



Exploring the Feasibility of International Conventions

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1 Executive Summary

Global resource governance (GRG) is at a critical stage in its development – managing the rise of new powers within a multilateral system where the core institutions still reflect the immediate post-world war II period. There is no simple or easy pathway to rapidly move towards a global convention or another type of international regime to deliver specific resource consumption, productivity or efficiency targets in the current multilateral context. However, this does not mean that there are not opportunities to advance this agenda and build the conditions that could support much greater multilateral efforts in the future.

Two key processes stand out as shaping the locus for the resource use and efficiency agenda over the coming years: the Paris climate change agreement and the implementation of the Sustainable Development Goals (SDGs). These processes provide a number of critical entry points that could be used to align the politics across key countries and build an evidence base and supportive ecosystem for future action. By working both at the global level and in establishing strong national links with priority countries this agenda could be achieved through a dual strategy of developing new metrics on resource use and flows focused on subsidies and prices, innovation policy and new business models and developing a resource efficiency intergovernmental conference (IGC).

Box 1 The objectives of Intress Work Package 7

This paper follows on from Work Package 5, which assessed identified the factors that have contributed to the successful adoption of rules-based governance or global standards on the environment through intergovernmental conferences (IGCs), and assessed the potential of advancing an international policy agenda through an IGC.

Its objective is to assess the political viability of delivering specific resource efficiency goals, targets or policies in the current multilateral context. It does so by;

- Identifying and analysing existing multilateral treaties or soft laws regulating sustainable resource use and discussing the principal options for an additional international instrument that could contribute to advancing the global sustainable resource use agenda;
- Assessing the political viability of delivering specific resource consumption, productivity, or efficiency goals, targets, or policies in the current multilateral context. This takes into account the compatibility and complementarity of such instruments with other international processes, including the Sustainable Development Goals (SDG) agenda and other

ongoing multilateral negotiations such as those on trade and carbon emissions, and, based on these findings;

- Discusses the potential scope and viability of a global convention or another type of international regime to advance the international resource governance agenda in the current political climate.

Global resource governance comprises the collection of international rules and organisations, formal and informal, which regulate the production, trade and consumption of natural resources either directly or indirectly. This includes agreements at different levels, whether multilateral, bilateral or sectoral, and involves various stakeholders, including governments, businesses, international organisations, or NGOs. Efforts to shape a new multilateral convention on resource use should be grounded in the evolving landscape of resource governance.

Since the establishment of the Bretton Woods institutions in the 1940's a tangible shift can be seen in the global resource governance, from 'hard' resource security to a more comprehensive approach to sustainable resource use and the importance of 'soft law' instruments. It is clear that the current patchwork of rules, norms and institutions will face growing challenges as resource demands and environmental and climate pressures continue to mount. The wide range of institutions and mechanisms that touch upon resource security and sustainability presents a real challenge in assessing the effectiveness of global resource governance. While acknowledging the diversity of conceptual frameworks and actors in play, five main functions of global resource governance are central in advancing resource efficiency and there are a number of critical gaps and opportunities in each area.

Table 1 Gaps and opportunities in global resource governance

1. Efficient, rules-based global markets	<ul style="list-style-type: none"> - The systemic, multilateral mechanisms are not resource-specific. There are gaps in critical places (export restrictions, volatility, commodities exchanges) - The proliferation of free trade agreements (FTAs) and narrow initiatives carries high transaction costs, and encourages a return to multilateral GRG
2. Secure and resilient resource flows	<ul style="list-style-type: none"> - The International Energy Agency (IEA) remains most appropriate forum for emergency response mechanisms for energy, but requires reform. There are no comparable mechanisms for metals and

	<p>minerals markets.</p> <ul style="list-style-type: none"> - GRG of critical maritime chokepoints and resource corridors is highly fragmented, with no real forum
3. Open and improved investment	<ul style="list-style-type: none"> - Resilient investment frameworks are critical to large-scale resource production and linked infrastructure investment - Sustainable investment and ‘de-risking’ tools originated in development banks, but are shifting toward the market
4. Sustainable production and consumption models	<ul style="list-style-type: none"> - Unsustainable production, consumption patterns present genuine , systemic risk to economy - Coordinated international action on efficiency can relieve pressure on global interdependencies - Innovation and new business models require new models of delivery -new actors, bottom-up policy levers, and different types and ways of intervention
5. Information, communication and transparency	<ul style="list-style-type: none"> - Mechanisms are concentrated by sector, and uneven in coverage. There are clear gaps for metals and minerals information provision. - The absence of key stakeholders – for historical, capacity, political or commercial reasons – undermines delivery

Source: CH (2014)

Note: Table 1 repeated on page 23

Among existing multilateral processes and mechanisms, it is the SDGs and Paris that aim to provide a core benchmark for limiting resource use in critical areas. There will be a significant window over the coming years to understand how international metrics for resource efficiency and productivity can contribute to the coherence agenda across the different goals. Within the UNFCCC the development of metrics for Measurement Reporting and Verification will have overlap with resource use and efficiency in a number of important areas. For example, some Intended Nationally Determined Contributions (INDCs) submitted by developing countries (such as India) are based on carbon intensity targets, the measurement and accounting of which has significant overlap with broader resource efficiency targets. Similarly, at least nine of the 17 SDGs have direct implications for resource use and many of the core global monitoring

indicators (GNIs) and complementary national indicators (CNIs) are still 'to be developed'. Identifying concrete indicators has proved challenging, not least due to gaps in data coverage and availability.

There are a number of areas of convergence between the monitoring levels and processes proposed by Paris and the SDGs, and those under development by the IntRes project. For example Work package 2 of the IntRes project represents a first step toward identifying areas and levels of measurement for material, water and land resources; and in some cases, appropriate targets and potential indicators. Understanding how the IntRESS proposals relate to the levels of monitoring under development in existing processes may help identify entry points and areas of collaboration. This could work to both advance the international agenda around resource use and governance, while contributing to coherent and effective international frameworks around climate and sustainable development.

Policies to promote more efficient and sustainable resource use are largely set at the national level, whether on efficiency standards, price reform, public procurement, fiscal incentives, or innovation. The political conditions and ecosystem do not yet exist for agreement of comprehensive or absolute resource targets at the international level. However, there are opportunities for enhanced international action in the following areas which may, over time build a more supportive ecosystem and align key countries;

- **Resource efficiency:** There is an opportunity for a new IGC to build on and leverage existing efforts to accelerate global improvements in resource efficiency linked to the SDGs and post Paris UNFCCC implementation processes;
- **New metrics on resource use and flows:** A range of thinking and new metrics have been proposed and developed but there is a need to consolidate and agree on standards and usage at the multilateral level. Key areas for collaboration include;
 - Resource subsidies and prices
 - Innovation policy
 - New business models

New approaches will need to capture the benefits of enhanced collaborative governance in each of these areas, and the value of more sustainable consumption pathways; while avoiding narrowly defined national approaches and overcoming (often unfounded) negative concerns about the impact that such action might have on economic competitiveness. Intress Work Package 4 has identified a number of key countries that could be strategic partners for Germany based on four key criteria: existing political and legal frameworks in the fields of sustainable development; strategic goals and future potentials

(based on a country's wealth of natural resources etc.); possible trade-offs in certain policy areas (governance, human rights etc.); and existing co-operation with German institutions.

A preliminary assessment of potential partners at a nation state level identified the following 6 countries as being potential priorities for further engagement:

- Region Africa: South Africa and Tunisia
- Region Asia: China and India
- Region South America: Brazil and Peru

These countries provide the potential to develop 'coalitions of the willing' to drive forward the development of resource efficiency metrics and open a discussion about future goals and targets. Engaging key emerging economies such as China, India, Brazil and South Africa early in these discussions will be critical for building a broad base of support. The politics of both Paris and the SDGs have demonstrated that emerging economies want to have active participation in shaping new governance mechanisms, and would potentially react negatively to any perception that Western governments are trying to force additional burdens on them that may limit their development space. Thus open and active cooperation from the outset would provide a space for the co-development of ideas and ensure a broad base of political support for future multilateral engagement. The following actions are therefore recommended for Germany's Federal Environment Agency and Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety to take this agenda forward and build towards future international conventions:

Box 2 Summary of recommendations

Recommendations for Germany's Federal Environment Agency:

Among existing multilateral processes and mechanisms, it is the SDGs and Paris that aim to provide a core benchmark for limiting resource use in critical areas. Given the scale and complexity of the different goals and targets across each, future research efforts should feed-in to the wider 'coherence for development' agenda, with a view to both advancing the international agenda around resource use and governance *and* contributing to coherent and effective international frameworks around sustainable development and climate. Specific actions could include;

- *Ensuring that the IntRes project contributes to the wider 'coherence for development agenda'. A scoping exercise that builds upon the IntRes project could comprehensively map the overlaps between the SDGs, UNFCCC and IntRes (as highlighted in Section 3 of this paper) in terms of data and metrics, and identify the most appropriate entry points and areas of collaboration.*

- *Exploring options for engagement within the SDG process, particularly in relation to the development of common metrics and resource and environmental accounting.* Participation in the UN DESA's Inter-agency and Expert Group on Sustainable Development Goals (IAEG-SDGs) and at the UN Statistics Department's working groups and Statistical Commission, for example, could insert the IntRes project into discussions around the SDGs framework and best available statistical and accounting models, while also helping resolve outstanding questions regarding the complex interactions between and within resource-specific targets e.g. the focus of the 'horizontal issues' workshop.
- *Supporting and/or undertaking research on INDC implementation beyond basic carbon accounting.* There is significant divergence between the INDCs of different countries where implementation measures and processes are concerned, from the kinds of targets and indicators identified to the role of different stakeholder groups in implementation. In partnership with its existing international and bilateral partners, UBA could make a valuable contribution to the development of coherent reporting frameworks in the post-Paris (2015-2020) period.

Where the wider political ecosystem is concerned, there is insufficient alignment to support absolute targets at present. The development of common metrics on resource use, flows and efficiency is crucial to building the evidence base around sustainable resource production, trade and consumption, and understanding the consequences of absolute targets. Focus areas could include;

- *Enhanced collaboration with existing information, communication and transparency mechanisms.* In the energy sector this means working with existing institutions such as the IEA, International Energy Forum (IEF) and International Renewable Energy Agency (IRENA) to provide the evidence base and policy support necessary to allay strategic concerns around energy security and promote a longer-term shift away from fossil fuels and toward renewables. In other sectors (such as materials, land and water) there are few comparable mechanisms at present. Continued and deepening engagement with international partners on data collection mechanisms and forums for dialogue can contribute to addressing these gaps.
- *Targeted research and technical interventions* around resource-related subsidies and prices, innovation policy and new business models could significantly shift the existing ecosystem in favour of future multilateral action.

Recommendations for Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety:

- *Leverage leadership of the G20 to shape the global resource governance agenda.* As Chair of the G20 in 2017, Germany sits between China (2016) and India (2018). China has already highlighted global energy governance among its priorities for its Chair of the G20. Germany has an opportunity to build upon and broaden this agenda into a coherent narrative around resource governance and sustainable development, which can be passed on to India in 2018. If successful this could be used to promote a future IGC on resource efficiency.
- *Refocus EU-China cooperation around resource use and governance.* Given its high tech manufacturing base and commitment to Industry 4.0, and the linkages between this and the China 2025 strategy, Germany is well placed to drive the EU-China strategic agenda forwards and enhance data and dialogue around resource use and materials flows, particularly in relation to critical metals and minerals.
- *Cross-government promotion of 'coherence for development'.* The Ministry can play a central role in heightening cross-government awareness of the 'coherence for development' agenda, and ensuring that sustainable development is a priority across government and with other international actors.

(Box repeated in full on page 43)

2. Understanding the emergence of global resource governance

Global resource governance is understood here as *the collection of international rules and organisations, formal and informal, that regulate the production, trade and consumption of natural resources either directly or indirectly. This includes agreements at different levels, whether multilateral, bilateral or sectoral, and involves various stakeholders, including governments, businesses, international organisations, or NGOs.* This complex landscape of global resources governance has emerged in response to the shifting resource interdependencies and market shocks of previous eras. This ‘messy web’ of international norms, institutions and mechanisms reflects the needs and priorities of key governments, businesses and other actors – along with their interests and influence.

