International Resource Panel, 'Sustainable Trade in Resources: Global Material Flows, Circularity and Trade' (United Nations Environment Programme 2020) Discussion Paper 62.

⁶⁵ Appellate Body Reports, *Canada – Certain Measures Affecting the Renewable Energy Generation Sector / Canada – Measures Relating to the Feed-in Tariff Program*, para. 5.178.

⁶⁶ This is further elaborated upon in Part C below.

Some of these initiatives are being further developed in the context of the “Structured Discussions on Trade and Environmental Sustainability”, which were launched in November 2020 in order to “collaborate, prioritize and advance discussions on trade and environmental sustainability”.⁶⁷ Specifically, as part of these Structured Discussions, Members have proposed ideas on fossil fuel subsidy reform; different types of environmentally harmful subsidies that contribute to climate change and biodiversity loss through their impacts on production and consumption; reducing tariffs on environmental goods and services; and the need for decarbonized supply chains. Other recurring topics that have been proposed with relevance to natural resource management include the role of the WTO in tackling trade in plastic pollution; supporting the transition to a circular economy and protecting biodiversity.⁶⁸

In sum, there are a number of different ways in which the WTO rules and ongoing negotiations could be relevant vis-à-vis the sustainable management of natural resources/resource efficiency. On the one hand, the rules of the WTO could restrict the types of measures governments can legally take to enhance resource efficiency. On the other hand, the rules could be leveraged to facilitate trade in sustainably produced goods or reduce resource use through disciplining subsidies. While the environmental angle features prominently in ongoing negotiations, it remains to be seen whether these negotiations will bear fruit.

C. Regional Trade Agreements (RTAs) and natural resources

A. Coverage of natural resources in RTAs

Most Regional Trade Agreements (RTAs) build upon the obligation set out in the WTO – either by including additional provisions or by adding additional rules and regulations to existing provisions. This means that a large part of the analysis set out in the WTO section with respect to the substantive WTO provisions also applies to most RTAs. Therefore, this section will focus on provisions that cover natural resources and sustainable resource management that go beyond what is set out in the WTO. Moreover, in light of the large number of RTAs that exist, this section highlights both trends in recently adopted RTAs that are relevant to natural resource management and focus on RTAs that contain provisions of specific relevance to natural resource management. It is, however, not representative of all RTAs.

Many RTAs contain references to MEAs; a trend that has significantly increased since 2006. MEAs that are most frequently referenced in RTAs include:⁶⁹

⁶⁷ Sofia Balino, ‘Trade and Environment Structured Discussions Among WTO Member Group Get Underway’ (International Institute for Sustainable Development 2021) Policy Brief.

⁶⁸ *ibid.*

⁶⁹ José-Antonio Monteiro, ‘Typology of Environment-Related Provisions in Regional Trade Agreements’ (World Trade Organization Economic: Research and Statistics Division 2016) WTO Working Paper ERSD-2016-13.

- CITES
- The Basel Convention
- The Rotterdam Convention
- The Stockholm Convention
- The Montreal Protocol
- The UNFCCC
- The Kyoto Protocol
- The Convention on Biological Diversity
- The Cartagena Protocol

RTAs differ in their approach: they can require parties to reaffirm their obligations under MEAs to which they are a party, or to reaffirm parties' respective obligations under a specific MEA or a specific provision of the MEA. RTAs can also require the parties not to fail to effectively enforce their environmental laws, regulations, and other measures to fulfil their obligations under the covered MEAs; or require that parties accede to or ratify specific MEAs. For example, the Common Market for Eastern and Southern Africa (COMESA) sets forth the parties' undertaking to accede to international agreements that seek to improve management of energy resources, natural resources, etc.⁷⁰

These references to MEAs in RTAs could incentivize sustainable resource management, even if this is not the main objective of these agreements (see previous section). However, it is commonly considered that the MEA-related obligations embedded in RTAs are weak, given that they lack measurable and verifiable commitments. This makes it difficult to measure and monitor whether a country is effectively implementing its commitments under the MEA. Another, related, critique of MEA references concerns their accountability in implementation. In EU RTAs, MEA-related provisions are set out in Trade and Sustainable Development Chapters, which are not subject to stringent dispute settlement mechanisms. Recommendations have been provided to address this issue.⁷¹

RTAs also cover natural resources more directly. For instance, many recently adopted RTAs incorporate provisions that cover natural resources such as fisheries. Different RTAs adopt different approaches to fisheries management, ranging from best endeavor provisions that focus on cooperation in the promotion of sustainable development and management of fisheries, to more specific commitments, including provisions relevant to the adoption of measures to monitor and control fishing activities.⁷² Other RTAs also refer to cooperation in the fight against illegal, unreported and unregulated fishing activities, or seek to prohibit subsidies that contribute to overfishing and overcapacity.⁷³ By focusing on promoting

⁷⁰ Monteiro (2016).

⁷¹ See, e.g., IEEP (2021), "Environmental credentials of EU trade policy: A comparative analysis of EU free trade agreements", Available at: [https://ieep.eu/uploads/articles/attachments/fa0af713-08e5-4800-b263-439138f627c4/Environmental%20credentials%20of%20EU%20trade%20policy%20\(IEEP%202021\).pdf?v=63785611056](https://ieep.eu/uploads/articles/attachments/fa0af713-08e5-4800-b263-439138f627c4/Environmental%20credentials%20of%20EU%20trade%20policy%20(IEEP%202021).pdf?v=63785611056).

⁷² Monteiro (2016).; Joel P Trachtman and José-Antonio Monteiro, 'Environmental Laws' in Aaditya Mattoo, Nadia Rocha and Michele Ruta (eds), *Handbook of Deep Trade Agreements* (World Bank Group 2020).

⁷³ Luca Rubini, 'Subsidies' in Aaditya Mattoo, Nadia Rocha and Michele Ruta (eds), *Handbook of Deep Trade Agreements* (World Bank Group 2020) 451. According to the database 248 FTAs cover fisheries subsidies. E.g. Article 20.16, Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) 2018; Article

sustainable management of fisheries and prohibiting harmful fishery subsidies, these provisions promote sustainable management of fishery resources.

Another natural resource that is the subject of RTAs is forestry and trade in forest-based products. Similar to fisheries, these provisions vary from best endeavor language promoting sustainable forestry management to more specific commitments that require the adoption of measures to combat illegal logging and related trade.⁷⁴ The most common form of environment-related provisions on forestry concerns cooperation in the promotion of sustainable forestry management.⁷⁵ In order to protect trade in timber species at risk, some RTAs include provisions that promote the effective use of the CITES, analyzed in the previous section. While resource efficiency is not the main objective of these provisions, they could incentivize sustainable forestry management and thereby enhance resource efficiency.

A handful of RTAs contain provisions that can be used to reduce the demand for fossil fuels and incentivize the adoption of renewable energy. Indeed, while at the WTO level, conversations on fossil fuel subsidy reduction are progressing slowly, a number of RTAs contain provisions that seek to discipline fossil fuel subsidies. For instance, the EU-Singapore EPA, which is still awaiting ratification, requires parties to ensure that, when developing public support systems for fossil fuels, they take into account the need to reduce greenhouse gas emissions and limit distortions to trade as much as possible.⁷⁶ Under the Agreement, the parties further commit to the goal of progressively reducing subsidies for fossil fuels. These provisions do not, however, prohibit the parties from subsidizing fossil fuels. In addition, in September 2019, Costa Rica, Fiji, Iceland, New Zealand, Norway and Switzerland launched the Agreement on Climate Change, Trade and Sustainability (ACCTS), the scope of which is envisioned to include disciplines to eliminate harmful and socially regressive fossil fuel subsidies.⁷⁷

A number of RTAs also contain provisions – or even entire chapters – on the trade of energy and mineral resources. These chapters tend to be focused on reducing risk to mineral and energy supply chains, however, as opposed to environmental protection. For instance, the Economic Partnership Agreement (EPA) between Japan and Australia refers to “the importance of a stable supply of energy and mineral resource goods”.⁷⁸ With this objective in mind, the mineral resource and energy chapter specifies that “each party shall endeavor not to introduce or maintain any prohibitions or restrictions on the exportation or sale for export of any energy and mineral resource goods”, including if taken consistently with Article XX (g).⁷⁹ It further requires that when a party adopts an export prohibition or restriction on energy and mineral resources in accordance with Article XX(g), it shall seek to limit such prohibition to the extent necessary. The chapter further notes that the parties shall take into account the impact on commercial activities when introducing energy and mineral resource regulations.

24.20, United States - Mexico - Canada Agreement (USMCA) 2018; Article 7.4, Comprehensive Economic Trade Agreement 2017 (OJ L 11) 23, 4.

⁷⁴ Monteiro (2016) 62.

⁷⁵ Trachtman and Monteiro (2020) 571.

⁷⁶ Free trade Agreement between the European Union and the Republic of Singapore 2019 (OJ L 294) 3, ch 12.

⁷⁷ United Nations Environment Programme and International Resource Panel (2020) 62.

⁷⁸ Japan-Australia Economic Partnership Agreement 2015., Art. 8.3 (1).

⁷⁹ *ibid.*, Art. 8.4 (export restrictions).

Similar provisions are found in RTAs between Japan and Brunei and between the Republic of Korea and Australia.⁸⁰

In sum, RTAs cover natural resources through a variety of approaches: some provisions, including references to MEAs, provisions on sustainable fisheries and forestry management, and provisions that seek to reduce fossil fuel subsidies, could have a positive impact on sustainable resource management. Other provisions designed to reduce disruptions to energy and mineral supply chains will likely increase resource extraction and trade. With respect to those provisions that could enhance sustainable resource management, they are also limited, however, as they do not cover resource management directly and comprehensively – as elaborated upon in the previous section. Moreover, the inherent weakness in these provisions relates to monitoring mechanisms and enforcement further limits the effectiveness of these provisions to advance natural resource management. Other limitations include the fact that relevant sustainability provisions are found in only a handful of RTAs – mostly with the EU – and are applicable only to the countries that are parties to the agreement.

B. Leveraging RTAs to advance the circular economy⁸¹

RTAs can also be relevant to natural resource management as they can serve as a lever to advance a transition towards a circular economy, thereby reducing resource use. Most notably, the EU has included the circular economy as an area of cooperation in its newest draft trade agreements under negotiation, including with Mexico, New Zealand, Mercosur, Chile, and the United Kingdom. For instance, the EU-Mexico FTA promotes “inclusive green growth and circular economy”, while the FTAs with Australia, New Zealand and the United Kingdom contain provisions to increase cooperation to promote initiatives on “sustainable production and consumption, including those aimed at promoting a circular economy, green growth, and pollution abatement.”⁸²

Parties to the pending EU-Mercosur FTA agree that they “may work together” on various issues, including trade-related aspects of “sustainable consumption and production initiatives consistent with SDG 12, including, but not limited to, circular economy and other sustainable economic models aimed at increasing resource efficiency and reducing waste generation”.⁸³ Similarly, as part of a possible modernized EU-Chile Association Agreement, the EU has proposed adding a Chapter on Sustainable Food Systems which emphasizes cooperation to improve the sustainability of the countries’ respective food systems, including the

⁸⁰ Monteiro (2016) 30–31.