Before thinking about the potential for a new multilateral convention on resource use and efficiency, it is critical to understand how the current landscape emerged; and what political, trade and other barriers there are to reforms and new agendas in this area. This section provides a short history global resource governance since the 1944 (characterised by four distinct phases, see Figure 1, below). Over the course of these six decades, a tangible shift can be seen in the global resource governance, from ‘hard’ resource security to a more comprehensive approach to sustainable resource use. The next section builds on these themes, examining existing governance mechanisms and assessing the gaps and opportunities for a new mechanism on resource use.

2.1 The four phases of global resource governance

The Bretton Woods era and stable commodities prices 1944 – 1972

The establishment of the Bretton Woods institutions and a period of relatively stable commodity prices following the Second World War provided the foundations for global resource governance. Governments were focused on post-war reconstruction and establishing processes that would facilitate trade and investment, partially in order to avoid an escalation in protectionism and increased tensions between major economies. Many of the norms and rules that underpin international trade, investment and transport of resources (e.g. the maritime commons) were established by governments and Bretton Woods institutions between 1944 and 1960, although some were formalized in later decades.

Industrialized OECD countries dominated trade and production outside of communist countries, and heavily influenced early GRG arrangements. Developing countries’ growing influence was channelled through the Non-Aligned Movement (NAM) and the G77, established at the first UN Conference on Trade and Investment (UNCTAD) in 1964. China’s engagement with the

Bretton Woods institutions and their main counterweight, the NAM, was relatively limited during this period, and it remained on the outskirts of the Group of 77. While China did not attend the first or second UN Conference on the Law of the Sea, it followed proceedings and voiced dissent in some cases.¹ Overall, this phase of global resource governance can be characterised as focusing primarily on resource supplies and the security of resource flows.

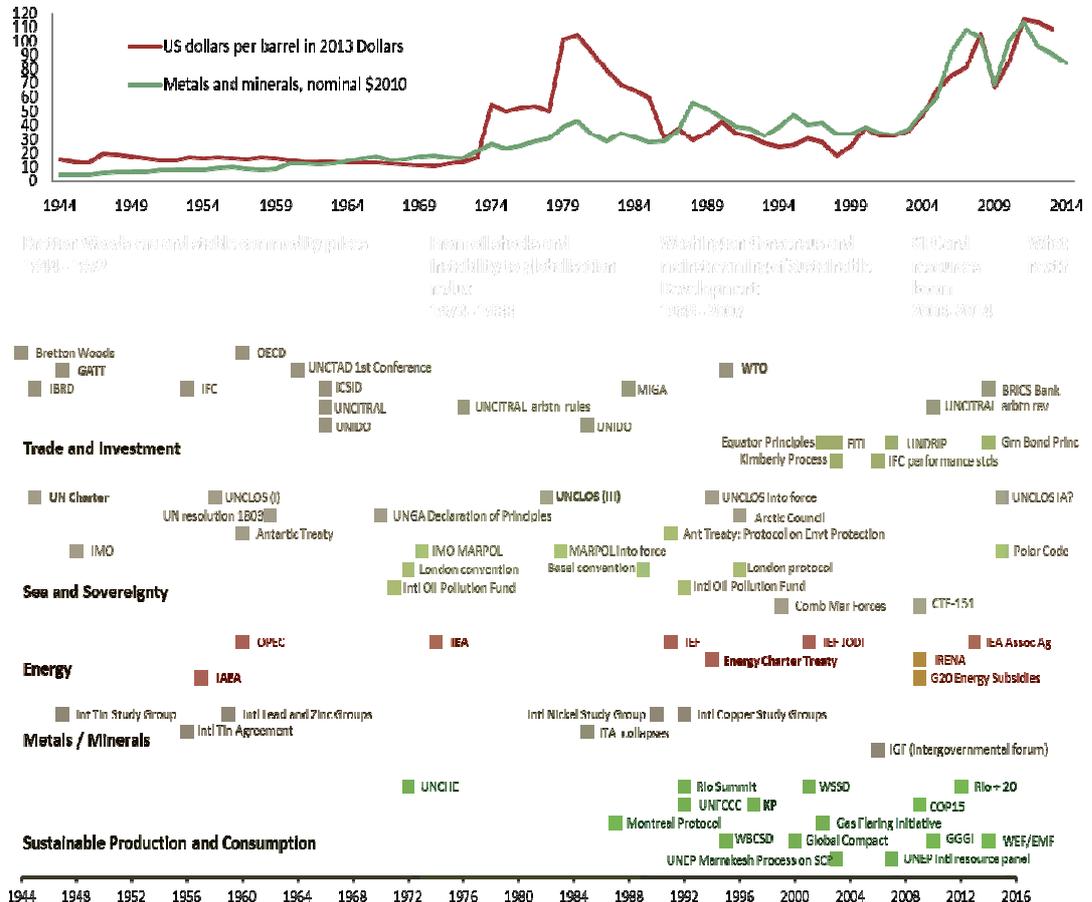
From oil shocks and instability to globalization redux 1973 - 1988

The events of the early 1970s reframed political debates around resources markets. Throughout the previous era, low and stable prices had facilitated attempts to manage prices via UN commodity agreements and producer groups, including Organisation of Petroleum Exporting Countries (OPEC). The first oil shock in 1973 led to the creation of the IEA in order to counterbalance OPEC and safeguard the interests of oil consumer countries. As a net crude oil exporter, China was not impacted heavily by the oil shocks and instead capitalised on the crisis, exporting oil to Thailand, the Philippines and other Asian countries.² Meanwhile, the major commodity agreements all collapsed, casting doubt on the ability of governments to control global commodity prices.

Many governments began to pursue liberalization, opening up to investment and trade. Long running negotiations did eventually lead to important breakthroughs on trade, investment and the law of the sea, although only after concessions. The G77 had increasing influence in negotiations over law of the sea, rules governing the seabed and changes to the General Agreement on Trade and Tariffs (GATT) to allow preferential trade arrangements for poorer countries. China joined the 3rd UN Conference on the Law of the Sea in 1973,³ which it saw as a rallying point for developing countries' fight against the 'maritime hegemony' of the West.⁴

The expansion of the global resource agenda did not stop at resource markets. The emerging issue of sustainable resource use began to gain prominence. Rulemaking on waste, shipping and mining began to increase, but there remained limited activity on global environmental change, despite the publication of 'The Limits to Growth'.

Figure 1 The Four phases of global resource governance



Source: CH (2014)

Washington Consensus and mainstreaming of sustainable development 1989 - 2007

The end of the Cold War paved the way for WTO agreement in 1995 and launched the process of globalization. The 'Asian Tigers' become a new source of resource demand, but the Asian financial crisis of 1997–98 and the economic collapse of Russia in 1998 began to raise doubts over the Washington Consensus prescriptions. China received US support for WTO membership in 1999,⁵ and joined two years later after agreeing to an unprecedented list of accession obligations.⁶ The costs of accession were justified by the benefits of deeper integration into the global economy and the increased momentum this lent to domestic economic reforms. The United Nations Convention on the Law of the Sea (UNCLOS) also came into force⁷ although the US remained outside of the Treaty due to unresolved concerns about deep-sea mining, among other issues.

At the same time, concerns over the impact of climate change and environmental stresses on resource security also increased in prominence. The Rio Summit in 1992 marked the high point of multilateral cooperation, establishing the UNFCCC and beginning the process that led to the Kyoto Protocol agreement in 1997. However, non-ratification of the Kyoto Protocol by the US and limited progress at the World Summit on Sustainable Development (WSSD) in 2002 and at the Copenhagen Climate Summit in 2009 undermined confidence in multilateral processes. Global resource governance began to fragment, with a proliferation of 'softer', voluntary initiatives based on coalitions of business, NGOs, cities and/or governments.

Global financial crisis and resources boom 2008 - 2014

Resource prices and price volatility started to climb from 2004 and peaked in 2008-9, putting resource security back on the global agenda. Yet political and economic cooperation got tougher as major economies focused on competitiveness issues, and investment and trade disputes over resources increased. Following the collapse of the financial system in 2008, the G20 took greater prominence, and quickly broadened its scope from economic cooperation to energy and natural resources. By this point, emerging economies accounted for nearly all growth in demand for resources. Accordingly, they began to make a growing contribution to dialogues at the G20 and the IEA, although existing organizations were generally slow to adapt to the new realities.

Throughout this period, high resource prices and technology breakthroughs prompted a renewal of interest in deep sea mining, the Arctic and other sensitive areas, and encouraged investment in smaller resource producers. China, for example, expressed increasing interest in Arctic affairs and was granted permanent observer status at the Arctic Council in 2013. The issue of territorial claims in the South China Sea also increased in their prominence, not least due to their relevance for navigation purposes, fishing and hydrocarbon resources.⁸

What next?

With the end of the resources boom, we are entering a new era once again. Notwithstanding the current slowdown in global resource markets, it is clear that this patchwork of rules, norms and institutions will face growing challenges as resource demands and environmental and climate pressures continue to mount. Although major negotiations on trade at the WTO and the Law of the Sea remain stalled, the success of the Paris Climate Change Agreement in late 2015 demonstrates that under the right conditions, multilateral agreements are still possible. Looking ahead, the Paris Agreement and the new Sustainable Development Goals, which were concluded September 2015, will provide the major multilateral platforms for innovations in resource governance. Developing coherent data and metrics across these broad areas – in line with the

‘Coherence for Development’ agenda – is the first step to advancing cooperation, ensuring effective implementation and building on this sense of momentum.

3. An evolving patchwork: Assessing existing multilateral treaties and soft laws for global resource governance

As defined in the previous section, global resource governance is comprised of a web of overlapping norms, agreements, institutions and mechanisms at different levels. In the first instance they include arrangements in which sovereign governments are the central actors, from multilateral conventions and international organisations, to regional groupings and treaties all the way to bilateral partnerships. Some of these mechanisms are explicitly focused on the governance of natural resources, such as OPEC, the IEA and the IEF in the case of oil, the Food and Agricultural Organisation (FAO), or the UN Fish Stocks Agreement. However, many of the most important global governance mechanisms for resource production, trade and consumption derive from much broader arrangements, including the WTO, international maritime treaties such as UNCLOS, and bilateral trade and investment treaties.

Global resource governance also includes other arrangements in which non-state actors play an important role, such as global commodity exchanges and other commercial platforms, various supply chain initiatives, arbitration mechanisms for investment disputes (e.g. those of the International Chamber of Commerce), and other arrangements. All of these contribute to an orderly and predictable international framework for the production and trade of resources. More recently established institutions concerned with resource governance often consist of ‘coalitions of the willing’ across a diverse set of stakeholders, including governments, businesses, international organisations, cities, and civil society organisations. The Extractive Industries Transparency Initiative (EITI) and the Kimberley Process (KP) are two such examples.

This broad mix of ‘hard’ multilateral agreements and instruments alongside different forms of ‘soft law’ (statements, principles, codes of practice, codes of conduct etc.) sits at the core of the ‘messy web’ that is global resource governance today. As Table 2 illustrates, the UNEP Global Environmental Outlook (Geo5) outlines the key hard and soft instruments for core elements of the UN environmental system.