⁸¹ For more information on the role of RTAs in advancing the circular economy, please see Malena Sell and Christoph Bellman, ‘Options to incorporate circular economy provisions in Regional Trade Agreements’ (IISD 2021).

⁸² Malena Sell and Christoph Bellman, ‘Options to incorporate circular economy provisions in Regional Trade Agreements’ (IISD 2021); EU-UK TCA.

⁸³ Draft EU-Mercosur Association Agreement 2019, Art. 13(q).

sustainability of food production and food consumption.⁸⁴ The EU-UK TCA also contains a reference to sustainable food systems.⁸⁵

These commitments to cooperate, however, are relatively weak as they fall short of imposing actual obligations on the parties to advance circular economy principles, resource efficiency, and/or sustainable production and consumption. Moreover, these cooperation commitments will only be as effective or ineffective as their actual implementation. Generally, the circular economy cooperation commitments form part of the EU's Trade and Sustainable Development Chapters, which are not subject to dispute settlement. Instead, implementation is taken up by Domestic Advisory Groups.⁸⁶

RTAs can also advance the circular economy by facilitating the diffusion of goods and services of relevance to advancing circular solutions and enhanced resource efficiency.⁸⁷ For example, RTAs can eliminate tariffs on machines and their parts for waste management and recycling, drip-irrigation systems, recycled papers, bags made of natural fibers. In this regard, the Asia-Pacific Economic Cooperation (APEC) countries agreed on a list of 54 environmental goods that would be subject to tariff reduction. Likewise, some RTAs include references to cooperate on addressing tariff barriers – as well as non-tariff barriers - related to environmental goods and services.⁸⁸

Relatedly, some RTAs include provisions that encourage the use of products that were obtained through sustainable production. For instance, the EU-Japan EPA, which is commonly considered among existing EU trade agreements to contain the most specific provisions for environmental protection,⁸⁹ encourages the parties to use “products which were obtained through sustainable use of natural resources and which contribute to the conservation and sustainable use of biodiversity...”⁹⁰ The Indonesia-EFTA Comprehensive Economic Partnership Agreement goes beyond such general statements by making tariff preferences for palm oil conditional on compliance with sustainability objectives, including: “effectively apply laws, policies and practices aiming at protecting primary forests, peatlands and related ecosystems, halting deforestation, peat drainage and fire clearing in land preparation...”. While the agreement itself does not provide references to specific certification schemes that would enable exporters to demonstrate compliance with these standards, governments have tried to fill this gap.⁹¹

⁸⁴ Draft Chapter on Sustainable Food Systems for Chile-EU Association Agreement, Available at: https://trade.ec.europa.eu/doclib/docs/2021/june/tradoc_159633.pdf.

⁸⁵ EU-UK TCA.

⁸⁶ This is different in RTAs negotiated by the United States, where environmental provisions are typically subject to dispute settlement mechanisms.

⁸⁷ Malena Sell and Christoph Bellman, 'Options to incorporate circular economy provisions in Regional Trade Agreements' (IISD 2021).

⁸⁸ See, e.g., EU-UK TCA.

⁸⁹ Economic Partnership Agreement between the European Union and Japan 2018 (COM/2018/192 final - 2018/0091 (NLE)) ch 16.

⁹⁰ Economic Partnership Agreement between the European Union and Japan, Article 16.6.

⁹¹ For example, Switzerland commissioned a study to assess different certification schemes for palm oil, and ultimately settled on four: the RSPO Identity Protected, the RSPO Segregated, the ISCC Plus Segregated, and the Palm Oil Innovation Group (POIG) with RSPO Identity Protected and Segregated. If a Swiss palm oil importer meets any of these four certification schemes, it will benefit from the reduced tariff. In the event of violations,

Similarly, with respect to services, parties to an RTA can consider liberalizing services sectors in areas relevant to the circular economy, or to advancing resource efficiency. This will include traditional environmental services, such as water and waste treatment, but also services that are critical to facilitate a transition towards a green economy, including access to services to assemble solar or lithium-ion cells, grid connections and installation services; or product design, waste recycling and water treatment services.⁹² Liberalizing these services would open a country's market to allow foreign service providers to deliver these services, thereby facilitating access to the required services and investment.

Furthermore, given their role in shaping production and consumption patterns, technical regulations and standards are a key instrument to advance sustainable resource use. For example, with respect to resource efficiency this includes standards on eco-design, sustainable production, recyclability, and reparability. In this regard, RTAs can play a role to remove non-tariff barriers that emerge when different jurisdictions adopt different regulations and standards. By encouraging transparency with respect to standards and regulations relevant to the circular economy through transparency requirements, or provisions that encourage equivalence, mutual recognition, or the harmonization of standards and regulations of relevance to the circular economy, RTAs can address issues that emerge due to regulatory heterogeneity, which impose additional costs on exporters and often act as non-tariff barriers. Some RTAs include provisions promoting harmonization or equivalence of specific upstream or downstream circular economy standards or regulations. For example, the USMCA Sectoral Annex on Energy Efficiency Performance calls on parties to harmonize energy performance standards within nine years of the entry into force of the agreement. It also seeks to promote cooperation on voluntary labelling schemes (including a product's durability, reparability etc.), recognizing that such voluntary programs should be open and transparent, maximize consumer benefits, and avoid creating unnecessary barriers to trade.⁹³

A handful of RTAs include provisions that enable renewable energy subsidies. For example, the Canada-EU Trade Agreement (CETA), affirms countries' commitments under the WTO SCM Agreement, but acknowledges the parties' right to use exceptions for environmental measures, including those related to MEAs.⁹⁴ Similarly, the *EU-Singapore* FTA allows governments to grant subsidies for "environmental purposes" provided that they are necessary to achieve a public interest objective; the amounts are limited to the minimum needed; their effects on trade are limited; and they do not affect the conditions of trade of either party or competition between the parties.⁹⁵ Similarly, the recent EU-UK TCA allows subsidies in relation to energy and environment to the extent that they aim at and incentivize the beneficiaries to deliver "a secure, affordable and sustainable energy system and a well-

customs officials can demand the difference in customs duties to be paid, and where appropriate, penalize the importer in accordance with Swiss legislation.

⁹² Colette van der Van and Landry Signe, 'Greening the AfCFTA: It is not too late', Africa Growth Initiative Policy Brief (2021).

⁹³ Bellmann and Sell (2021); Christoph Bellman and Colette van der Ven (2020), 'Greening regional trade agreements on non-tariff measures through technical barriers to trade and regulatory co-operation', OECD Trade and Environment Working Papers (2020).

⁹⁴ Comprehensive Economic Trade Agreement chs. 7, 12.

⁹⁵ Free trade Agreement between the European Union and the Republic of Singapore, Annex 11-A.

functioning and competitive energy market” or to increase “the level of environmental protection compared to the level that would be achieved in absence of the subsidy”.⁹⁶

The emergence of provisions that seek to enhance cooperation in the transition towards a circular economy could be a start to enhance alignment between sustainable resource management and RTAs, and thereby advancing sustainable resource management. However, these provisions are also limited as they focus mostly on sustainable production processes. Apart from a handful of references to sustainable consumption, they do not focus on natural resource demand. Moreover, while the provisions analyzed in this section seek to facilitate countries’ green transitions and are therefore relevant to advance life within planetary boundaries, the impact they have on resource use is complex: in the case of spurring the development of renewable energy, they could decrease demand in fossil fuels. Yet at the same time, subsidizing renewable energy will likely increase demand for certain minerals and metals required to develop this market. In addition, inherent weaknesses in circular economy and resource-efficiency-related provisions analyzed in this section include the fact that cooperation provisions are weak, lack specificity, and often are not subject to an effective enforcement mechanism.

D. Findings - natural resource management under FTAs

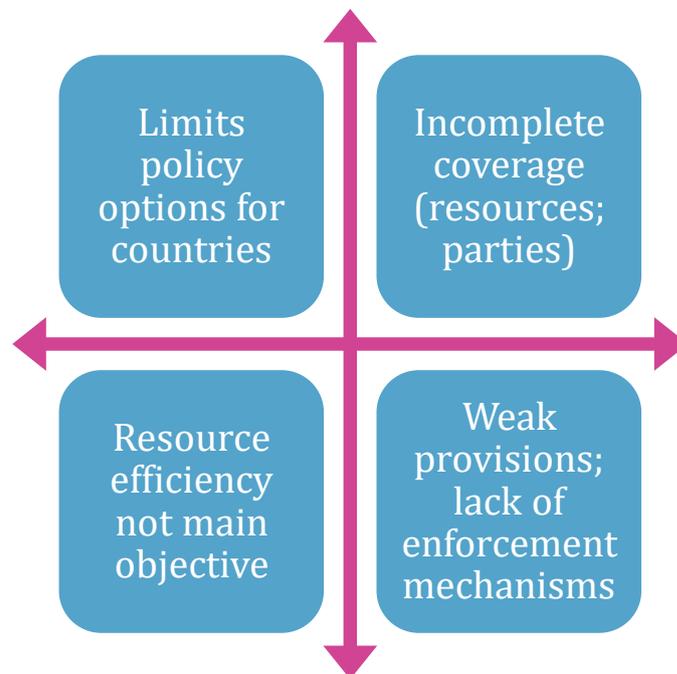
This section has analyzed the interaction between FTAs and natural resource management. On the one hand, it finds there exists a wide gap between trade agreements, which mostly seek to facilitate trade, and natural resource management objectives, which seek to ensure production and consumption stays within planetary boundaries. In this regard, FTAs can limit countries’ policy space to adopt certain types of measures relevant to natural resource management. Moreover, some RTAs include provisions designed to reduce disruptions to energy and mineral supply chains and could thereby increase resource extraction.

On the other hand, this section has demonstrated the emergence of a large number of provisions, mostly within the context of RTAs, that seek to leverage trade agreements to advance certain environmental objectives, with relevance to natural resource management. For instance, RTAs that contain references to relevant MEAs, provisions on sustainable fisheries and forestry management, and provisions that seek to reduce fossil fuel subsidies, could have a positive impact on sustainable resource management. In addition, an increasing number of RTAs contains provisions relevant to advancing the circular economy – either directly, by circular economy cooperation provisions, or indirectly by reducing tariff and non-tariff barriers on trade in goods and services relevant to developing circular solutions and resource efficiency. While these provisions seek to facilitate countries’ green transitions and are therefore relevant to advance life within planetary boundaries, the impact they have on resource use is complex: in the case of spurring the development of renewable energy, they could decrease demand in fossil fuels but increase demand in minerals and metals.

⁹⁶ EU-UK TCA, Art. 367.14.

Existing provisions in RTAs relevant to resource management are highly imperfect instruments to advance natural resource management. Indeed, their coverage of natural resources is scattered and random. Through forestry and fisheries provisions, as well as references to MEAs that are relevant to biodiversity – biomass is probably the resource that is covered the most in RTAs. There are very few provisions, however, directly relevant to minerals and metals. Moreover, natural resource management is not the main objective of the provisions analyzed. A coverage gap also exist as most natural resource-related provisions are set out in only a handful of RTAs, which are applicable only to the Parties that have signed the agreement – most often including the EU. Other weaknesses include the fact that the provisions tend to focus on sustainable production of resources – but not on sustainable consumption. To stay within planetary boundaries, it is critical to tackle both production and consumption.

Figure 2: Key limitations in existing FTAs to tackle natural resource management



In addition, inherent weaknesses in circular economy and resource-efficiency-related provisions analyzed in this section include the fact that cooperation provisions are weak, lack specificity, and are often not subject to an effective enforcement mechanism. This limits the effectiveness of these provisions to advance natural resource management. A more holistic approach will be required to embed sustainable resource management principles – which could decouple economic growth from natural resource use – into trade policy.⁹⁷

⁹⁷ World Economic Forum, 2019 White Paper 4.

IV. Design and architecture of an international agreement on natural resource management

A. Introduction

The previous sections have made the case in favor of developing an international agreement on resource management and have demonstrated how doing so would complement existing treaties. This section builds on the findings in the previous two sections and explores in more detail the design and core principles that should be reflected in an international agreement on natural resource management. Specifically, an international agreement on natural resource management should be designed to address, as much as possible, gaps in existing treaties, as analyzed in the previous two sections.

In this regard, the main coverage gaps identified, in the previous sections, both in MEAs and FTAs, include (i) the fact that the focus is not on resource efficiency, but resource efficiency is addressed only indirectly; (ii) the fact that existing MEAs and FTAs address resource efficiency only with respect to a subset of resources; and (iii) the fact that MEAs tend to cover only a subset of the value chain. More generally, the analysis also found that biomass is most widely covered, whereas the sustainable management of abiotic resources is underrepresented in MEAs and FTAs. Other weaknesses identified, inherent to MEAs/relevant provisions in FTAs, include the fact that many existing provisions are weak; only a limited number of agreements provide for quantifiable targets; and poor implementation records.

An international agreement on sustainable resource management has the potential to address some of these coverage gaps. To begin with, it would ensure that natural resource management would be the main objective of such an agreement, and not just an afterthought. An international agreement on natural resource management could also address the fact that many resources are not covered by existing agreements; and that most agreements fail to provide for quantifiable targets. Gaps that will be more difficult to address, at least immediately, concern weak obligations, as this would likely be difficult politically. In any event, developing an international agreement on natural resource management will likely be a long process that would have to be approached gradually, and leave sufficient space to receive input from the members.

Against these considerations, this section analyzes design options for an international agreement on natural resource management, with a focus on scope, structure, targets, and reporting and monitoring.

B. Scope

A key question to address in designing the contours of an international agreement on natural resource management concerns what resources it would cover. As set out below, there are three main options to consider, each of them with advantages and disadvantages.

Table 3: Analysis of different types of scope options for an agreement on natural resource management

Resource Coverage	Coverage in MEAs/FTAs	Tradability of resources	Environmental impact	Political considerations
All natural resources (material resources, soil, air, water etc.)	Water, soil and air are subject to a number of MEAs. Material resources other than biomass are only partially covered.	Soil, air and water are not tradeable resources	This would cover the impact that different ecosystems have on the environment and could be aligned to the planetary boundaries approach.	The scope may be too broad to get political buy-in.
Material resources (fossil fuels, non-metallic minerals, metals, and biomass).	Biomass is widely covered by MEAs/FTAs. Material resources other than biomass are only partially covered.	Material resources are tradeable	Material resource extraction and processing accounts for more than 90% of global biodiversity loss and water impacts; and is responsible for almost half of all global emissions.	Including biomass in the scope would involve many political interests, which could make political buy-in difficult.
Abiotic resources, i.e., resources that do not originate from living beings except if transformed into fossil fuels (material	Abiotic resources are only partially covered under MEAs/FTAs	Abiotic resources are tradeable	Abiotic resources have significant impact on the environment: <ul style="list-style-type: none"> Between 2000 and 2015, the climate change impact from global 	A narrow focus on abiotic resources would make it easier to obtain political support. The green energy transition will be heavily reliant on metals and minerals, which would make a focus on abiotic

<p>resources without biomass). Examples include: metals, sand, gravel, potassium salts, quartz sand, and fossil fuels.</p>			<p>extraction and production of metals doubled.</p> <ul style="list-style-type: none"> • The processing stage of minerals is responsible for generating the largest proportion of climate change impact, as well as on local ecosystems. • Extracting fossil fuels contributes considerable to climate change and environmental pollution, especially in air. 	<p>resources politically relevant.</p>
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Based on the various considerations set out in Table 3 above, an international agreement on natural resource should either focus on material resources, or on abiotic resources. Focusing on abiotic materials only would avoid any potential overlap between existing MEAs that cover biomass, while making it politically easier to garner support for this agreement, given the political difficulties involved surrounding the issue of agriculture and related issues. Other studies examining the implications of an international agreement on natural resource management likewise focus on a scope that would cover abiotic resources.⁹⁸

Not covering biomass, however, also has limitations, given the fact that biomass accounted for one third of all extracted materials in 1970s (reduced to just over one quarter by 2017), and plays a critical role in the clean energy transition.⁹⁹ Similarly, the focus might be too narrow to respond to SDG 12, which seeks to ensure sustainable consumption and production patterns, including by halving global per capita food waste which refers to biomass. Further, there might be trade-offs between the under-consumption of abiotic resources and overconsumption of biotic resources, if left unregulated by the agreement and excluded from the targets. These trade-offs would suggest that biotic and abiotic material streams would need to be approached together in determining integrated pathways to develop value chains that stay within planetary boundaries.

⁹⁸ See, e.g., Bodle and others (2021).

⁹⁹ OECD (2019) 43.

The question is easier with respect to which part of the value chain an international agreement on sustainable resource management should cover resource extraction, resource efficiency, resource consumption, and/or end-of-life. Given the fact that most MEAs cover only part of the value chain – often focus on end-of-life and not production – an international agreement on resource management should adopt a comprehensive approach and focus on all stages of the value chain.¹⁰⁰

C. Structure

When thinking about an international agreement on natural resource management, it is important to identify possible options for the structure of the agreement. This, in turn, is directly related to the political ambition of the agreement. As set out in Section 1, at present, natural resource efficiency is not currently the focus of many government efforts. Discussions that are taking place with respect to addressing resource efficiency, including at the EU level, at the G7 Alliance for Resource Efficiency, the G20 Alliance for Resource Efficiency, GACERE, and the OECD. While this indicates a growing political momentum with respect to developing an agreement on international resource management, these political processes take time and indicate that a more gradual approach to advancing an agreement on resource management would be more feasible. This is further supported by the work done by the Ecologic Institute in Berlin.¹⁰¹

The structure of an international agreement on resource management should reflect this gradual approach. One way of doing so would be by starting with a framework structure that would contain general principles and set out the objective of the agreement, and that envisions subsequent amendments, through protocols or annexes, setting out commitments vis-à-vis particular issues or resources.¹⁰² In this regard, the resolution that is being developed seeking the reduction of plastics and plastic waste under the UNEA as explained earlier could be adopted as Protocol to the framework convention.

Specifically, the approach of a framework convention complemented by subsequent amendments and annexes for specific resources was followed, most prominently, by the UNFCCC, the Long-range Transboundary Air Pollution system (LRTAP), and the Ozone layer protection system. For instance, the LRTAP framework convention included only the following: (i) a definition of the object; (ii) an introduction to fundamental principles; (iii) establishment of an institutional framework for subsequent protocols.¹⁰³ Similarly, the Vienna

¹⁰⁰ Similar proposal by SYSTEMIQ and Club of Rome (2020).

¹⁰¹ Bodle and others (2021) 221–238.

¹⁰² In this regard, the framework convention could take the form of high-level political commitments, with a Conference of the Parties (COP) to set deadlines and targets for future annexes and amendments. In the case of an international agreement on resource management, work is ongoing that express interest to upgrade of international governance of certain specific resources, like chemicals or plastics. These resource-specific agreements could be protocols to the framework convention.

¹⁰³ Protocols signed within the framework of the LRTAP Convention include the Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes; the Protocol concerning Control of Emissions of Nitrogen Oxides; the Protocol concerning the Control of Emissions of Volatile Organic Compounds on their Transboundary Fluxes; the Protocol on Further Reduction of Sulphur Emissions, the Protocol on Persistent Pollutants; the Protocol on Heavy Metals; and the Protocol to Abate Acidification, Eutrophication, and Ground-level Ozone.

Convention on the Protection of the Ozone Layer set out an initial framework that only included general principles and institutional arrangements for future protocols and general obligations. The legally binding provisions were introduced subsequently, mainly through the Montreal Protocol. This approach enabled the Convention to reach universal ratification in 2009.

Likewise, the UNFCCC served as a convention that sets out weak provisions with the objective of reducing Greenhouse gas emissions, encouraging countries to adopt policies and mitigation measures, and to report on them periodically.¹⁰⁴ The Kyoto Protocol, which was agreed subsequent to the UNFCCC, operationalized the UNFCCC by committing industrialized countries and economies in transition to limit and reduce greenhouse gas emissions in accordance with individual targets. The Paris Agreement, administered under the UNFCCC but being a stand-alone treaty, required all countries to make reduction commitments through Nationally Determined Contributions (NDCs).

D. Basic Principles and Obligations

The Framework Convention would not introduce substantial obligations, but introduce general principles, define the objective of the Convention, the scope of the Convention, and set out an institutional structure. For example, with respect to natural resource management, this could be the obligation to adopt national measures to enhance resource efficiency, sustainable resource management, or to reduce the overexploitation of material resources – subject to a number of qualifications that could moderate the commitment. Depending on the scope of the agreement, it could also include a general reference to the importance of staying within planetary boundaries.

Additionally, basic principles and obligations could also highlight the importance of transparency, research and tracing material use, cooperation through the exchange of information, consultation, research, and monitoring. As elaborated upon in Section E below, the Framework Convention should also include provisions that highlight the importance of different responsibilities and provide technical assistance to developing countries.