Table 2 Multilateral instruments by environmental response area

<p>Sustainable development</p> <p>International soft law instruments and institutions: Rio Declaration on Environment and Development and Agenda 21 from the United Nations Conference on Environment and Development (UNCED, 1992); Johannesburg Plan of Implementation (JPOI); Millennium Development Goals (MDGs, 2000); UN system entities; Sustainable Development Goals (SDGs, 2015)</p> <p>Science processes: Group on Earth Observations and its Global Earth Systems (GEOSS); Inter-Agency and Expert Group (IAEG) on MDG indicators coordinated by the UN Statistics Division; UN DESA’s Inter-agency and Expert Group on Sustainable Development Goals (IAEG-SDGs)</p> <p>Inter-agency bodies: Chief Executive Board for Coordination (CEB); High Level Committee on Policy (HLCP); Executive Committee on Economic and Social Affairs (ECESA); United Nations General Assembly (UNGA) Open Working Group (OWG) on the SDGs</p>
<p>Environment</p> <p>International soft law instruments and institutions: Declaration and Programme of Action from the Stockholm Conference on the Human Environment; UNEP; Global Environment Facility (GEF); Environment related portfolio of 44 UN system entities including the United Nations Development Programme (UNDP), Food and Agriculture Organisation of the United Nations (FAO), United Nations Educational, Scientific and Cultural Organisation (UNESCO) and World Bank Group</p> <p>Science processes: Global Environmental Outlook (GEO) (UNEP); International Panel for Sustainable Resource Management (UNEP); Millennium Ecosystem Assessment (MEA)</p> <p>Funds: Environmental Fund (UNEP); GEF Trust Fund; World Bank environmental and natural management (ENRM) lending portfolio; Environmental portfolio of other UN Multi-Donor Trust Funds (MDTF) administered by UNDP</p> <p>Inter-agency bodies: Environment Management Group (EMG)</p>
<p>Atmosphere</p> <p>Multilateral environmental agreements: Vienna Convention (1985) and Montreal Protocol (1987); United Nations Framework Convention on Climate Change (UNFCCC, 1992); Kyoto Protocol (1997); Paris Climate Change Agreement (2015)</p> <p>International soft law instruments and institutions: A broad range of UN system entities including FAO; the United Nations Conference on Trade and Environment (UNCTAD); UNDP; UNEP; World Meteorological Organization (WMO); World Bank Programme activities related to atmosphere</p> <p>Science processes; Technology and Economic Assessment Panel (TEAP) under the Montreal Protocol (UNEP); Intergovernmental Panel on Climate Change (IPCC) administered by WMO and UNEP; World Climate Research Programme</p>

<p>(WCRP)</p> <p>Funds: Montreal Fund (UNEP); GEF is the financial mechanism for the UNFCCC; Clean Development Mechanism (CDM); Special Climate Change Trust Fund (SCCF); Adaptation Trust Fund and Least Developed Countries Trust Fund (LDCF) administered by the GEF; Environment Fund (UNEP)</p> <p>Inter-agency bodies: Working Group on Climate Change under the High Level Committee on Policy (HLCP) of the Chief Executives Board for Coordination (CEB); UN Energy</p>
<p>Land</p> <p>Multilateral environmental agreement: United Nations Convention to Combat Desertification (UNCCD, 1994)</p> <p>International soft law instruments and institutions: A broad range of UN system entities with programme activities on land-related issues including the FAO; the International Fund for Agricultural Development (IFAD); UNDP; UNEP; UN-Habitat; World Health Organisation (WHO); World Food Programme (WFP)</p> <p>Science processes: Covered by the Global Environmental Outlook (GEO) and Millennium Ecosystem Assessment (MA)</p> <p>Funds: GEF as the financial mechanism for UNCCD; Global Mechanism (UNCCD); Environment Fund (UNEP)</p> <p>Inter-agency bodies: EMG Issue Management Group on Land</p>
<p>Water</p> <p>Multilateral Environmental Agreements: United Nations Convention on the Law of the Sea (UNCLOS, 1994); International Convention for the Prevention of Pollution from Ships (MARPOL, 1973); International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC, 1990); Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (LDC, 1972), International Convention for the Control and Management of Ships Ballast Water and Sediments (2004)</p> <p>International soft law instruments and institutions: International Oceanographic Commission, administered by UNESCO; Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) administered by UNEP; FAO; Code of Conduct for Responsible Fisheries; a broad range of UN system entities including FAO, the International Maritime Organisation (IMO), UNDP, UNEP, UNESCO, WMO and World Bank have programme activities related to oceans and water</p> <p>Science processes: Regular process for global reporting and assessment of the state of the marine environment (UNCLOS); Group of Experts on Scientific Aspects of Marine Environmental Protection (GESAMP); World Water Development Report (UNESCO), and covered by the GEO and the MA</p> <p>Funds: GEF international waters for focal area; Environment Fund (UNEP)</p> <p>Inter-agency bodies: UN-Oceans and UN-Water</p>
<p>Biodiversity</p>

Multilateral environmental agreements: Ramsar Convention on Wetlands (1971), World Heritage Convention (WHC, 1972); Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1973); Convention on Migratory Species (CMS, 1979); Convention on Biological Diversity (CBD, 1992); Cartagena Protocol (2000); Treaty on Plant Genetic Resources (ITPGRFA, 2001).

International soft law instruments and institutions: Commission on Genetic Resources for Food and Agriculture under FAO; United Nations Forum on Forests (UNFF); a broad range of UN system entities, including FAO, IMO, UNDP, UNEP, UNESCO, United Nations University (UNU), United Nations World Tourist Organisation (UNWTO), WHO, WMO, World Trade Organisation (WTO) and the World Bank, have programme activities related to biodiversity

Science processes: Intergovernmental science-policy platform on biodiversity and ecosystem services (IPBES); Global Biodiversity Outlook (CBD); Global Forest Resource Assessment ; State of the World Fisheries and Aquaculture; State of the World's Plant Genetic Resources for Food and Agriculture; State of the World's Animal Genetic Resources for Food and Agriculture; International Assessment on Agricultural Science and Technology for Development (IAASTD); covered by GEO and the Millennium Ecosystem Assessment (MA)

Funds: GEF as a financial mechanism for CBD; Environment Fund (UNEP)

Inter-agency bodies: EMG Issue Management Group on Biodiversity; Biodiversity Liaison Group

Chemicals and waste

Multilateral environmental agreements: Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their disposal (1989); Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemical and Pesticides in International Trade (1998); Stockholm Convention on Persistent Organic Pollutants (POPs, 2001).

International soft law instruments and institutions: Negotiation of a convention on mercury (UNEP); Strategic Approach to International Chemicals Management (SAICM); a range of UN entities including FAO, International Labour Organisation (ILO), UNDP, UNEP, United Nations Industrial Development Organisation (UNIDO), United Nations Institute for Training and Research (UNITAR), WHO and World Bank have programme activities related to chemicals

Science processes: Covered by GEO

Funds: GEF is the financial mechanism for the POPs Convention; Environment Fund (UNEP)

Inter-agency bodies: Inter-Organisation Programme for the Sound Management of Chemicals (IOMC)

Source: CH (2015), based on UNEP Global Environment Outlook-5 (Geo5), 2012, <http://www.unep.org/geo/geo5.asp>

3.1 The functions of global resource governance

The wide range of institutions and mechanisms that touch upon resource security and sustainability presents a real challenge in assessing the effectiveness of global resource governance in key areas. While acknowledging the diversity of conceptual frameworks and actors in play, this section investigates the overall coverage and quality of global resource governance across key areas, and identifies gaps in understanding and response. Five main functions of global resource governance – in relation to resource efficiency and the broader sustainable development agenda, as given shape by the SDGs and Paris – are identified in Table 3, below. This section maps the key institutions and mechanisms in these areas.

Table 3 Examples of GRG mechanisms by function

Function	Example mechanisms and institutions
Efficient, rules-based global markets	WTO, UCNLOS International Navigation, OECD Information and Policy Guidance, Arctic Council
Secure and resilient resource flows	IEA ERM, ASEAN Petroleum Security Agreement, UCNLOS International Navigation, Combined taskforce, Arctic Council, Energy Charter Treaty,
Open and improved investment	Arctic Council, EITI, Equator Principles, Global Green Growth Institute (GGGI), Global Compact, Kimberley Process, MDBs, UNCLOS Protection of the Marine Environment, IFC Performance Standards
Sustainable production and consumption models	G20 Energy Subsidies, multilateral development banks, GGGI, UNEP Marrakech Process, UNEP International Resource Panel, Energy Charter, IRENA, WEF/EMF Circular Economy, World Bank Gas Flaring initiative, KP
Information, communication and transparency	EITI, G20 Energy Subsidies, IEF Forum & JODI, IRENA, OECD, OPEC, UN Commodity Study groups, UNCLOS Limits of the Territorial Sea, UNEP International Resource Panel

Source: CH (2014)

Efficient, rules-based global resource markets

Countries around the world rely on functioning, resilient global markets and a relatively open, rules-based trading system in order to meet their energy and raw materials needs. It is the systemic, multilateral mechanisms such as the WTO that shape the rules and mechanisms that govern trade, alongside organisations such as the OECD that act as strong advocates for open and competitive markets. Yet these pillars of global trade do not directly address natural resources and efficiency – indeed in the WTO’s case they are explicitly omitted. Experience through the 2008/09 food price crisis and oil price peak demonstrates that in the absence of cooperative multilateral rules, zero-sum

strategies to hedge against scarcity and price swings at national level tend to proliferate. Despite a long history of efforts to address these gaps through international negotiations, shortcomings remain.

Export restrictions are one example, and are routinely applied by governments in pursuit of a variety of policy goals, from sheltering domestic consumers and industry from price spikes, to part of wider industrial policy reforms. Restrictions on raw materials are typically driven by protectionist policies that aim to promote domestic downstream processing, and as part of import substitution strategies. Emerging economies with large raw materials exports and major industrialisation strategies, such as South Africa and Brazil, have mooted the implementation of such restrictions. Other motivations for imposing such restrictions range from controlling illegal exports, conserving natural resources and protecting the environment, to generating revenue and increasing domestic supply security. Figure 2 provides an illustration of the frequency of recent trade restrictions on metals and food.

Such restrictions tend to exacerbate price volatility, can encourage tit-for-tat restrictions, and may undermine consumer countries' trust in global market mechanisms. Iron ore export bans imposed in India in 2010, for example, may have added \$40 per tonne to global prices. For Chinese steelmakers, which imported a record 820 million tonnes of iron ore in 2013, this could equate to \$30bn in additional material costs. Where trust is undermined and consumers begin to seek supply security arrangements outside the market, such restrictions may contribute to a fragmentation of global resource governance, as it applies to resource markets. Moreover, for the implementing country, export restrictions tend to be blunt and inefficient instruments of economic policy – slowing exports has relatively few benefits if the goal is to protect vulnerable consumers from food price spikes, while strategic raw mineral export restrictions may deter mining sector FDI.

Figure 2 Countries with recent trade restrictions on metals and food



Based in ICTSD (food) and Chatham House (minerals) analysis (2012)

Increasingly sophisticated forms of market manipulation, which create distortions in international resource markets, highlight another gap in governance. While the resurgence of 1970's style cartels appears highly unlikely, concealed efforts by companies to coordinate on prices and output continue to emerge. At least 15 clandestine private international cartels in mining and primary metals were detected and punished by competition authorities around the world between 2000 and 2010. Moreover, at the intersection of physical and financial markets, increasingly sophisticated forms of market manipulation are emerging, such as the questionable practices of some aluminium warehousing companies on the LME. Combatting these distortionary practices is challenging, due to unclear and overlapping jurisdictions, and a lack of transparent market data.

In the context of increasing resource interdependencies and emerging actors and challenges, the present resource trade framework appears constrained by its rigidity. This, in turn, may inhibit action to improve resource efficiency and productivity at the trade level. The WTO lacks the legal frameworks and tools to address country-led market distortions such as export restrictions and inefficient environmentally harmful fossil fuel subsidies. Economies generally avoid or are unable to address resource trade disputes – the very prospect of 'resource trade wars' over access would threaten to overwhelm WTO's dispute settlement regime at present. Other market distortions, such as metals warehousing and the manipulation of price discovery mechanisms, are generally driven by private actors and lie beyond the scope of the WTO, under the jurisdiction of national regulators.

Narrower issue-specific initiatives such as the G20's efforts to phase out fossil fuel subsidies and address commodity price volatility have emerged, partially in response to blockages at the multilateral level. Further cooperation will be crucial to 'unblocking' such key areas of resource trade and markets. Where resource price volatility is concerned, for example, any attempt to address drivers and impacts will require coordination, as unilateral action is likely to exacerbate volatility. The international community will need to consider options to build trust or strengthen understanding in critical areas e.g. a 'Resources Round' of trade negotiations among a 'coalition of the willing' or enhanced cooperation and information sharing between national regulators.