¹⁰⁴ Dupuy and Viñuales (2018) 173–176.

Box 2: Draft proposal for an international agreement on natural resource use

The proposal developed in a study commissioned by the German Environmental Agency, entitled “Options under International Law to Increase Resource Efficiency”, could be a starting point for an international agreement on natural resource management:

“Article 3 – Guiding Provisions

In taking action towards achieving the objectives of this Convention and implement its provisions, the Parties shall be guided, inter alia, by the following:

(a) Parties should utilise natural resources sparingly and economically with a view to conserving existing natural resources for future generations and minimising negative environmental impacts associated with resource extraction and use.

(b) Parties should include resource efficiency in promoting the internalisation of environmental costs.

[Alternative wording: The internalisation of environmental costs should include resource efficiency.]

(c) Parties should avoid that risks and burdens are shifted between stages in the value chain, phases in the life-cycle, sectors, regions, resources and impacts.

(d) [...]

Article 4 - General Obligations

1. Parties shall, in the light of different national circumstances and with developed country parties taking the lead,

(a) prepare, communicate and regularly update national strategies on resource efficiency,

(b) take steps to increase resource efficiency progressively over time with the aim of achieving the objective of the Agreement as set out in Article 1, for instance by,

i. addressing and improving policy integration and coherence;

ii. promoting resource-efficient production and consumption patterns, in accordance with national policies and priorities,

iii. discouraging or preventing inefficient production and consumption patterns;

iv. promoting and implementing public procurement practices that are sustainable, in accordance with national policies and priorities; [original footnote refers to SDG 12.7]

v. advancing technologies for obtaining materials from natural resources that eliminate waste and toxics and support long-term ecosystem health;

vi. promoting and requiring, where feasible and appropriate in accordance with national policies and priorities, the application of environmental management systems;

vii. promoting sustainable materials management;

viii. improving information about, and monitoring of, materials, their flows and environmental impacts;

ix. [...]

2. In addition to paragraph 1, each Party shall take measures with regard to each annex it is listed in.”

E. Targets and indicators

A. Targets

An international agreement on natural resource management would seek to enhance the sustainable management of natural resources by encouraging countries to adopt sustainable resource management policies. In this regard, and as noted in the section above, the Framework Convention should contain general references to the obligation of increasing resource efficiency progressively. Depending on the scope of the agreement, it could also include a general reference to the importance of staying within planetary boundaries.

To ensure that the resources used enable the world to stay within planetary boundaries, it would be important to develop a global target and associated indicators to identify the safe operating space for natural resources, i.e., ways in which natural resources can be used and not exceed local, regional and/or global thresholds; help measure progress with respect to resource efficiency; guide policymakers to move into a certain direction to reach a goal; and to help shape national plans. To measure progress with respect to the identified targets, it would be important to make reference to quantifiable indicators, especially with regards to Protocols that could be added to the Framework Convention at a later stage and would contain more stringent obligations vis-à-vis resource efficiency at country-level.

The development of targets on global resource use is still in its infancy. This reflects the fact that the science and knowledge around establishing such target is not well-established.¹⁰⁵ Several international organizations, including the IRP and UNEP, are currently engaged in developing such targets. In 2022, the IRP is expected to deliver a study with targets on what a safe operating space would be vis-à-vis a select number of material resources. In addition, the Global Footprint Network has been working on the concept of limits to sustainable resource consumption for over a decade, whereas the Earth Targets Platform,¹⁰⁶ created in 2017, also focuses on developing the scientific insights needed to set science-based targets for a stable and resilient planet.¹⁰⁷ This work will be important to advance the global conversation regarding setting targets and indicators on material resource management.

One of the challenges is translating targets with respect to the environment (e.g., the planetary boundaries) into resource-use targets paired with indicators applicable at a global scale.¹⁰⁸ In other words, how can global planetary boundaries be translated into material usage limits for different materials, and generate concrete resource-use targets for different resources and for different countries, reflecting each country's contributions? This question

¹⁰⁵ European Commission, Directorate General for Environment. (n 1).

¹⁰⁶ This system was the product of a Global Commons Initiative that was initiated by the Global Environment Facility, the International Institute for Applied Systems Analysis; the International Union for Conservation of Nature, the Stockholm Resilience Centre, the World Economic Forum, and the World Resources Institute.

¹⁰⁷ World Economic Forum, 2019 White Paper.

¹⁰⁸ Identified in many national reports: Dao and others (2015); Björn Nykvist and others, 'National Environmental Performance on Planetary Boundaries' (Swedish Environmental Protection Agency 2013) Swedish Environmental Protection Agency Report 6576; European Environment Agency 2020.

was explored in a study commissioned by the Swedish Environmental Protection Agency, which sought to translate the planetary boundaries framework into setting national boundaries for Sweden.¹⁰⁹ More recently, the Swiss Federal Office for the Environment commissioned a study to assess environmental limits and Swiss footprints based on planetary boundaries,¹¹⁰ applying the planetary boundaries to Switzerland, taking a consumption perspective. Figure 3 below sets out findings regarding Switzerland’s performance vis-à-vis various planetary boundaries.

Figure 3: Summary of Swiss performances, limits and footprints¹¹¹

Performance	Planetary Boundary	Units	Limit	Current footprint	Confidence	Trend
Clearly unsafe						
Clearly unsafe	Climate Change	MtCO ₂ eq	4.8	109	high	rapidly deteriorating
	Ocean Acidification	MtCO ₂	4.5	82.8	high	rapidly deteriorating
	Biodiversity Loss	no units	0.16	0.3	low	rapidly deteriorating
	Nitrogen Losses	kt	53.8	108.6	low	slow evolution
Unsafe						
Unsafe	Land Cover Anthropisation	km ²	21 900	17 600	medium	rapidly deteriorating
Missing data						
Missing data	Phosphorus Losses	kt	43.6	no data	low	slow evolution

In addition, the UNEP-Grid blueDot program¹¹² is evaluating the application of the planetary boundaries framework to countries and regions. All these processes will be useful when developing global targets and indicators that can be referenced in Protocols to an international agreement on natural resource management. In addition to the scientific challenges, another major challenge is political. For example, even if we had global targets for various resources, it would be a major political challenge to develop an equitable distribution of the overall remaining material budget amongst different countries. There would also be a challenge to ensure that sustainable resource management targets take into account countries’ different levels of development.

In this regard, it would be important to develop a target that would consider different levels of development and apply the principle of common but differentiated responsibilities. UNEP has proposed two targets that could fit this bill. The first one would have as objective to “double the yearly rate of resource productivity increase by 2030”.¹¹³ This would require developed countries to use less resources than today, enabling developing countries to use more. Another possible target proposed that would take into account the equitable use of

¹⁰⁹ Nykvist and others (2013).

¹¹⁰ Dao and others (2015).

¹¹¹ *ibid* 69.

¹¹² ‘BlueDot | Planetary Boundaries’ <<http://bluedot.world/>> accessed 20 November 2021.

¹¹³ UNEP (2014), “Managing and Conserving the Natural Resource Base for Sustained Economic and Social Development”, Available at: <https://www.resourcepanel.org/reports/managing-and-conserving-natural-resource-base-sustained-economic-and-social-development>.

natural resources would be “decoupling economic growth rates from escalating use of natural resources to achieve the average material intensity of consumption per capita of 6/8 tons/capita/year in 2050.”¹¹⁴ Such a target would enable developing countries to achieve a rising share of global resources, while industrial countries would have to lower the intensity of their consumption by investing in increases in resource efficiency and changes in consumer behavior.

Absent global targets, some countries have set targets – based on commonly used indicators – that set goals relative to existing material use scenarios in these countries. For example, in April 2021, Finland adopted a resolution that restricts the use of domestic primary raw materials in Finland, by requiring that the consumption of domestic primary raw materials in 2035 does not exceed the level of 2015.¹¹⁵ The indicator, however, excludes natural resources used to manufacture products for exports.¹¹⁶ The Netherlands has adopted an interim objective of a 50% reduction in the use of primary raw materials by 2030, with a focus on minerals, fossils and metal.¹¹⁷ In 2019, the Flemish Government adopted the Energy and Climate Plan, which includes provisions that seek to reduce the material footprint of consumption in Flanders with 30% by 2030. In December 2021, a monitor for the progress towards a Circular Economy has been launched in Flanders; the material footprint is one of the headline indicators therein, and more detailed indicators on the material footprints of the mobility, food, housing and consumer goods subsystems have been included as well. The monitor is to develop in the coming years into an instrument to follow-up on CE targets and to underpin policy decisions.¹¹⁸ Other examples are set out in Table 1 above. While such national targets are a start, they would do little to address the global planetary crisis if they are not orchestrated at a global level.

B. Indicators

In addition to establishing targets, it matters what indicators are adopted to measure progress towards these targets. As set out in Table 4 below, with respect to material resource use, common indicators measure domestic material consumption (DMC), material footprint, or domestic material input.¹¹⁹ The type of indicator that countries use to measure material resource impact is important.

¹¹⁴ Ibid.

¹¹⁵ Ministry of Environment Resolution on the Strategic Programme for Circular Economy 2021.

¹¹⁶ A number of other countries have adopted material consumption reduction targets, including Italy, Switzerland, Sweden, the United Kingdom, Austria, Denmark, and Estonia. Resource targets in Europe and Worldwide; An Overview

¹¹⁷ Ministry of Infrastructure and the Environment and Ministry of Economic Affairs, ‘A Circular Economy in the Netherlands by 2050’ (Ministry of Infrastructure and the Environment and the Ministry of Economic Affairs 2016).

¹¹⁸ Circular Economy Monitors Flanders, Available at: <https://cemonitor.be/en/home-english/>.

¹¹⁹ Federal Statistical Office, ‘MONET 2030: Material Footprint per Person’ <<https://www.bfs.admin.ch/bfs/en/home/statistiken/nachhaltige-entwicklung/monet-2030/alle-nach-themen/12-konsum-produktion/material-fussabdruck-person.html>> accessed 20 November 2021.; Material footprint data are available for a number of European countries, ‘Eurostat - Data Explorer’ <https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_ac_rme&lang=en> accessed 20 November 2021.

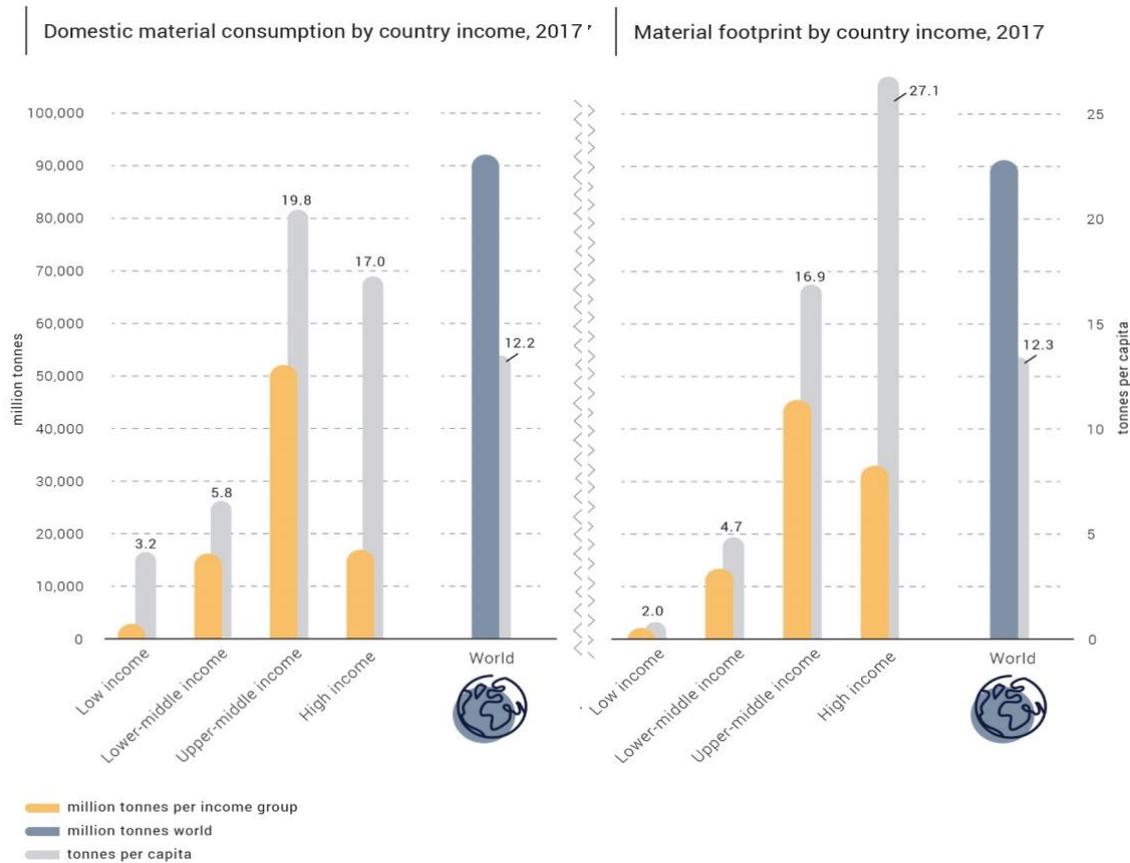
Table 4: Overview of different indicators relevant to material use¹²⁰

Indicator	What does it measure?	Data availability
Domestic Material Consumption (DMC)	Total amount of raw materials extracted in country, plus materials imported, minus materials exported (physical)	Reliable data available from UNEP and Eurostat for the last four decades
Material Footprint	Attribution of global primary extraction to final consumption (indirect flows)	Data available for the last two decades based on material extraction satellite accounts and standard multi-regional input-output (MRIO) approaches, such as EXIOBASE, EORA and GTAP-WDIO.
Domestic Material Input	National material used to fuel production sourced domestically or imported (physical)	Reliable data available from UNEP and EUROSTAT

While DMC focuses only on resources used within a country’s territory, the material footprint indicator focuses on all resources needed for consumption, including upstream in the production chain. This means that, in contrast to DMC, the material footprint indicator includes all raw materials needed throughout the production chain, including imported materials the production of which has been outsourced. The importance of the indicator used cannot be underestimated: as set out in Figure 4, when measured in DMC, upper-middle income countries are the largest per capita material consumer, whereas measured in material footprint, high-income countries are by far the largest consumers per capita, and are increasing their resource dependence by 1.5% per year.

¹²⁰ United Nations Environment Programme, ‘Sustainable Consumption and Production Indicators for the Future SDGs’ (2015) UNEP Discussion Paper.

Figure 4: Domestic material consumption per capita vs. material footprint consumption per capita¹²¹



Other indicators include material resource productivity targets, formulated by the ratio of GDP/ Domestic Material Consumption (DMC), material footprint, or material requirement. Some countries also combine DMC and resource efficiency. For example, France has adopted two-fold goal to have a 30 per cent increase in resource productivity $S(GDP/DMC)$ along with a decrease in in per capita DMC between 2010 and 2030.¹²² As set out in Table 5 below, Germany uses two different indicators to measure resource efficiency, one focusing on raw material productivity which is measured by GDP/DMI , covering only abiotic materials. The other one focuses on total raw material productivity, and is measured by adding GDP and imports, divided by RMI (including biotic materials).

¹²¹ Janez Potočnik, "Resource Management: Scientific backbone and some international related implications", PPT Presentation, 7 December 2021. S

¹²² 'More from Less — Material Resource Efficiency in Europe 2015: Overview of Policies, Instruments and Targets in 32 Countries: France' (European Environment Agency 2015) Country Profile.

Table 5: Economic indicators and targets for resource use¹²³

Economic indicators and targets		
Approach	Indicator	Target
Continuous improvement in the resource efficiency of domestic production	Raw material productivity (GDP/DMI _{abiotic materials}) (indicator under the German Sustainable Development Strategy)	Doubling of raw material productivity from 1994 to 2020
Continuous improvement in resource efficiency, including biotic resources and making adequate allowance for imports	Total raw material productivity (GDP + imports)/RMI (including biotic materials)	Trend from 2000 to 2010 to be sustained to 2030
Source: BMUB		

Generally, a consumption-based indicator would be the most direct method to measure the impact of a country's resource use on the planet. Moreover, it could be relevant to understand how to address the problem: if a country performs poorly on territorial measures, it might want to address production technologies or diversity exports; whereas if a country performs poorly on the consumption level, it might want to address lifestyle issues and consumer awareness.¹²⁴ The most accurate indicator to measure natural resource use would be to measure material footprint, as this includes all raw materials needed throughout the production chain, including imported materials the production of which has been outsourced.

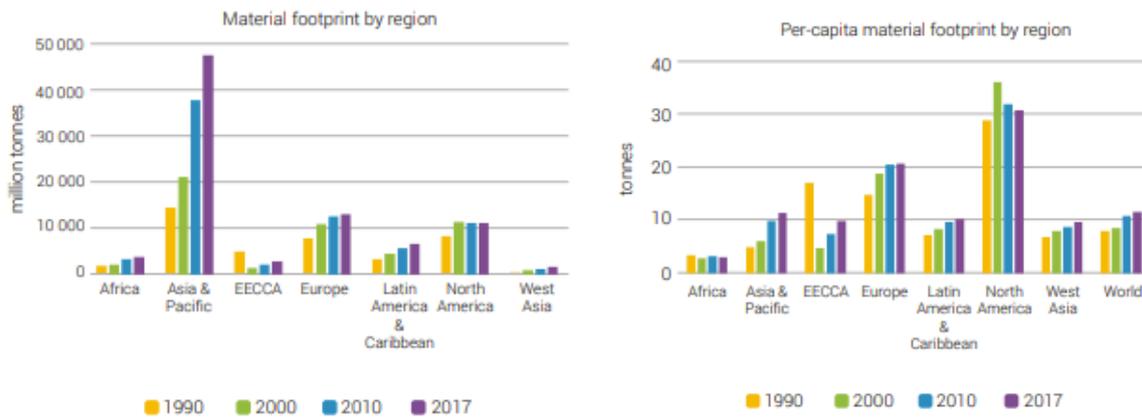
In addition to accuracy, the type of indicator adopted to measure material resources will also have political implications: resource-rich countries will likely score relatively higher on territorial indicators and relatively lower on consumption-based indicators. Conversely, resource-poor countries with advanced economies would score higher on consumption indicators, like material footprint, compared to what they would score on territorial indicators, like DMC.

In addition, to reflect common but differentiated responsibilities between different countries, it would also be important to move towards adopting *per capita* targets and indicators. Indeed, the material footprint picture looks very different when looking at the per capita numbers or when looking at the overall numbers. As illustrated in Figure 5 below, when measured without adjusting per capita, Asia and the Pacific have the highest material footprint, and is growing the fastest. However, when measured on a per capita basis, North America shows the highest numbers.

¹²³ Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (2016) 41.

¹²⁴ E.g. Nykvist and others (2013).

Figure 5: Material footprint by region vs. per capita material footprint by region¹²⁵



On the basis of these considerations, the Framework Convention could adopt a per capita threshold for material footprint – or material consumption - towards the goal of achieving the 6-8 tons/capita/year in 2050 – the target suggested by UNEP.¹²⁶

F. Reporting

The reporting requirements set out in an international agreement on sustainable resource management will depend on the different phases of the agreement. For the initial Framework Convention, reporting can come in the shape of annual reports that set out the initiatives and actions taken by the members for resource efficiency and sustainable consumption and production. Subsequently, when Protocol(s) are adopted that set out more substantive reduction requirements, the reporting requirements can become more extensive, mirroring the NDC process of the Paris Agreement. Countries can be asked to create NDC for resource efficiency, which sets out the various steps that the country seeks to take to reduce its resource consumption, and which would include a resource reduction target. As a starting point, it would make sense to adopt this approach only for a sub-set of resources, and then slowly expand it. When the science is more advanced, countries might also be asked to report on the resource efficiency progress they have made vis-à-vis the planetary boundaries, as illustrated in the reports by Sweden and Switzerland referred to earlier in this section.

In developing reporting requirements, it would be important to create synergies with other MEAs reporting system, such as the one in UNFCCC and the biennial transparency Reports under the Paris Agreement.¹²⁷ For example, the required reporting system should be technically similar to the reporting systems found in other MEAs, especially those sharing

¹²⁵ International Resource Panel, 'Assessing Global Resource Use: A Systems Approach to Resource Efficiency and Pollution Reduction' (United Nations Environment Programme 2017).

¹²⁶ UNEP 2014.

¹²⁷ Chiara Falduto and Sina Wartmann, 'Towards Common GHG Inventory Reporting Tables for Biennial Transparency Reports: Experiences with Tools for Generating and Using Reporting Tables under the UNFCCC' (2021) OECD/IEA Climate Change Expert Group Papers 2021/01.

common targets, indicators or commitments. The adoption of common reporting tables has already been considered in the context of climate change reporting. In establishing reporting requirements, it would also be important to consider the different role advanced economies and lesser advanced economies play in contributing to resource overexploitation.