Secure and resilient resource flows

Consumer countries face major challenges in securing access to time-critical resources. The globalisation of resource flows and the adoption of 'just-in-time' production models has increased the efficiency of supply chains, but also the speed and scope of contagion where natural disasters, conflict or market shocks arise. As a result, the security of sea-lanes, ports and other transport infrastructure – and increasingly 'soft' infrastructure underpinning global markets and trade – present systemic vulnerabilities. Yet the governance of resource flows and efforts to mitigate supply shocks and disruptions remain largely dependent on national responses and ad-hoc coordination among key players, with the risk that misunderstandings might exacerbate crises, and that response measures in the event of a major shock are uncoordinated and ineffective. Efforts to improve global resource efficiency and productivity must therefore also work to provide resilience.

Collaborative rules-based global governance remains the most effective way of ensuring the security of resource flows and avoiding risk in a power-based world where crises may escalate quickly. There is plenty of evidence to suggest that the cooperative governance of shared resources and key resource corridors is possible, from the Arctic Council's management of Western claims in Arctic, to the success of UNCLOS' Freedom of Navigation rights. Yet there remains no real forum for managing critical maritime chokepoints and resource corridors. A patchwork of governance is provided under UNCLOS, the UNSC and maritime task forces, but these mechanisms are struggling to adapt to the challenges presented by new actors. UNLCOS, for example, has no coherent response to increasingly assertive state and the emergence of non-state actors.

Ensuring the long-term security of resource flows will entail harnessing international efforts and improving coordination on the protection of critical sea-lanes and resource corridors. Avoiding unilateral responses and continuing constructive engagement with the systemic governance mechanisms that 'pick up the pieces' e.g. UNCLOS and the UNSC are perhaps the most critical pieces. Collaboration on better systems to combat piracy along important shipping routes, including in the Gulf of Aden and the Strait of Malacca, is

particularly relevant. Yet the significant surveillance and maritime assets required to effectively police vast areas that are vulnerable to piracy and other security risks raises difficult questions about appropriate mechanisms for burden-sharing among major consumer and producer countries, often with very different capabilities.

Even with effective prevention measures, the increasing threat posed by natural disasters, conflict and market shocks point to the need for parallel mitigation mechanisms. The starting point is better international communication and more effective global early-warning systems (EWS). Adequate warning and clear lines of communication lie at the heart of coordinated approaches to supply-shortfalls e.g. by releasing reserves or initiating dialogues to limit panic buying or export controls. In almost every case, effective mitigation has co-benefits for global resource governance in other areas – for example, enhanced data mechanisms that include or link to early warning systems may help reduce the impact of supply chain shocks. Yet current capacity to respond in a coordinated and comprehensive manner is unclear, given the incomplete and/or informal nature of existing mechanisms in this area.

As energy interdependencies have expanded, fragmented and increased in their complexity, questions about the continued effectiveness of IEA mechanisms have been raised. The 28 IEA member countries hold most of the world's strategic oil stocks, with the US alone holding nearly 700 million barrels of crude. Yet with global oil consumption shifting towards Asia, the region appears particularly vulnerable, with no formal cooperation mechanisms among key actors, most of which are not IEA members. Moreover, the full implications of OPEC's decision to abandon its 'swing producer' role are not yet clear, given the role that spare capacity among OPEC producers and particularly Saudi Arabia has historically played in the calculation of crisis response capacities. There is broad consensus that the IEA must reform in order to better reflect today's global energy landscape – the IEA's establishment of 'association agreements' with eight emerging economies (including China), which focus on data and capacity building participation, does help address this.

In the long-term, significant institutional reform may be required. There are serious questions regarding the ability of these frameworks and institutions to adapt to a world where greater emphasis is placed on energy and renewables. The IEA has developed a significant role in monitoring and guiding the market in renewables and energy technologies, alongside the dedicated IRENA. Nonetheless, the ability of these institutions to provide the evidence base and policy support necessary to allay strategic concerns around energy security and promote a longer-term shift away from fossil fuels and toward renewables is unclear. Moreover, there are no equivalent governance frameworks addressing the resilience and security of metals and minerals flows.

Open and improved resource investment

Mainstream projections suggest that investment will need to remain at historically high levels beyond 2020 to meet global resource needs and avoid excessively tight markets. In the energy sector for example the IEA estimates that an annual upstream spend of US\$660 billion is required by 2035 (about one third of which is for gas) in order to keep pace with expanding global demand and offset declining production. Fit-for-purpose finance and regulatory frameworks also have increasing relevance for R&D and innovation in renewable energy and zero-carbon urban infrastructure and transport systems.

However, there is an obvious risk that continued investment in old resource intensive infrastructure models may 'lock-in' unsustainable development pathways. The long lifetime of new infrastructure assets such as gas development and pipelines may create a barrier to countries adopting more dynamic, resource efficient development models. International governance therefore needs to address investment challenges both from the perspective of providing enhanced welfare and development to the growing global population, while simultaneously.

Attracting investment in resource development and related infrastructure at the scale required to meet future demand growth presents a major challenge. For many potential projects, practical constraints including inadequate infrastructure, unreliable power supplies and high energy costs for production and transport are serious barriers to investment. The Asian Development Bank Institute estimates that at least \$8 trillion is required in infrastructure investment between 2010 and 2020 in order to ensure the region's continued growth.⁹ Similarly, the World Bank has for example identified a \$50 billion investment gap in sub-Saharan African infrastructure, but meeting this would require a doubling of current spending levels.¹⁰ Regulatory uncertainty in host and transit countries compounds these challenges – from a lack of pipeline controls and third party access, to fragmented regulatory frameworks and investment barriers, including restrictions on FDI.

Multilateral development banks are a particularly important global governance tool in this context. Public-private partnerships and large-scale syndicated loans generally underpin the kind of major infrastructure projects – from pipelines to ports – that will help unlock these chokepoints. Institutions such as the World Bank and regional development banks act as a source of finance and a facilitator of private sector through supporting PPPs, for example. They also 'de-risk' investments through political risk guarantee such as MIGA and international arbitration facilities like ICSID. International trade regulation provided by the WTO and regional frameworks also plays a supporting role, facilitating the movement of essential materials and services required for resource and large-scale infrastructure development. Where regulatory coverage is lacking, other mechanisms bridge the gap to some extent. In

central Asian countries that are not members of the WTO, for example, the Energy Charter Treaty (ECT) provides binding freedom of transit, and freedom of trade and goods provisions, as well as an investment dispute mechanism and energy efficiency standards.

Yet there is little prospect of delivering the required expansion in global resource supplies over the next decade without major input investment from China and other emerging economies as they will account for a significant proportion of new demand. By some estimates, expenditure on the Chinese 'one belt, one road' initiative (which aims to create a new overland and maritime trade route from China to the West) could reach \$232 billion, equivalent to two-thirds of the World Bank's balance sheet.¹¹ At the same time, the global financial crisis has undermined the financial capacity of US and European-led institutions. The establishment of the BRICS New Development Bank, Silk Road Fund and Asian Infrastructure Investment Bank (AIIB), and China's recapitalisation of the China Development Bank and China EXIM Bank,¹² all help address the shortcomings of existing multilateral institutions in terms of stakeholder coverage and capital. International perception of China's commitment to GRG will be shaped by how it manages the increasing number of relationships and complex risks that these institutions and their beneficiaries will face.

Effective management of the impacts of resource and infrastructure development, from water scarcity and deforestation, to safeguarding local livelihoods, is central to this vision. The most influential tools and mechanisms that encourage sustainable resource development have been developed by the multilateral development banks – initiatives such as the IFC Performance Standards originated in order to manage project risk and financial performance. Private financial institutions often seek to involve the MDBs in these projects precisely because they come with standard process for analysing, reporting and verifying environmental and social risks and applying due diligence. While their direct leverage is limited, with little influence over state-led investment, for example, their role in 'norm-setting' is significant.

Over the past two decades, there has been a proliferation in the number of sustainable development and responsible business standards at project and finance level. Many extractive companies voluntarily benchmark operations against IFC or similar standards in order to help safeguard their local 'social licence' and their international reputation. In turn, producer countries have come to expect higher social and environmental performance, and have improved their capacity to enforce environmental regulation, for example. At the same time, the centre of gravity among sustainable investment mechanisms has shifted toward the market. The Equator Principles, which provide a voluntary

ESG reporting framework, have been almost unanimously adopted by commercial lenders.

Sustainable production and consumption models

Demand growth for many resources has been rapid, with serious consequences for the environment, from climate change impacts, to deteriorating air quality in cities and exacerbating water scarcity around production sites. Slowing this demand may ease these impacts and relieve pressure on global resource systems, and the institutions and mechanisms that govern them. Incremental action on efficiency can make a significant contribution to easing stress on global resource systems and GRG. By contrast, the long-term goal of sustainable resource use requires major changes in production and consumption patterns. However, there is little in the way of a blueprint for global governance in these areas. Leadership here has the potential to secure both soft and hard power benefits, by enhancing multilateral influence and physical resource security.

Co-ordinated action on resource efficiency could make a huge difference to long-term resource demand. Incremental improvements in resource efficiency are often seen as an easy win – just scratching the surface of what is possible can deliver huge gains. In China for example a CCICED Task Force on China's Low Carbon Industrialisation Strategy in 2011 found that energy-intensive industrial sectors could avoid a total of 456 Mtce of energy by 2020 if they adopted just 79 key technologies. Similarly, the consultancy McKinsey has identified 130 opportunities to increase resource productivity, which could together reduce demand by 13–29% and deliver global savings of \$2.9 trillion per year by 2030.¹³ Targeted resource efficiency improvements in large consumer countries is arguably the most effective way to reduce pressure on global resource markets and the global environment – IEA scenarios, for example, show that efficiency measures will account for over half the required reductions in GHG emissions by 2050.

Yet raising global ambition on resource efficiency remains difficult, owing to a number of practical barriers. Where efficiency is addressed, it generally forms part of a wider remit, for instance GGGI's support of green energy transitions. Efficiency is often the 'forgotten' policy tool – it is rarely presented as a contribution to global sustainability, and the difficulty of getting results and a lack of data on which to base measures compounds low levels of policy interest around such measures. Further concerns have been raised about the extent of the rebound effect, whereby reductions resulting from improved efficiency are undermined if savings lead to increased activity in other resource-using areas.¹⁴ Across OECD countries in particular, ongoing economic uncertainty and austerity has further complicated the introduction of even incremental resource efficiency measures.

Policy will continue to be set at national level but further cooperation with emerging and advanced economies could accelerate progress. Collaboration across major markets such as the EU, US, China, India and Brazil could act as an impact multiplier; catalysing smart approaches through joint data collection; spreading common protocols and technology standards; and working together to support resource-efficient development in third countries.

Fostering the disruptive change that is required to overhaul production and consumption models and bring major improvements in resource efficiency presents a very different challenge. For a start, innovation is an inherently 'system-wide' challenge, and must work along the supply chain at regional or global level, for example a regional circular economy. Furthermore, disruptive change is an inherently collaborative and bottom-up process – it cannot be driven from the top down. A 'burning platform' for innovation – with specialised finance mechanisms and safe spaces (incubators and labs) for a range of stakeholders – could support supply chain and global cooperation.

Global resource governance in this area is currently less about existing institutions and mechanisms, and more about building afresh, with different types and ways of intervention. Accelerating innovation and new business models through for example common approaches to the circular economy and commitments to open innovation systems will entail engagement with new actors, and experimentation with bottom-up policy levers. 'Soft' mechanisms such as IRENA and the World Economic Forum/Ellen MacArthur Foundation's Project Mainstream for the Circular Economy provide important policy advice and support, but there is no real multilateral GRG for such activity. Major disputes over solar panels and antidumping demonstrate how innovation can quickly lead to tensions – this reinforces the need for effective governance mechanisms at the multilateral level that encourage collaboration and mitigate the risk of disputes.