G. Administration and institutions

The Framework Convention should establish the Conference of the Parties (COP), a secretariat and subsidiary scientific and financing bodies. In this regard, similar to the role of the IPCC in climate change, and IPPS for biodiversity, an Intergovernmental Panel on Sustainable Resource Management would be important to bring together international actors and scientist, including by publishing reports. Specifically, the International Resource Panel (IRP) under the aegis of UNEP already fulfills some of the suggested functions that would be carried out by the Intergovernmental Panel on Sustainable Resource Management. While the IRP would be the obvious institution to serve as scientific body, a number of potential limitations must be addressed, including a lack of financial and human equipment, intergovernmental political connections, and institutionalized anchoring.¹²⁸

The Conference of Parties could have a similar role to the Conference of the Parties set out under the UNFCCC, being the highest body of the Agreement. The Conference of the Parties would include reviewing and adopting the protocols to the Convention, the establishment of subsidiary organs and other functions required for the implementation of the Agreement. In addition, it would also be advisable to develop formal links with the secretariats of UNFCCC and UNCBD to enhance coordination. In this regard, it is worth noting that the Stockholm, the Rotterdam and the Basel Convention share a joint working group that promotes the cooperation between the secretariats and the various subsidiary bodies of the conventions.¹²⁹ Given the magnitude of the problem, i.e., ensuring that we stay within a safe operating space, another option to consider would be to connect the agreement to the UN General Assembly. Exactly how this would work would require additional research.

¹²⁸ Bodle and others (2021) 128.

¹²⁹ Dupuy and Viñuales (2018) 278, referring to the CoP decisions by all three treaties.

V. Implications for net material importers, resource-rich developing countries, and developing countries with low levels of material consumption per capita

Developing an international agreement on resource management will politically be very difficult. Besides the fact that broad political acceptance of an international agreement on natural resource management necessitates widely accepted scientific foundations, different socio-economic realities of different countries will form an additional obstacle to generate widespread political support.

On the one hand, net material importers, such as the European Union, have good reasons to be interested in advancing the circular economy transition. On the other hand, however, resource-rich countries will worry that such an agreement would reduce export volumes in natural resources. Resource-rich developing countries have particular challenges and vulnerabilities. Similarly, developing countries with low levels of per capita consumption will likely oppose any agreement that seeks to reduce material consumption levels, based on economic, as well as fairness and equity considerations. To be effective, an international agreement on natural resource management would require participation from as many countries as possible. This section seeks to map the interests and concerns of three sets of countries: net material importers, resource-rich developing countries, and developing countries with low levels of material consumption per capita and makes various suggestions on how resource-rich and low and middle-income countries can be brought on board.

A. Implications for net material importers

Throughout this report, most references made to initiatives and efforts that seek to advance natural resource management come from countries that are at the forefront of the resource efficiency agenda – mostly European countries, but also Japan and China. What these countries have in common is that they are net material importers, dependent on imports to meet their natural resource needs. For example, industries in Europe consume more than 20% of the world’s metals, but European mines contribute only a fraction of the global mineral supply (1.5% of iron and aluminum, and 6% of copper).¹³⁰ Relatedly, the EU imports a majority of the 30 materials it has listed as critical raw materials.¹³¹ Likewise, Japan is heavily dependent on imports for critical raw materials: in 2017, its material footprint was 24 thousand kg/capita, whereas its domestic extraction was only around 4 thousand kilograms per capita.¹³² China, while being the dominant global supplier, is on balance a net material importer.

Table 6: Top net material importers and exporters (2017, physical trade balance)¹³³

Largest Net Material Importers			Largest Net Material Exporters		
No.	Country	Net Imports (million tonnes)	No.	Country	Net Exports (million tonnes)
1	China	1,949	1	Australia	1,360
2	Europe	1,093	2	Russian Federation	707
3	Japan	634	3	Brazil	508
4	India	426	4	Indonesia	421
5	South Korea	417	5	Saudi Arabia	339
6	Germany	249	6	Canada	289
7	Singapore	156	7	Norway	171
8	Italy	145	8	UAE	160
9	United Kingdom	134	9	South Africa	146
10	Turkey	129	10	Kazakhstan	143
11	France	122	11	Qatar	138
12	Netherlands	98	12	Mozambique	117

Large net material importing countries have much to gain from enhanced resource efficiency, given that such a transition would reduce their dependence on resource imports, and therefore reduces their vulnerability in international supply chains. In addition, a circular transition would give impetus to the production of secondary materials, which can generate important new employment opportunities. At the same time, absent coordinated global action, adopting policies that advance natural resource management at a national level could disadvantage domestic businesses internationally, given that complying with additional

¹³⁰ Smart Prosperity Institute (2021).

¹³¹ European Commission, Critical Raw Materials: https://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en.

¹³² Smart Prosperity Institute (2021).

¹³³ Ibid.

regulatory requirements will likely add operational and production costs. It is thus unsurprising that interests in developing an international agreement that would set out obligations to reduce resource use comes predominantly from net material importers.

B. Implications for resource-rich developing countries

At the same time, resource-rich developing countries will likely be more reluctant to sign on to an international agreement on natural resource management. This group of countries, which includes countries such as Zambia, Venezuela, Laos, Indonesia and Peru, is concerned that global commitments to reduce material resources would reduce trade in primary raw materials.¹³⁴ Indeed, a transition towards a circular economy implies, *ceteris paribus*, a reduced need for primary raw materials. This could have serious implications for commodity-dependent low and middle-income countries, where resource revenues have been a key driver of economic growth.¹³⁵ For example, it has been estimated that at least 10 percent of low-income countries' GDP comes from natural resource rents.¹³⁶ Thus, an international agreement that seeks to reach sustainable levels of resource use is expected to effect growth prospects of resource-dependent developing countries.

However, the extent to which a circular transition would indeed reduce demand for primary raw materials remains unclear. The effects will depend on the scope and speed at which countries are transitioning towards a circular economy as well as socioeconomic trends like population growth and rising standards of living. Moreover, as noted earlier, transitioning to a carbon free economy is also heavily dependent on material inputs. In this regard, various studies have predicted that, at least in the near future, demand for primary raw material will increase.

Regardless, resource-rich developing countries can opt to approach changes in international supply chains as an opportunity, to overcome the resource curse and adopt an economic model away from primary material production.¹³⁷ Opportunities will emerge in developing secondary raw materials and new services models that will be critical for the circular economy. In this context, suggestions have been made on how resource-rich developing countries can better leverage RTAs to diversify their economies.¹³⁸ Moreover, the circular economy transition presents opportunities for leapfrogging, i.e., the idea that industrializing countries can bypass the resource-intensive pathway of economic developed followed by high-income countries. As resource-rich developing countries are not yet locked into long-

¹³⁴ Addisu Lashitwe et al, "What Drives Successful Economic Diversification in Resource-rich Countries?" (2020), Available at: <https://academic.oup.com/wbro/article/36/2/164/5813434>.

¹³⁵ Colette van der Ven, 'The Circular Economy, Trade, and Development: Addressing Spillovers and Leveraging Opportunities' TULIP Consulting.

¹³⁶ Ibid.

¹³⁷ United Nations Environment Programme, 'Sustainable Trade in Resources: Global Material Flows, Circularity and Trade' (2020).

¹³⁸ See, e.g., Colette van der Ven (2020).

term infrastructure, an opportunity presents itself to develop an infrastructural model that is based on new technologies and less resources.¹³⁹

To garner support from resource-rich developing countries, proponents of an international agreement on natural resource management should seek to develop provisions that would provide adequate financing to advance a transition away from primary raw materials towards innovating ways of securing alternative sources of income for countries' income dependent on material exports. Moreover, an international agreement on natural resource management could provide additional environmental safeguarding, as well as play a role in global development and fairness. For example, this could be done by facilitating cross-border solutions and innovations to dematerialize and circularize whole value chains, and by supporting new economic opportunities/industrial development models for lower-income countries who are currently "stuck" on low-value add raw material or heavy industry exports.

In addition, it would be important that additional research is conducted to better understand the implications of an international agreement on natural resource management with respect to different resource-rich countries generally, and in particular, resource-rich developing countries. Given the fact that the resource efficiency discussions are being dominated by resource-poor countries, these concerns are not adequately considered or studied.

C. Implications for developing countries with low levels of per capita material footprints

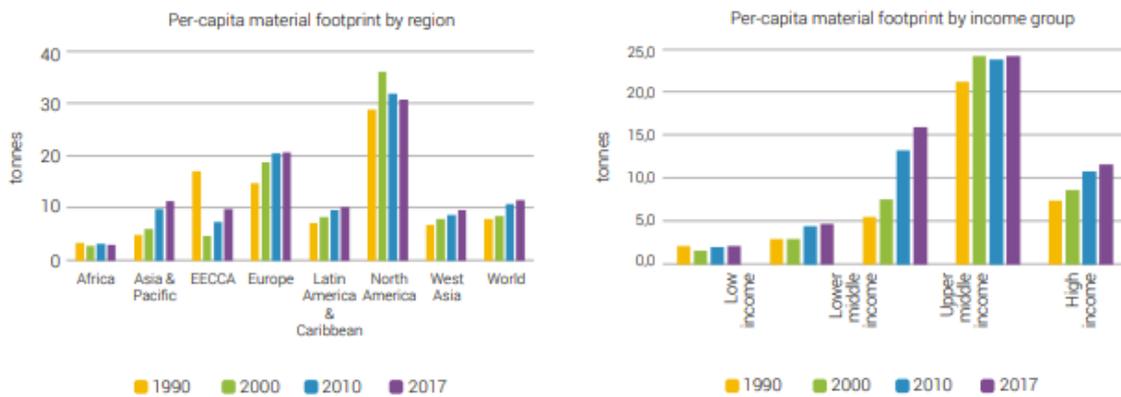
In addition, and echoing the climate change debate, an international agreement on natural resource management will have political and development implications for developing countries with low levels of per capita material consumption per capita. As noted earlier and as illustrated in Figure 6 below, an IRP study found that in 2017, the material footprint per capita of high-income nations was around 27 tons, 17 tons for upper-middle income countries, almost 5 tons for lower-middle income countries, and only 2 tons per capita for low-income countries.¹⁴⁰ Organized by region, Africa has the lowest levels of per capita material footprint, followed by West Asia, Asia and the Pacific, Eastern Europe and Central Asia (EECCA), and Latin America. Europe and especially North America are the regions with the highest material footprint per capita.¹⁴¹

¹³⁹ International Resource Panel, Global Resource Outlook 2019.

¹⁴⁰ International Resource Panel, 'Assessing Global Resource Use: A Systems Approach to Resource Efficiency and Pollution Reduction' (United Nations Environment Programme 2017) Report of the International Resource Panel 38–40.