Information, communication and transparency around resources

Strong institutions that support information, communication and transparency are critical for all areas of global resources governance, but especially efficiency and productivity improvements. The landscape of discreet mechanisms and dialogues that exists today has emerged in response to historical crises and in order to collect and communicate resource information in areas that are otherwise neglected at the multilateral level. For many initiatives including the IEA and IEF, collecting and communicating data is a core objective. For others, such as the EITI, data collection is a means to an end; in this case improving governance in producer countries and extractive companies. Mechanisms are generally sector-specific, and are disproportionately focused on energy. The IEA emerged out of the 1970s oil shocks, for instance, but metals and minerals markets have yet to experience a comparable 'moment'. The strongest data collection takes place in the private sector, primarily in banks and specialist

consultancies, and often behind paywalls, and there is no coordinated communication mechanism at regional or global level.

Where mechanisms are in place they are often undermined by less than comprehensive participation. The reasons for this are clear – membership of mechanisms such as OPEC and the IEA reflect the political economy of their time and have failed to keep pace with fast-evolving resource interdependencies. Without the full participation of China and other major economies such as India, the effectiveness of such mechanisms is clearly limited. The first steps toward broadening stakeholder coverage – such as the IEA's Association Agreements which focus on data collection and technical capacity – have been taken, but significant further reforms are necessary. Evolving resource trade interdependencies also illustrate increasing systemic vulnerability to disruption in metals and minerals, as disputes over export restrictions and market manipulation demonstrate. Gathering information and fostering communication here will require new mechanisms and actors.

Participation in other mechanisms has been limited by political or commercial sensitivities. Where the information that is collected contributes to a broader theory of change or legal commitment, for example EITI or UNCLOS, the norms associated with this can be uncomfortable for some countries. Often, there are implicit assumptions framed in the 'price of entry'. There is clearly a difference between signing up to a technical mechanism for information sharing and dialogue, and signing up to broader principles that may challenge how a country engages in international affairs. There may also be legal and commercial constraints to making data public, particularly where commercially sensitive licence rounds are concerned, or where water is treated as a state secret. Adapting to the prominent role of non-state actors in this area is a further challenge.

3.2 Assessing key GRG institutions and mechanisms

Work Package 5 of this project identified over 400 ICGs related to resource and sustainability since 1990 alone. The focus of these ICGs includes energy, environment, extractives, forestry, oceans and water, many cross-cutting impacts including climate change, biodiversity and desertification. No ICG occurs within a vacuum. Ostensibly one-off events emerge out of a broader diplomatic ecosystem, and there are dynamics across processes and between processes. In many cases, it seems that success or failure in one area may have implications in other ICGs and areas of governance. The World Summit on Sustainable Development (Rio+10 or WSSD) held a one off major conference in 2002, which was effectively the launch pad for a number of Track 2 partnerships, which in turn used ICGs to in an effort to develop stakeholder participation and consensus and deliver concrete policy outcomes. These including the EITI and IRENA, mentioned above, and the Sustainable

Consumption Production Framework (Marrakech process) which held major conferences in 2003, 2005, 2007, and delivered its final agreement in 2012.

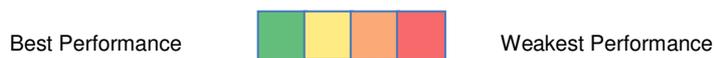
A diverse range of 26 different types of governance mechanism were therefore chosen for the assessment as part of Work Package 7. These reflect the existing GRG landscape that the SDGs and Paris will sit within, the available data sources that are publicly available, and give a diverse perspective on different aspects of resource governance. The methodology was developed to systematically assess the different forms of governance outlined above, in order to understand gaps and opportunities to advance global resource efficiency and productivity. Various governance institutions and mechanisms were assessed against seven different characteristics:

1. Goals and objectives: Were the goals for the governance mechanism clearly articulated? How did this relate to the key functions of global resource governance?
2. Evidence base: Was there a good evidence base supporting the resource functions? Was there a clear theory of change behind the creation of the governance?
3. Stakeholder coverage: Did the governance mechanism cover the main stakeholders necessary for effective action?
4. Agency to take action: Was the governance mechanism empowered to take action and critical decisions in relation to resource governance? Did some countries or groups hold an effective veto over decisions?
5. Current delivery: How was the governance mechanism performing relative to current challenges for natural resources?
6. Active versus passive response: Was the governance mechanism actively seeking out ways to address challenges and emerging trends or was it passive in responding to developments?
7. Ability to adapt to future trends: Was the governance mechanism designed to respond to new trends (e.g. ability to include new members as emerging economies gain power, ability to update goals and objectives)? Or was the governance mechanism essentially static reflecting a fixed set of members and objectives from the time of its creation?

A summary of the assessment outputs is highlighted in Table 4, below. These response options were then ranked against the five key functions of international resource governance highlighted in the previous section to identify gaps and opportunities in relation to future resource efficiency and productivity goals.

Table 4 Summary assessment of selected global governance mechanisms

Key:



Organisation	Assessment factor						
	Goals and Objectives	Evidence base	Stakeholder coverage	Agency to take action	Current delivery	Active versus passive response	Ability to adapt to face future trends
<i>Arctic Council</i>	Orange	Yellow	Yellow	Orange	Red	Yellow	Yellow
<i>EITI</i>	Green	Yellow	Orange	Green	Orange	Yellow	Orange
<i>Energy Charter Treaty</i>	Green	Yellow	Red	Yellow	Orange	n/a	Orange
<i>Equator Principles</i>	Orange	Orange	Yellow	Yellow	Orange	Red	Orange
<i>G20 Fossil Fuel Subsidies</i>	Green	Red	Yellow	Green	Red	n/a	Yellow
<i>GGGI</i>	Yellow	Yellow	Orange	Orange	Orange	Yellow	Orange
<i>Global Compact</i>	Orange	Red	Orange	Red	Red	n/a	Orange
<i>Green Bond Principles</i>	Yellow	Yellow	Orange	Yellow	n/a	n/a	n/a
<i>IEA</i>	Green	Yellow	Orange	Yellow	Orange	Yellow	Orange
<i>IEF Forum</i>	Green	Green	Yellow	Green	Orange	Red	n/a
<i>IEF Data / JODI</i>	Green	Green	Yellow	Yellow	Yellow	n/a	n/a
<i>IGF</i>	Yellow	Yellow	Yellow	Yellow	Orange	n/a	Orange
<i>IRENA</i>	Yellow	Yellow	Orange	Orange	Yellow	n/a	Yellow
<i>Kimberley Process</i>	Yellow	Green	Green	Yellow	Orange	n/a	n/a
<i>OPEC</i>	Green	Yellow	Yellow	Green	Orange	Orange	Orange
<i>UN Commodity Study Groups</i>	Orange	Yellow	Orange	Orange	Orange	Red	Red
<i>UN Mercury Convention</i>	Green	Green	Yellow	Green	Green	Yellow	Orange
<i>UNCLOS International navigation</i>	Green	Green	Orange	Yellow	Yellow	n/a	Orange
<i>UNCLOS Limits of the territorial sea</i>	Green	Green	Yellow	Yellow	Yellow	Orange	Red

UNCLOS Marine environment						n/a	
UNEP Marrakesh Process on SCP						n/a	
UNEP International resource panel							
UNFCCC							
WEF/EMF							n/a
WTO							
IFC							n/a

Source: CH (2015)

Note: Governance mechanisms are ranked not applicable (n/a) for categories where it was not possible to conduct an appropriate assessment

The assessment finds a number of gaps and opportunities in GRG. Systemic mechanisms provide basis for global resource governance, but were not designed for this challenge. Even though numerically, the bulk of governance mechanisms are resource or issue-specific, it is the systemic ones such as the WTO, UNCLOS and even UNFCCC that have by far the greatest impact on the wider resource landscape. However, they are struggling to address evolving resource concerns – the WTO has no effective response to raw mineral export restrictions, for example, and UNCLOS is finding the assertiveness of nation states and the increasing role of non-state actors highly challenging. It is in the places that these mechanisms are effectively ‘stuck’, that new initiatives have begun emerging in order to plug the gaps. Stalled negotiations at the WTO Doha round and at Copenhagen in 2009 have cast doubt on prospects for rule-making at multilateral level. Table 5 presents a brief summary of current gaps and opportunities in global resource governance.

Table 5 Summary of gaps in global resource governance

Function	Gaps and opportunities
Efficient, rules-based global markets	<ul style="list-style-type: none"> - The systemic, multilateral mechanisms are not resource-specific. There are gaps in critical places (export restrictions, volatility, commodities exchanges) - The proliferation of FTAs and narrow initiatives carries high transaction costs, and encourages a return to multilateral GRG

Secure and resilient resource flows	<ul style="list-style-type: none"> - The IEA remains most appropriate forum for emergency response mechanisms for energy, but requires reform. There are not comparable mechanisms for metals and minerals markets. - GRG of critical maritime chokepoints and resource corridors is highly fragmented, with no real forum
Open and improved investment	<ul style="list-style-type: none"> - Resilient investment frameworks are critical to large-scale resource production and linked infrastructure investment - Sustainable investment and ‘de-risking’ tools originated in development banks, but are shifting toward the market
Sustainable production and consumption models	<ul style="list-style-type: none"> - Unsustainable production, consumption present genuine , systemic risk to economy - Coordinated international action on efficiency can relieve pressure on global interdependencies - Innovation and new business models require new models of delivery -new actors, bottom-up policy levers, and different types and ways of intervention
Information, communication and transparency	<ul style="list-style-type: none"> - Mechanisms are concentrated by sector, and uneven in coverage. There are no comprehensive mechanisms for metals and minerals. - The absence of key stakeholders – for historical, capacity, political or commercial reasons – undermines delivery

Source: CH (2015)

Solutions to the gaps in global resource governance may be found through engagement with a wider range of actors and the exploration of ‘bottom-up’ policy levers. There has been a proliferation in resource-related initiatives – in many cases NGOs, the private sector and others bear a greater share of the burden, or even occupy a leadership role. Given that innovation is critical to solving the greatest resource challenges – from managing volatility to fostering new business models – engagement with new actors and approaches may provide the fresh thinking and impetus required to overcome the ‘deadlock’ that existing institutions have encountered. Furthermore, in pragmatic terms, spreading the burden of engagement in global resource governance

mechanisms across a range of actors may reduce the capacity challenge that many emerging economies face.

While assessing and addressing concrete governance mechanisms is critical, the role of softer initiatives and dialogues should not be underplayed. While they do not generally address the underlying politics, the work done by institutions from the World Bank to GGGI helps countries on a policy and technical level, and undoubtedly makes an important contribution to global resource governance. While their activities and results may be less tangible, they still have a significant cumulative impact, building bridges policy and implementation, and between state and non-state actors. Frequently, it is these groups that support the cross-cutting dialogue and innovation that is critical to meeting many of the response challenges laid out above.

The mesh of international norms, institutions and mechanisms has evolved in response to the needs and priorities of specific governments, businesses and other actors and reflects their sometimes competing and sometimes converging interests as well as their influence. The structure of many of the principal international institutions today, for example, still reflects the international political economy of the post-1945 world order from which they emerged. Others such as OPEC have resulted from the perception of joint interests among a smaller group of countries, sometimes in open competition with others.

In some cases, global governance mechanisms can even be imposed unilaterally. This is for example the case in the recent attempts by large consumer countries at regulating transnational supply chains, including the conflict minerals section (1502) of the US Dodd-Frank Act or the EU Timber Regulation. The review of international mergers and acquisitions by national competition authorities to maintain competitiveness in international markets is another example of such unilaterally imposed global governance mechanisms.