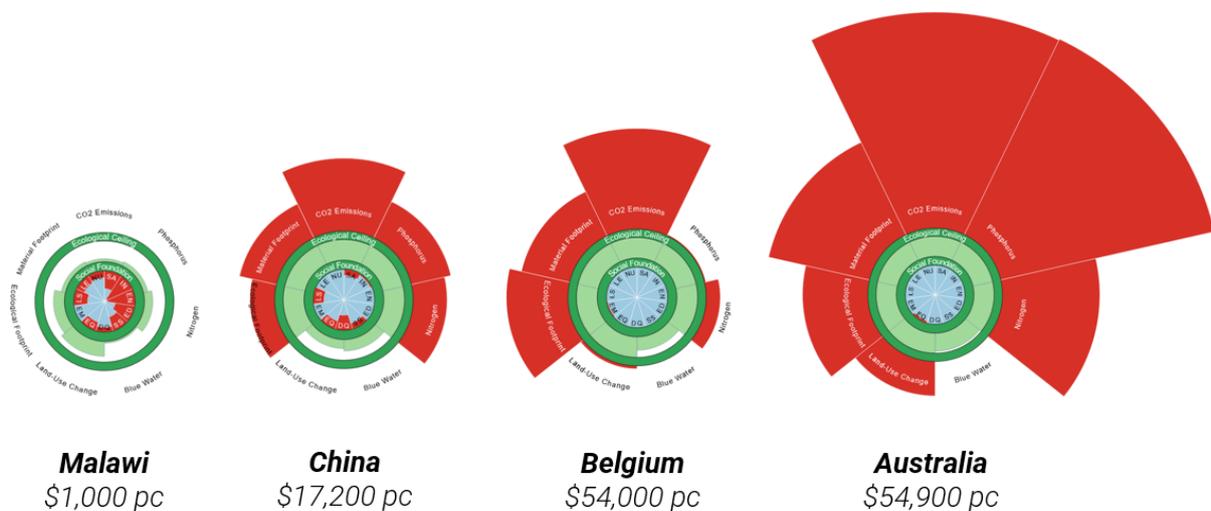
¹⁴¹ Ibid.

Figure 6: Per capita material footprint by region and by income group¹⁴²



As a result, and as illustrated in Figure 7 below, this means that different countries have different levels of responsibility with respect to the overexploitation of natural resource, which has resulted in exceeding planetary boundaries.

Figure 7: Diverging country performances with respect to planetary boundaries¹⁴³



However, while the per capita material footprint is still the highest in high-income countries, it is rapidly growing in upper-middle income countries. Indeed, in 2012, the share of global domestic material consumption in upper-middle income countries surpassed those of high-income groups.

¹⁴² Ibid.

¹⁴³ Janez Potočnik, "Resource Management: Scientific backbone and some International related Implications". PPT Presentation, 7 December 2021. Based on a study conducted by the University of Leeds. Available at <https://goodlife.leeds.ac.uk/national-trends/country-trends/#GBR>.

Developing countries with low levels of per capita material footprints – but growing levels of material consumption – could oppose an international agreement on natural resource management by referring to principles of fairness and equity, i.e., decades of overconsumption by developed countries, which is responsible for this planetary emergency, should not take away their right to economic development.

There are various ways in which the design of an international agreement on natural resource management can reflect concerns related to natural-resource justice. For example, and as already highlighted in Section IV above, the Framework Convention should reference the concept of common but differentiated responsibilities. Specifically, it should allow for each country to reach its own level of ambition with respect to natural resource management and, on this basis, introduce their contributions. Countries with high level of per capita material footprints should be asked to make the deepest cuts in resource use. At the same time, this group of countries should provide technical assistance to developing countries that have low levels of per capita material footprint but are yet to reach minimum social thresholds.

In addition, it would be important to adopt targets and indicators conducive to ensuring that developing countries receive their fair share of the resource pie. As highlighted earlier, this could be done by adopting per capita indicators that seek to achieve average material intensity of consumption of 6/8 tons/capita/year in 2050. While this would enable developing countries to achieve a rising share of global resources, it would mean, at the same time, that industrial countries would have to lower the intensity of their consumption by investing in increases in resource efficiency and changes in consumer behavior. In this regard, it would be important to stress the importance of limiting the per capita material footprint in high-income countries to secure sufficient resources that can be used by developing countries with low per capita material consumption levels.

In addressing equity and fairness concerns, the type of indicators adopted is critical. Indeed, indicators that focus on material footprint, as opposed to domestic material consumption, place the burden of resource reduction on advanced economies with high levels of resource consumption – irrespective as to whether the country has outsourced production to developing countries. Indeed, as mentioned in Section IV above, when measured in domestic material consumption (DMC) upper-middle income countries come out on top, whereas when measured in material footprint per capita, high-income countries are by far the largest consumers and are increasing their resource dependence by 1.5% per year. Moreover, it would likewise be critical to focus on per capita indicators.

In addition, it would be important to highlight the economic and social benefits societies can obtain from shifting towards a more resource-efficient economy. For example, many developing countries are struggling to manage an increase in waste, which could be addressed through resource-efficiency targets. Other arguments concern the fact that a circular use of resources can, in certain circumstances, render material production cheaper, thus enabling a country to be more competitive internationally.¹⁴⁴ From an environmental perspective, many developing countries are bearing the brunt of climate change and biodiversity challenges.

¹⁴⁴ This section is based on an example from John A Matthews, 'Greening Industrial Policy' in Arkebe Oqubay and others (eds), *The Oxford handbook of industrial policy* (First edition, Oxford University Press 2020).

Especially issues related to local biodiversity losses and local sources of pollution can be tackled, in part, by advancing a circular transition.

Indeed, recognizing these benefits, developing countries have also developed platforms and other initiatives to advance the circular transition/a transition towards enhanced material efficiency. For example, India has adopted a National Resource Efficiency Policy; South Africa has adopted a national waste management strategy; and Indonesia, through the adoption of presidential decrees on household waste management and marine debris management.¹⁴⁵ In addition, as set out in Section II above, various regional initiatives have emerged, including the African Circular Economy Alliance (ACEA)¹⁴⁶, the Latin America and Caribbean countries have adopted a Coalition on the Circular Economy, and the Framework for Circular Economy for the ASEAN Economic Community.

These initiatives to advance a circular economy transition in developing countries acknowledge the benefits such a transition could bring for countries everywhere – and not only for net material importers. To garner support from these different groups of countries, however, it is imperative that an international agreement on natural resource management proactively reflects the economic and political concerns highlighted in this section. This can be done through adopting a collaborative and inclusive approach, and through a purposeful and careful design of provisions, indicators, and targets.

¹⁴⁵Organisation for Economic Co-operation and Development, 'Towards a More Resource-Efficient and Circular Economy: The Role of the G20' (OECD 2021) Background Report.

¹⁴⁶ African Circular Economy Alliance, available at: <https://www.aceafrica.org/>.

VI. Conclusion

This report has been developed as conversations on developing an international agreement on natural resource management are being initiated. To further advance these discussions, this report has analyzed a number of different questions that must be addressed in the context of developing an international agreement on resource management.

Specifically, this report has highlighted the important role an international agreement on natural resource management can have to reduce overexploitation of resources in the decades to come. While several existing MEA and FTAs cover natural resource use, and various non-binding initiatives are being pursued by political groups like the G7 and the G20, these initiatives fall short of setting a coherent, global approach to addressing natural resource use. In particular, as demonstrated in this study, MEAs and FTAs cover only a subset of natural resources; a sub-set of the value chain; and a subset of countries. While biomass is largely covered, a number of minerals and metals are not covered. Moreover, while some treaties incentivize resource efficiency indirectly, the MEAs and FTAs studied in this report do not have as main focus resource efficiency. As such, they are, by nature, imperfect instruments to address the overexploitation of resources.

Given the magnitude of the environmental problems associated with the overexploitation of natural resources, it would be important to develop an agreement that directly tackles resource use. Moreover, an international agreement on resource management could galvanize coordinated action at a global scale, which would be critical to avoid-free riding and to ensure our levels of consumption remain within planetary boundaries. Doing so will not be easy, and will likely encounter stark political opposition, especially in resource-rich developing countries. Therefore, a gradual approach to an international agreement on resource management would be the preferred course of action, with as a first step, countries agreeing to sign a Framework Convention that sets out general guiding principles and open-ended resource-related obligations, followed by the negotiation of Protocols that would contain more stringent obligations for specific resources.

With respect to the design and architecture of the agreement, this report has found that while focusing on abiotic resources would avoid overlap with existing agreements and make it politically easier to garner support for the agreement, focusing on material resources would be more comprehensive and ensure that trade-offs between biotic and abiotic resources are taken into account. For each resource covered, it would be important that the international agreement would apply to all stages of the value chain. This report suggests developing a gradual approach, that has various phases. The starting point would be to develop a framework structure that sets out general principles, followed by subsequent protocols and annexes that set out commitments with respect to a particular issue or resource. To ensure that global material consumption levels do not exceed planetary boundaries, it would be important to develop a global target and associated indicators to identify the safe operating space for natural resources. Moreover, the choice of indicator will be critical, both to accurately reflect a country's material footprint, and to take into account different levels of development in accordance with the principle of common but differentiated responsibilities.

Therefore, it would be critical to ensure that an agreement on natural resource management would be closely linked to a scientific research panel that could provide scientific inputs. Moreover, in designing an international agreement on natural resource management, it is important to think about reporting mechanisms, as well as the administration and institutional support.

As resource efficiency as an objective is gaining momentum, both in certain EU countries but also in political fora – directly or indirectly – including the G20 and G7, the United Nations, and the World Trade Organization, it would be important to leverage and build upon these processes to garner broad-based support for a comprehensive global approach to resource management. In particular, it would be important to ensure that resource efficiency is an approach that is adopted not only by environmental organizations, but also as part of the WTO, and RTAs. Indeed, this report found the link between natural resource management and trade agreements rather weak, it being mostly an afterthought to trade liberalization considerations. This suggests that innovative, out-of-the-box thinking is required to better align resource efficiency objectives with RTAs.

Finally, discussions on developing an international agreement on natural resource management predominantly reflect the agendas and interests of resource-poor and/or net resource importing countries. However, to be effective, an international agreement on natural resource management would require broad political buy-in. While this report has presented various ways in which the design of such an agreement could reflect developing country concerns, there is a dearth of research that sets out the benefits of the resource efficiency agenda for resource-rich countries, and for developing countries with low per capita material footprints. This would be an area that would necessitate additional study and analysis.

Annex 1: An overview of selected MEAs and their relevance for natural resource management

Planetary Boundary	Name of Treaty	Objective(s)	Resources covered	Stage of the value chain	Level of ambition/enforcement/implementation	Relevance to resource efficiency
Atmospheric Aerosol Loading	Convention on Long-Range Transboundary Air Pollution (+Additional Protocols)	Protection of man and his environment against air pollution; heavy metal protocol aims to control emissions of lead, cadmium, and mercury.	Resources related to air pollution (Persistent Organic Pollutants, Heavy Metals, Sulphur, Volatile Organic Compounds, Nitrogen Oxides).	Presumably the entire value chain	<ul style="list-style-type: none"> • Legally binding • Limited scope: 51 parties • Effective implementation: emission of a series of harmful substances have been reduced by 40 to 80% since 1990 in Europe. • Dispute settlement provisions included. • Compliance procedures set out by the Implementation Committee. 	Controlling these emissions could incentivize resource efficiency, but only indirectly.
Chemical Pollution	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	Protection of human health and the environment against the adverse effects of hazardous wastes;	Hazardous Wastes (minerals and metals)	Waste disposal	<ul style="list-style-type: none"> • Legally binding • Broad coverage with 180 parties (but US has not signed) • Formal dispute settlement (Arbitration, International Court of Justice) • No specific numerical target, the aim is to reduce the number of 	The Basel Convention seeks to limit trade in hazardous waste. In doing so, it could incentivize resource

	(and amendments)	reduce movements of hazardous waste especially between developed and less-developed countries.			<p>transboundary movements and the quantity of hazardous wastes to a minimum</p> <ul style="list-style-type: none"> As of November 2020, 187 countries and the European Commission are parties to the Convention. Implementation and compliance committee assists Parties to comply with their obligations under the Convention and to facilitate, promote, monitor and aim to secure the implementation of and compliance with the obligations under the Convention 	efficiency indirectly. However, nothing in the Basel Convention concerns limiting consumption or production of resources.
Chemical pollution	Minamata Convention on Mercury	Protecting human health and the environment from mercury by stopping its production and use	Mercury	Along the whole value chain (Mining, export/import, manufacturing, recycling, waste disposal)	<ul style="list-style-type: none"> Binding, in force Relatively broad coverage (112 parties) Conference of the Parties (COP) to review and evaluate the treaty's implementation. Includes provisions on dispute settlement The Convention does not provide numerical targets but only soft-oriented action obligations. 	By seeking to stop the use of Mercury, the Convention has a high potential of reducing it. The Convention also has various limits, including the fact that phase-out deadlines are long, not all relevant industrial processes containing

						mercury are covered, and it contains many exceptions.
Chemical pollution	Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	Seeks to protect human health and the environment from hazardous chemicals by promoting shared responsibility in relation to the importation of hazardous chemicals.	Hazardous chemicals	Trade in hazardous chemicals	<ul style="list-style-type: none"> • Legally binding, in force • Broad coverage (164 parties) but excluding the United States • Compliance Committee established in 2019 	The prohibition and restriction on trade in hazardous chemicals and pesticides could create an incentive for resource efficiency – although resource efficiency is not the focus of the agreement.
Chemical pollution	Stockholm Convention on Persistent Organic Pollutants	Eliminate or restrict the production and use of Persistent Organic Pollutants to protect human health and the environment.	Persistent organic pollutants (POPs). POPs are produced for agricultural and industrial processes	All stages including production, unintentional releases, trade in POPs and waste management.	<ul style="list-style-type: none"> • Legally binding, in force • Broad coverage (184 parties) but US is not a party. • Numerical target- reduce and, where feasible, eliminate the release of 29 listed POPs in the annex of the convention • Lack of compliance mechanism • Implementation is a mixed bag: POP concentration in air and human populations have declined and remain at low levels. But for newly listed POPs, concentrations 	They provide an incentive for resource-efficiency indirectly, as they could lead to reductions in levels of metal production. There is no information available as to whether the Convention has

					are only beginning to show decreases.	indeed led to a reduction in production levels.
Climate Change	The Paris Agreement	Keep increase in global temperature well below 2C or even 1.5 to increase ability to adopt and make finance flows consistent low-carbon development.	It does not regulate specific substances or resources, but potentially affects all resources that contribute to climate change (most notably fossil fuels)	All stages (does not address specific steps of the value chain but rather focuses on all steps that cause GHG emissions)	<ul style="list-style-type: none"> • Legally binding, in force • Broad coverage (191 parties) • Contains mostly procedural obligations; parties have discretion to decide what measures to take • Weak implementation and compliance (no enforcement) • As the Paris Agreement only entered into force recently, no data are available on the effectiveness. However, it is apparent that the first round of NDCs will not be sufficient to achieve global objectives of the Agreement. 	By aiming to stay within certain thresholds of temperature increase, countries are incentivized to phase-out fossil fuels.
Climate change	UN Framework Convention on Climate Change (UNFCCC)	To stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference	It does not regulate specific substances or resources, but potentially affects all resources that generate	All stages (does not address specific steps of the value chain but rather focuses on all steps that cause GHG emissions)	<ul style="list-style-type: none"> • Relevant quantified target (2 Celsius temperature rise) • High coverage (197 countries) • High level of ambition • Legally binding • Lack of compliance mechanisms for the commitments made in the Convention or decisions taken by COP. • Poor implementation (target so far not achieved) 	Non-obligatory (conference of the parties overseeing commitments, subsidiary body for implementation) Formal Dispute Settlement (Arbitration,

		with the climate system	greenhouse gases emissions			International Court of Justice)
Global freshwater use	Convention on Protection and Use of Transboundary Water Courses and International Lakes (the Water convention)	Improve protection and management of transboundary waters and groundwaters.	Fresh-water resources	N/A	<ul style="list-style-type: none"> • Each Party has the obligation to establish and publish its own national targets • Legally binding • Limited coverage (45 countries); amended to allow accession by all Member States. • Provides for formal dispute settlement • There is a high level of implementation of the Water Convention 	Focus is on water pollution, although some provisions also address water quantity, and are therefore relevant to resource management.
Land system change/Rate of Biodiversity loss	International Tropical Timber Agreement	Promote the sustainable management of tropical timber producing forests	Tropical Timber and their genetic resources	N/A	<ul style="list-style-type: none"> • To achieve by 2000, all tropical timber traded internationally comes from sustainably managed forests; • Legally binding • Relatively weak coverage (74 parties) • Provides for dispute settlement review 	By promoting sustainable management of tropical timber, could create an incentive in the amount that is ultimately reduced.
Marine ecosystem health	London Protocol to the Convention on the Prevention of Marine Pollution by Dumping of	Protection of marine environment from all sources of pollution, especially	Material and substance of any kind, form or description	Water disposal; production-processes and waste recovery addressed only indirectly.	<ul style="list-style-type: none"> • Binding, in force • 48 countries have ratified (but not US and Russia) • Creates international minimum standard for all states for 	The prohibition and restriction on waste dumping could create an incentive for

	Wastes and Other Matter	dumping and incineration			<p>regulation and pollution of the marine environment.</p> <ul style="list-style-type: none"> • No compliance mechanisms in the protocol, but in 2007 at the Meeting of Contracting Parties, a compliance mechanism was adopted. • The Protocol contains a provision for dispute settlement, which refers to using UNCLOS. 	resource efficiency
Marine Ecosystem health	UN Convention on the Law of the Sea (UNCLOS) and the Agreement on the Implementation of Part XI of the 1982 Law of the Sea Convention	Distribute the opportunities for revenue by regulating all mineral resources in a specific geographical area	Fossil fuels, minerals and other abiotic resources transported via the sea.	Mining, transport, waste disposal	<ul style="list-style-type: none"> • Binding, in force • Broad coverage (168 parties) (excluding the US) • The UNCLOS uses regulatory, reporting and information tools • It provides for several fora of dispute resolution. 	There is little indication that UNCLOS seeks to limit the amounts of minerals extracted to preserve supplies over time.
Rate of biodiversity loss	Convention on International Trade in Endangered Species of Wild Fauna and Flora	Regulation of international trade in specimens of wild animals and plants to preserve the survival of the species	Biomass (wild animals and plants)	Trade in Endangered Species of Wild Fauna and Flora	<ul style="list-style-type: none"> • Legally binding (it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES is implemented at the national level.) • Broad coverage (183 parties) • CITES, through its monitoring requirements, has been very successful in providing the most comprehensive database on international trade in wildlife species available to date. 	

					<ul style="list-style-type: none"> • CITES, working with other mechanisms, has been very effective in reducing trade in certain species 	
Rate of biodiversity loss	Convention on the Conservation of Migratory Species of Wild Animals	Conservation of Migratory Species of wild animals	Migratory Species of wild animals		<ul style="list-style-type: none"> • Broad coverage (130 parties +EU) + 29 participating non-parties. Acts as a framework Convention. • Include both legally binding treaties and less formal instruments, such as Memoranda of Understanding (19 in place) and can be adapted to the requirements of particular regions. 	
Rate of biodiversity loss	FAO Agreement to promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas	Enhance the role of flag States and ensure that a State strengthens its control over its vessels to ensure compliance with international conservation and management measures	Biomass (Marine Resources)		Obligations of Result (enforcement obligation with regards to international conservation and management measures, exchange of information)	Formal Dispute Settlement (Arbitration, ITLOS, International Court of Justice)

Rate of biodiversity loss	International Treaty on Plant Genetic Resources for Food and Agriculture (International Seed Treaty)	Guarantee food security through the conservation, exchange, use of the world's plant genetic resources for food and agriculture, as well as fair and equitable benefit sharing arising from its use.			<ul style="list-style-type: none"> • Legally binding • Broad coverage (146 parties +EU) 	
Rate of biodiversity loss	United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, particularly in Africa	Combat desertification and mitigate the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements	Land and water resources		<ul style="list-style-type: none"> • Legally binding • High coverage (197 parties) • To date, over 120 countries have engaged with the Land Degradation Neutrality Target Setting Programme and considerable progress has been made since the 2030 Agenda was adopted in 2015 	

Rate of biodiversity loss/Land-system change	Convention on Biological Diversity (CBD)	The conservation of biological diversity; the sustainable use of the components of biological diversity; and the fair and equitable sharing of benefits from utilising genetic resources.	Biomass	•	<ul style="list-style-type: none"> • Quantified targets on relevant parameters • High coverage (196 parties) • Moderate level of ambition • Legally binding • No strong compliance mechanism (merely a general reporting requirement) • Unsuccessful implementation of previous targets for biodiversity loss 	
Stratospheric ozone depletion	Montreal Protocol on Substances that deplete the Ozone Layer, under the Vienna Convention for the Protection of the Ozone Layer (any subsequent amendment of the Protocol)	<p>Regulation of the production and consumption of ozone depleting substances (ODS)</p> <p>Protection of human health and environment against adverse effects resulting from</p>	Chemical substances (ODS)	ODS are used along the entire value chain of abiotic resources.	<ul style="list-style-type: none"> • Relevant quantified targets (phase-out targets and bans) • High coverage • High levels of ambition • Legally binding • Strong non-compliance mechanism (trade sanctions with respect to ODS containing CFS as one of the strongest) • Good implementation record 	Here, the goal of the Montreal Protocol and Vienna Convention Protocol is relevant for the PB of stratospheric ozone depletion.

		human activities that modify the ozone layer				
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