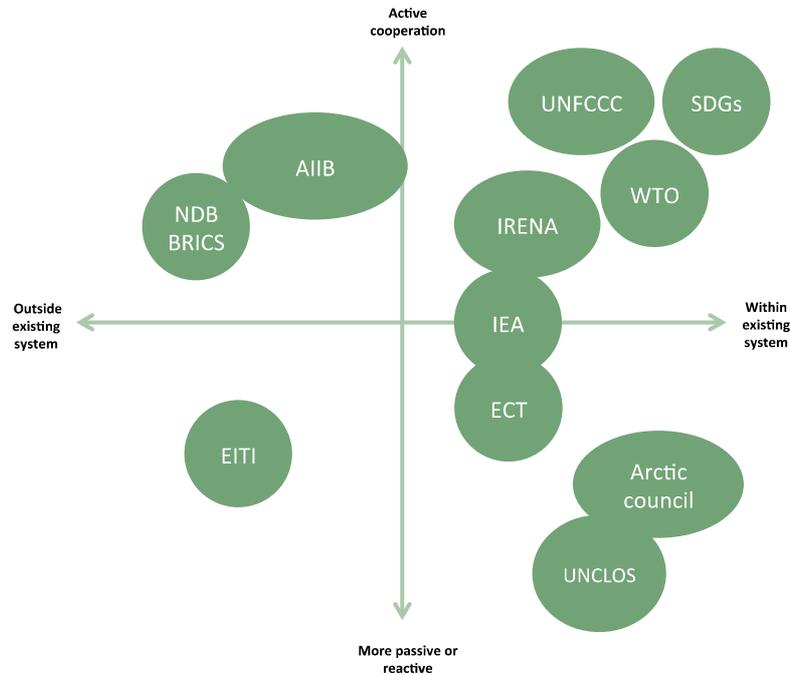
This loose patchwork of rules and norms governing resources has been robust enough to allow for the steady expansion of international resource flows, but a number of important gaps remain in relation to resource efficiency and productivity. There are for example no accepted and effective governance mechanisms in place to address challenges such as limiting dangerous greenhouse gas emissions, excessive commodity price volatility, or protecting key vulnerable ecosystems such as the Arctic. In some cases past efforts to deal with these gaps have failed. This is for example the case with a number of the International Commodity Agreements (ICAs), which were put into place in the 1970s by consumer and producer countries to limit price volatility by jointly managing global supply and demand. Others, such as the ongoing negotiations for an international agreement to limit greenhouse gas emissions, are still awaiting resolution.

Creating new or reforming existing international governance mechanisms requires substantial investment of institutional capacity and political capital, making global governance subject to considerable inertia. Incumbent bureaucracies and entrenched interest that favour the status quo are often also resistant to change. This explains for example why, a quarter century after the end of the Cold War, the governance mechanisms for the principal institutions of the post-1945 era, such as the UN Security Council or the Bretton Woods institutions, remain unchanged in important respects. More fundamental changes to global governance regimes are obviously particularly difficult to achieve, explaining the long and complex negotiation processes around efforts to reform the WTO (the so-called Doha Round) or achieving an ambitious and binding agreement to limit greenhouse gas emissions.

4. Political viability of delivering specific resource consumption, productivity of efficiency goals in the current multilateral context

At the global level the resource governance agenda is currently being driven by two multilateral processes: the agreement of the SDGs; and the potential for a new global climate agreement in Paris at the end of 2015. Both Paris and the SDGs have been the main focus of heads of state from major countries, and both aim to establish enduring global regimes that will work to deliver sustainable development over the coming decades. They are also notable for driving active cooperation from within the existing multilateral system, utilising the core foundations of the United Nations system that was laid down during the Bretton Woods phase of global resource governance immediately following World War II. As shown in Figure 3, below, Paris and the SDGs stand apart from new initiatives, largely driven by China and other emerging economies, to create new multilateral resource governance systems outside of the existing Bretton Woods institutions. The creation of both the AIIB and BRICS New Development Bank are good examples of the desire of emerging economies to establish resource governance mechanisms that they have strong control over, rather than trying to work within a system where they have relatively less influence.

Figure 3 Mapping of GRG mechanisms



Source: CH (2015)

There are also a set of more passive mechanisms such as UNCLOS, the Arctic Council and ECT within the existing system and mechanisms such as the EITI outside the existing system. These mechanisms provide critical functions for different aspects of resource governance, but do not seek to drive active cooperation with new actors. The WTO also continues to play a systemic role in resource trade, but its direct application to resource production and consumption is limited.

Among existing multilateral processes and mechanisms, it is the SDGs and Paris that aim to provide a core benchmark for limiting resource use in critical areas. The INDCs that countries have submitted in advance of Paris fall short of providing a below 2oC pathway, but they do represent a significant improvement on the targets put forward in Copenhagen. Although there is always a large degree of uncertainty in projecting forward temperature changes the latest estimates suggest that the Paris INDCs are consistent with a pathway to 2.7oC of warming by 2100, in comparison with previous policies that indicated 3.6oC-3.8oC of warming.¹⁵ Options are also under discussion to agree ‘cycles of improvement’ which would seek to ratchet up ambition over time. This could ask countries to revisit their INDCs at regular intervals, such as every 5 years, to come forward with stronger contributions. Paris may also establish a long-term goal for climate action that could include options such as achieving ‘net-zero’ emissions or ‘climate neutrality’ by a certain date. Paris will also

establish a process of measurement, reporting and verification (MRV) to provide transparency and accounting for country actions.

The SDGs have established 17 goals with 169 targets and a wide variety of indicators underpinning them. The goals will provide a focus for future efforts across different resource areas including sustainable production and consumption, water, food, forestry and ecosystems. The Open Working Group (OWG) on the SDGs has suggested that 100 global monitoring indicators (GMIs) – alongside complementary national indicators (CNIs) – is a sufficient number of indicators to support effective monitoring while enabling national statistics offices and other actors to report in a coherent and coordinated manner.¹⁶ Given the scale and complexity of the different goals and targets it is anticipated that there will now be a strong agenda focused on ‘coherence for development’ to address the inter-linkages across different elements, not least with the Paris climate change agreement.

With the political investment that has been made in Paris and the SDGs the political space to start an entirely new IGC process on resource goals is extremely limited in the short-term. However, the implementation processes for both Paris and the SDGs provide a number of entry points that could be used to build an agenda on resource use, efficiency and targets moving forward. This also builds on the conclusions from Work Package 5 that concluded that the conditions do not currently exist for rapid movement towards an IGC that would be able to agree absolute resource targets. Presently, there is not sufficient political alignment within or between major consumer countries, which would allow for substantial multilateral steps towards regulating global resource use. The ecosystem is also not yet aligned to support absolute targets at this stage and concrete metrics are lacking that could allow countries to analyse the full costs and benefits of such a decision.

There will be a significant window over the coming years to understand how international metrics for resource efficiency and productivity can contribute to the coherence agenda across the different goals. Within the UNFCCC the development of metrics for MRV will have overlap with resource use and efficiency in a number of important areas. For example, some INDCs submitted by developing countries (such as India) are based on carbon intensity targets, the measurement and accounting of which has significant overlap with broader resource efficiency targets. Similarly, at least nine of the 17 SDGs have direct implications for resource use. As Table 5 illustrates, among these SDGs, several resource-specific GMIs and almost half of resource-specific CNIs are still ‘to be developed’. To date, however, identifying concrete indicators has proved challenging, not least due to gaps in data coverage and availability.

Table 6 SDGs, GMIs and CNIs with a major focus on resource production, trade and use

Goal	Indicator	Implementing agency
Goal 6. Ensure availability and sustainable management of water and sanitation for all		
47	Percentage of wastewater flows treated to national standards [and reused] – to be developed	WHO/UNICEF JMP
48	[Indicator on water resource management] – to be developed	UN Water
49	Proportion of total water resources used (MDG Indicator)	FAO, UNEP
	Complementary National Indicators: 6.6. Proportion of the flows of treated municipal wastewater that are directly and safely reused 6.7. [Reporting of international river shed authorities on transboundary river-shed management] – to be developed 6.8. [Indicator on international cooperation and capacity building in water and sanitation-related activities] – to be developed 6.9. [Indicator on participation of local communities for improving water and sanitation management] – to be developed	
Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all		
53	Rate of primary energy intensity improvement	Sustainable Energy for All, IEA
	Complementary National Indicators: 7.1. Primary energy by type 7.2. Fossil fuel subsidies (\$ or %GNI) 7.3. Share of energy from renewables	
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all		
54	GNI per capita (PPP, current US\$ Atlas method)	IMF, World Bank, UNSD
55	Country implements and reports on System of Environmental-Economic Accounting (SEEA) accounts	UNSD
	Complementary National Indicators: 8.9. [Indicator on implementation of 10-year framework of programs on sustainable consumption and production] – to be developed	
Goal 9. Build resilient infrastructure, promote inclusive and sustainable		

industrialization and foster innovation		
62	Total energy and industry-related GHG emissions by gas and sector, expressed as production and demand-based emissions (tCO ₂ e)	UNFCCC, OECD, UNIDO
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable		
68	[Ratio of land consumption rate to population growth rate, at comparable scale] – to be developed	UN-Habitat, World Bank
69	Mean urban air pollution of particulate matter (PM ₁₀ and PM _{2.5})	UN-Habitat, UNEP, WHO
70	Area of public and green space as a proportion of total city space	UN-Habitat
95	Domestic revenues allocated to sustainable development as percent of GNI - by sector	
	Complementary National Indicators: 11.5. City biodiversity index (Singapore index) 11.6. Percentage of consumption of food and raw materials within urban areas that are produced and delivered in/from rural areas within the country	
Goal 12. Ensure sustainable consumption and production patterns		
72	Disclosure of Natural Resource Rights Holdings	EITI, UNCTAD, UN Global Compact
73	Global Food Loss Index [or other indicator to be developed to track the share of food lost or wasted in the value chain after harvest]	FAO
74	Consumption of ozone-depleting substances (MDG Indicator)	UNEP Ozone Secretariat
75	Aerosol optical depth (AOD)	UNEP
76	[Share of companies valued at more than [\$1 billion] that publish integrated monitoring] – to be developed	Global Compact, WBCSD, GRI, IIRC
	Complementary National Indicators: 12.1. [Strategic environmental and social impact assessments required] – to be developed 12.2. [Legislative branch oversight role regarding resource-based contracts and licenses]- to be developed	

	12.3. [Indicator on chemical pollution] – to be developed 12.4. CO2 intensity of the building sector and of new buildings (KgCO2/m2/year)	
Goal 13. Take urgent action to combat climate change and its impacts		
77	Availability and implementation of a transparent and detailed deep decarbonization strategy, consistent with the 2°C - or below - global carbon budget, and with GHG emission targets for 2020, 2030 and 2050.	UNFCCC
78	CO2 intensity of new power generation capacity installed (gCO2 per kWh), and of new cars (gCO2/pkm) and trucks (gCO2/tkm)	UNFCCC, IEA
79	Net GHG emissions in the Agriculture, Forest and other Land Use (AFOLU) sector (tCO2e)	UNFCCC
80	Official climate financing from developed countries that is incremental to ODA (in US\$)	OECD DAC, UNFCCC, IEA
	Complementary National Indicators: 13.1. [Climate Change Action Index] – to be developed 13.2. GHG emissions intensity of areas under forest management (GtCO2e / ha)	
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development		
81	Share of coastal and marine areas that are protected	UNEP-WCMC, IUCN
82	Percentage of fish tonnage landed within Maximum Sustainable Yield (MSY)	FAO
	Complementary National Indicators: 14.1. Eutrophication of major estuaries 14.2. Ocean acidity (measured as surface pH) 14.3. [Indicator on the implementation of spatial planning strategies for coastal and marine areas]– to be developed 14.4. Area of coral reef ecosystems and percentage live cover 14.5. Proportion of fish stocks within safe biological limits (MDG Indicator) 14.6. Percentage of fisheries with a sustainable certification 14.9. [Use of destructive fishing techniques] – to be developed 14.10. [Indicator on access to marine resources for small-scale artisanal fishers] – to be developed 14.11. [Indicator on transferring marine technology] – to be developed 14.12. Area of mangrove deforestation (hectares and as % of total mangrove area)	

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss		
83	Annual change in forest area and land under cultivation (modified MDG Indicator)	FAO, UNEP
84	Area of forest under sustainable forest management as a percent of forest area	FAO, UNEP
85	Annual change in degraded or desertified arable land (% or ha)	FAO, UNEP
86	Red List Index	IUCN
87	Protected areas overlay with biodiversity	UNEP-WCMC
	Complementary National Indicators: 15.1. Improved tenure security and governance of forests 15.2. [Indicator on the conservation of mountain ecosystems] – to be developed 15.3. Vitality Index of Traditional Environmental Knowledge	

Source: CH analysis of UN SDSN (2015) Indicators and a Monitoring Framework for the Sustainable Development Goals, <http://unsdsn.org/wp-content/uploads/2015/05/150612-FINAL-SDSN-Indicator-Report1.pdf>

Note: This table focuses on SDGs with major implications for resource production, trade and use, while acknowledging that other SDGs – including Goal 1 (End poverty), Goal 2 (End hunger) and Goal 5 (Achieve gender equality) – may also have significant implications for aspects of resource governance.

The post-Paris and post-SDGs process offers opportunities at both the international and national levels to shape the political conditions and build a supportive ecosystem. Strengthening the multilateral architecture and developing commonly accepted metrics on resource efficiency could act as a step toward understanding the consequences of absolute targets; and open pathways that empower governments to transform resource efficiency to change production and consumption patterns. A solid conceptual framing and common metrics around resource targets could help create a narrative that has wider public and policy salience and hence support a future IGC process on this issue.

There are a number of areas of convergence between the monitoring levels and processes proposed by existing international processes, and those under development by the IntRes project. Work package 2 of the IntRes project represents a first step toward identifying areas and levels of measurement for material, water and land resources; and in some cases, appropriate targets and potential indicators. Considerable variation in the appropriate level and method of measurement are apparent across resource groups (see Table 6, below).

Table 7 IntRes project proposed monitoring levels, measurements and targets and/or indicators

Level of analysis	Measurement	Targets and/or indicators
Materials		
Global	Total material use	Total material consumption 45bn tonnes, with TMC as headline indicator, 1970 material use as baseline
National	Total material use	Total material consumption of 5 tonnes TMC per capita, WITH complementary socio-economic indicators
Total material use frameworks should explore the feasibility to; <ul style="list-style-type: none"> • Differentiate used and unused extraction • Formulate sub-targets for disaggregated abiotic materials • Derive targets for biotic and abiotic material extraction separately 		
Thematic sub-targets	Sand and gravel use	Per capita-target relative to land area and GDP
	Critical materials flows	Targets for raw materials e.g. REEs and other biotic materials, based benchmarks e.g. markets share of commodity produced under internationally recognised sustainability standards instead of absolute materials flows.
	Material stocks and secondary materials	Modelling of the relationship between material use and stock accumulation, and mid-term targets balancing extraction of primary materials and use of recycled material.
Water		
Global	Water consumption	Rockstrom et al 2009 planetary threshold
National	Indirect water appropriation	Thresholds i.e. national level water footprint comparing national water availability against dependence on indirectly imported water resources.
Thematic sub-targets	Water abstraction	Watershed-level thresholds for ratio between water appropriation and availability
	Direct water appropriation	Watershed-level thresholds based on water scarcity and competition for available water resources
Land		
Global thematic	Land cover	Integrated land cover framework comprised of;

targets		<ul style="list-style-type: none"> • Global cropland thresholds (with 15% boundary) by Rockstrom et al., 2009; • Forests global biome approach (maintenance of 85% tropical 85% boreal and 50% temperate forests with min 75% biome intact) by Steffen et al. • Mangroves IntRes biome approach with a range of indicators including deforestation rates, salinity, sea level rise, CO2, and potentially flood protection risk per capita.
	Biodiversity loss	Biome integrity <ul style="list-style-type: none"> • Protected areas (with 100% protection) as per Deguignet et al. 2014
National	Land use	Integrated social impacts of land use framework including; <ul style="list-style-type: none"> • Food security – diet, undernourishment (FAO), food losses, food price volatility, land tenure, food crops for fuel, food production, access to electricity, carbon footprints household consumption • Income –income \$ per day per capita (World Bank)

Source: CH analysis of IntRes Working Papers 2.3, 2.4 and 2.5 (2015)

Understanding how these proposals relate to the levels of monitoring under development in existing processes and the key actors involved in implementing them (see Box 3, below) may help identify entry points and areas of collaboration with a view to both advancing the international agenda around resource use and governance and contributing to coherent and effective international frameworks around climate and sustainable development.

Box 3 Monitoring levels and processes

UNFCCC

The Paris climate change agreement is likely to establish a process to develop a detailed measurement, reporting and verification (MRV) process. This will apply to both tracking country Intended Nationally Determined Contributions (INDCs) but also climate finance and the activity of non-state actors. The Paris

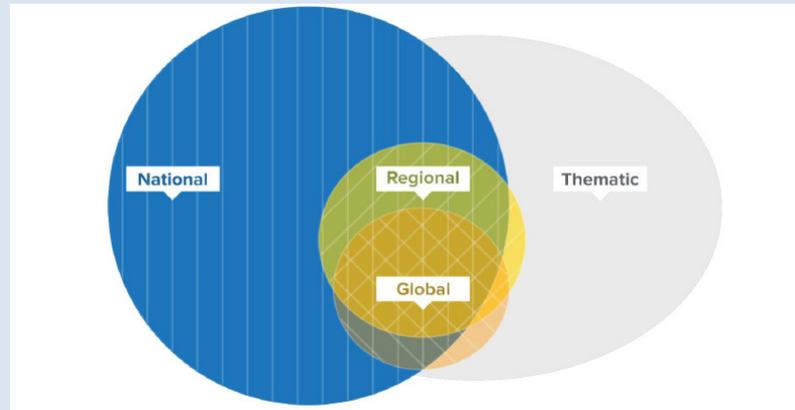
agreement itself is likely to only establish the high level principals on transparency, review and reporting. Much of the detailed design and implementation will be created from 2015-2020, when the agreement is expected to enter into force.

SDGs

The framework developed by the Open Working Group (OWG) on the SDGs outlines four different levels of monitoring. There is some overlap between the indicators, actors and processes at each level, as Figure 4 illustrates. The levels are;

- Global – Global Monitoring Indicators (GMIs) are centrally determined through the OWG, and will form the basis for review at the High Level Political Forum. They are largely drawn from official statistics and harmonized to common global standards. Generally, they apply to all countries, albeit with some context-specific exceptions, for instance targets related to land cover and geography (e.g. forests, oceans).
- National – Complementary National Indicators (CNIs) are nationally determined, and accordingly, they may not be internationally comparable in number and nature. CNIs are likely to be drawn from existing official data sources, although countries may also opt to incorporate GMIs into national efforts and/or include non-official data.
- Regional – Regional indicators are intended to provide a platform for knowledge-sharing, peer review and peer-to-peer learning. Indicators may comprise of GMIs, CNIs and potentially, supplementary indicators relating to regional priorities.
- Thematic – Indicators that will enable specialist expert and interest groups to report on progress toward the SDGs. These may include input and process metrics (in addition to official data), unofficial data and innovations in data collection, analysis and presentation.

Figure 4 Illustration of the indicators for national, regional, global and thematic monitoring

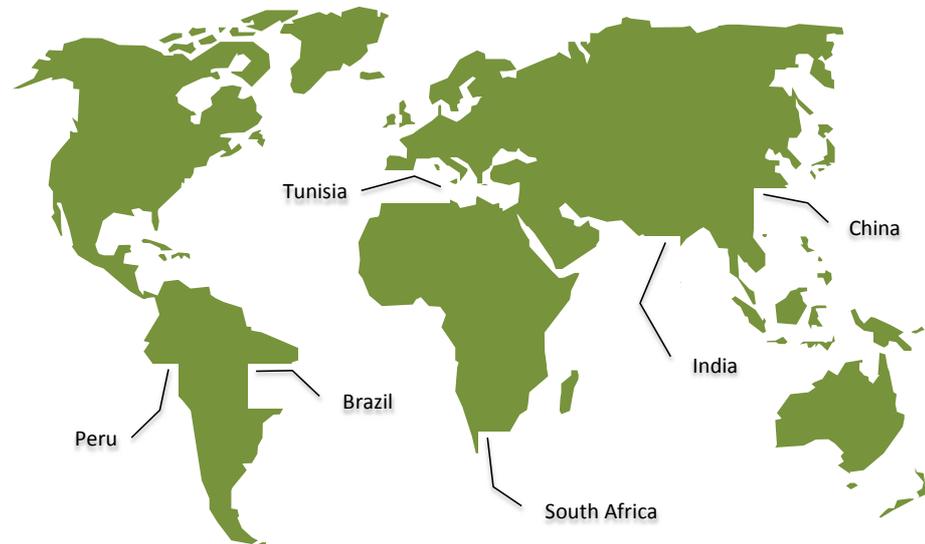


Source: UN SDSN (2015), Indicators and a Monitoring Framework for the Sustainable Development Goals, June 2015, <http://unsdsn.org/wp-content/uploads/2015/05/150612-FINAL-SDSN-Indicator-Report1.pdf>

Moreover, both Paris and the SDGs will lead to detailed low carbon development planning at the national level in a range of countries. Individual INDCs will have to be translated into national actions; and development plans updated to reflect the SDGs and set out a pathway towards meeting them. This will shape overall flows of overseas development assistance and climate finance to developing countries as well as developed country planning models. Inress Work Package 4 has identified a number of key countries that could be strategic partners for Germany based on four key criteria: existing political and legal frameworks in the fields of sustainable development; strategic goals and future potentials (based on a country's wealth of natural resources etc.); possible trade-offs in certain policy areas (governance, human rights etc.); and existing co-operation with German institutions. A preliminary assessment of potential partners at a nation state level identified the following 6 countries as being potential priorities for further engagement (summarised in Figure 5 below):

- Region Africa: South Africa and Tunisia
- Region Asia: China and India
- Region South America: Brazil and Peru

Figure 5 Potential strategic partner countries based on Inress WP4 assessment



Based on Inress WP5 (2015)

These countries provide the potential to develop 'coalitions of the willing' to drive forward the development of resource efficiency metrics and open a discussion about future goals and targets. Engaging key emerging economies such as China, India, Brazil and South Africa early in these discussions will be critical for building a broad base of support. The politics of both Paris and the SDGs have demonstrated that emerging economies want to have active participation in shaping new governance mechanisms, and would potentially react negatively to any perception that Western governments are trying to force additional burdens on them that may limit their development space. Thus open and active cooperation from the outset would provide a space for the co-development of ideas and ensure a broad base of political support for future multilateral engagement as explained in the section below.

5. Supporting sustainable and resilient consumption pathways: the scope and options to advance the global resource governance agenda

Given the emergence of new powerful actors and the disruptive shifts in global resource consumption and trade patterns that have been triggered by the rapid industrialization and urbanization of large emerging economies, it is not surprising that global resource governance has struggled to keep pace. As demonstrated by the four phases of global resource governance the incumbent powers in this system are trying to deal with the dilemma of integrating and accommodating rising powers into existing governance frameworks, while at the same time maintaining their privileged position in the existing order. In the meantime, rising powers are faced with the difficult choice of either trying to pursue their interests and strengthen their position within pre-existing institutional frameworks (which would in time boost their legitimacy and effectiveness), or invest in attempts to establish new structures.

Failure to reach consensus in key negotiations such as the Doha Round of trade negotiations and the Copenhagen climate summit, as well as slow progress in reforming institutions such as the UN, the World Bank or the IMF, have nurtured growing scepticism about the ability to deliver effective global governance through traditional multilateral processes. This scepticism would apply to any attempt to establish a new multilateral convention on resource use. A growing number of global governance initiatives in recent years have relied on a 'coalition of the willing' approach instead, bringing together smaller, ad-hoc groups of governments and other stakeholders with shared interests in addressing specific issues. The most prominent new institution to emerge in this way is the G20, which was initially established to respond to the 2008 global financial crisis. Others such as EITI, IRENA and GGGI have followed a similar model.

Emerging economies have taken on an active role in some of these new mechanisms and expanded their engagement in many existing institutions, but have generally relied heavily on engagement at the bilateral level to pursue their interests around resource governance. Investing in multilateral governance mechanisms is a cumbersome process that often offers limited tangible short term benefits to emerging economies facing pressing issues such as the need to create supply security. Similarly, limits to institutional capacity, and the perception that existing mechanisms might not always be designed to best serve their interests, have contributed to this focus on bilateral diplomacy.

Sustainable production and consumption

At the same time, it is now widely acknowledged that consumption patterns need to be reformed into more sustainable production and consumption models, given future resource constraints and the effects of climate change. Following ten years of negotiations, a framework for an action plan on sustainable production and consumption was adopted at Rio+20, but actions by individual countries are voluntary. Sustainable production and consumption were central to negotiations around the Sustainable Development Goals, which governments agreed in 2015, and will continue to guide the implementation and MRV process.

There have been varied responses to regulating production and consumption to increase sustainability across sectors and from different actors (government, the private sector and civil society). Exploration of legislative interventions in the form of efficiency standards, certification and labelling, and accounting and taxing systems has increased significantly in recent years, but such measures have experienced varying levels of take-up and success. The long-term goal of sustainable resource use will depend on changes in consumption patterns and consumer behaviour, and it is unclear to what extent current policy tools and frameworks can effectively influence that.

There have been many attempts to encourage more sustainable consumption through information campaigns, public education and labelling of products. Many of these have benefitted from knowledge exchange programmes and technical projects in cooperation with develop countries, drawing experiences of countries such as Germany and Japan. Yet despite a proliferation of eco standards and labels over the last 60 years, incongruent regional and international frameworks to support and enforce them remain stumbling blocks in some sectors and countries. Consumers may be more aware and more concerned about environmental factors, but their choices are still determined by socio-economic circumstances, cultural norms and infrastructure factors such as availability and access.

Enhancing global governance on resource use, efficiency and targets

Policies to promote more efficient and sustainable resource use are largely set at the national level, whether on efficiency standards, price reform, public procurement, fiscal incentives, or innovation. As WP5 argues, there is little scope for comprehensive or absolute resource targets at the international level at present. Nonetheless, there are opportunities for enhanced international action in the following areas;

- **Resource efficiency:** There is an opportunity for a new IGC to build on and leverage existing efforts to accelerate global improvements in resource efficiency linked to the SDGs and post Paris UNFCCC implementation processes;

- **New metrics on resource use and flows:** A range of thinking and new metrics have been proposed and developed but there is a need to consolidate and agree on standards and usage at the multilateral level. Key areas for collaboration include;
 - Resource subsidies and prices
 - Innovation policy
 - New business models

Clearly, new approaches will be needed to capturing the benefits of enhanced collaborative governance in each of these areas and the value of more sustainable consumption pathways, while avoiding narrowly defined national approaches and overcoming (often unfounded) negative concerns about the impact that such action might have on economic competitiveness. The following sub-sections make initial recommendations on where enhanced international action would be of value, and what such action might look like, in light of the current landscape of governance mechanisms, measures and metrics in these key areas.

Resource efficiency

Today, resource efficiency remains largely a national (or corporate) policy exercise, and there has been slow progress on international target-setting. At the clean energy ministerial in 2012, governments committed to double the rate of global energy efficiency improvements by 2030, but with insufficient detail to make this a practical goal as yet. Even within the EU, the 2030 energy efficiency target under the Climate and Energy Package is indicative rather than mandatory, weakening its legitimacy. For other resources very little has been agreed internationally. Moreover, the bulk of international attention has been on energy, while non-energy resources have received comparatively less attention.

Increasing multilateral ambition on resource efficiency has the potential to be a ‘quick and cheap win’. A more efficient economy is more competitive and less exposed to price fluctuations on global markets. Consumers benefit from lower and more predictable bills. Efficiency savings offer enormous economic potential. McKinsey has identified 130 opportunities to increase resource productivity, which together could reduce demand for different types of resources in 2030 by 13–29% – offering at that point \$2.9 trillion in global savings per year.¹⁷ Three-quarters of these savings could be realized by implementing 15 priority measures, with energy-efficient buildings topping the list. Many countries, most notably China but also groupings such as the EU, already have a strong story to tell in terms of domestic action on improving energy efficiency. As noted above this would have strong synergies with energy intensity metrics which will be critical for the post-Paris measurement, reporting and verification system and across a range of the SDG goals and indicators.

Yet in practice, significant political economy barriers exist. These include inappropriate resource pricing, a lack of awareness of the need for resource efficiency, the absence of data on which to base measures, and the broader lack of technology, human and financial capacity. Further concerns have been raised about the extent of the rebound effect, whereby reductions resulting from improved efficiency are undermined if savings lead to increased activity in other resource-using areas.¹⁸ Economic uncertainty during an era of austerity has, for many, introduced further complexity to the introduction of ambitious resource efficiency measures and the overhaul of energy systems.

As the coherence agenda develops over the coming years to understand the linkages across and between the SDGs and Paris climate agreement, there is a potential space to host an intergovernmental conference focused on resource efficiency. This would fill a critical gap as there is currently considerable investment in national and regional level processes, but this is not matched by equivalent multilateral action. The aim of the IGC could be to forge a coalition of the willing spanning both developed and developing country parties to launch a sustained process on improving resource efficiency to enhance the delivery of both Paris and the SDGs. The IGC could also reach out to engage key actors from the private sector, civil society and academia to provide technical advice and input. If successful the initial coalition of the willing could be expanded over time, building on the EITI model (see WP5), to cover more countries and work to align the politics to support future efforts to establish resource targets.

5.1 New metrics on resource use and flows

For governments to commit to disruptive levels of change, developing commonly accepted metrics on resource use, flows and efficiency is a crucial step to understanding the consequences of absolute targets. Without a clear evidence base and transparency on the costs and benefits of action and inaction over different timescales, it is extremely difficult to shape an ecosystem that would support binding international targets. However, as the current climate negotiations demonstrate, even with a strong evidence base such as the IPCC provides, agreement on binding, absolute targets may be impossible to achieve. Thus it is also important to consider how new forms of cooperation and collaboration across different actors can demonstrate effective solutions, and thus build political momentum for change. The following three areas provide significant opportunities to advance transparency on resource use and impact, which could significantly shift the existing ecosystem in favour of future multilateral action.

Subsidies and prices

Government subsidies are used extensively in the natural resource sectors to promote domestic production, to shield producers from competition or to protect consumers from volatile world market prices. For example in the energy sector the total value of fossil fuel subsidies worldwide was estimated at over \$400

billion for 2010, about twelve times as much as the value of renewable energy subsidies.¹⁹ In terms of hard law addressing the pricing of resources, as in other areas, WTO rules attempt to limit the use of subsidies (albeit for purely protectionist purposes) through the Agreement on Subsidies and Countervailing Measures. Nevertheless, resource-related subsidies remain pervasive, effectively undermining coordinated action on resource efficiency and other such measures, and reducing the impetus behind disruptive change from innovations and new business models, and broader progress toward sustainable resource production and consumption models.

In the wake of the global financial crisis and the oil price shock of 2008, G20 leaders committed to “rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption” in 2009.²⁰ Despite these high-level declarations of intent, the debate over how to tackle the problem is still fraught with sensitivities about equity and political anxieties over the impact of removal on inflation, competitiveness and the backlash from those whose incomes would be affected. In 2010 the EU, for example, introduced a requirement for subsidies to the coal-mining industry (€3 billion per year in Germany and Spain alone) to be phased out by 2018, but this legislation came at the end of a lengthy battle with labour unions, coal-producing regions and industrial lobbies which succeeded in extending the proposed subsidy period by four years. Moreover, the international community faces a significant challenge in how to distinguish between those subsidies or policy support mechanisms that spawn positive public goods outcomes, and those that create incentives that lead to further environmental degradation and resource depletion.

Although most subsidy reforms follow a halting process, necessity and a growing convergence of interests towards removing fossil fuel subsidies among producer and consumer governments are producing context-specific solutions to subsidy reform. As resource prices have fallen, reducing the direct financial impact on consumers that subsidy removal can entail, progress has been expedited. Several countries are managing gradual fuel price rises (China, Malaysia, Jordan) and a learning curve is emerging in mechanisms to allow lifeline rates/quotas or to offset subsidy removal with welfare transfers (Iran, Indonesia, Chile). One key lesson is the importance of clear articulation and public communication of the objectives of price reform. Another is building in robust monitoring, evaluation and feedback mechanisms and some flexibility, so that schemes can be adjusted in response to unforeseen consequences and the process does not end up undermining those objectives.²¹

The necessity to tailor price reform and subsidy removal to local conditions and politics suggests that it is likely to remain a predominantly national area of competency. Nonetheless, the need for stronger definitions, data and

processes at the international level are clear. Long-term investments in lessons sharing and network building can also help local experts to chart a path through this complex terrain.

Innovation policy

With increasingly complex technology systems and diffuse patterns of knowledge generation, cross-border cooperation between countries and companies will be crucial to boost the pace of technology development. Yet at present, innovation cooperation is still primarily a national, not an international, activity. Across six energy sectors, Chatham House research found that 1.5% of total patents are co-assigned (i.e. list more than one company or institution as co-owners); and 87% of co-assigned patents result from collaboration between companies and/or institutions from the same country.

While there is some collaboration among OECD countries, only 2% of joint patents are shared between developed- and developing-economy companies and institutions. In addition to hardware, it is critical not to overlook the gains to be achieved through 'soft' practices and knowledge, such as natural resource accounting, monitoring, tracking and mapping systems and optimization of manufacturing processes.

Industrialized countries and companies are looking to increase their resilience by increasing cooperation to substitute resources or developing alternative approaches. Japan and the EU recently agreed to synchronize their research efforts to reduce their vulnerability to a supply disruption in critical resources. The recent concern over access to rare-earth elements highlighted the importance of perceived scarcity as a driver for such innovation.

Frontier technologies, such as nanotechnology or additive manufacturing, create new global governance challenges, including managing potential health and environmental impacts as well as updating standards and regulatory frameworks for rapidly changing technologies and industries. While these technologies could deliver sustainability and resource security breakthroughs, their potential adverse impacts need to be carefully managed. Developing systems and tools to map technology development and patent ownership would significantly enhance transparency on future tools and opportunities to manage resource use and encourage international cooperation to manage market failures and accelerate diffusion of key technologies.

New business models

For much of the last century, corporate strategies and business models were built on the assumption of cheap and stable resource prices.²² With dramatically increased price volatility in resource markets over the past decade, and increasing international on the need to phase-out environmentally perverse subsidies, it is clear that this assumption no longer holds. Accordingly, the

World Economic Forum has called for a paradigm shift in business models “to enable growth through resource efficiency, closed loops and decoupling at a systems level”. It argues that this is a core strategic imperative for any company that intends to thrive and grow – avoiding costs, generating new revenue streams and preparing for a tougher regulatory environment and greater public scrutiny.²³

The ‘circular economy’ offers one radical vision for reshaping resource use in the economy. Both governments and business are waking up to the opportunities available if circular economy business models can be taken to scale. Since the 1970s academics have been calling for a rewiring of industrial structures along ecological lines, to ensure that waste from one factory becomes a useful resource for another, that products are made from sustainable materials, and that consumer products can be repaired and ‘remanufactured’ or are designed to biodegrade safely.²⁴ The Ellen MacArthur Foundation suggests that if even a subset of the EU manufacturing sector adopted circular-economy business models, it could realize net materials cost savings worth up to \$630 billion per year by 2025.²⁵

Yet to date, most circular economy policies have been set at the national level – in particular, by Japan, China and Germany – and attempts to collaborate have been limited. One exception is the proposed ‘China-Japan-Korea Circular Economy Model Bases’, which aim to identify shared lessons but will be built with different characteristics according to the three countries’ respective needs.²⁶ With increasingly complex global supply chains and growing trade in waste, cross-border harmonisation will be vital to scaling up circular economy practices. Options to advance this agenda include:

- Accelerating innovation and new business models by common approaches to the circular economy, joint research on key technologies, and commitments to open innovation systems.
- Scaling up markets for green goods and services by aligning performance standards, reducing barriers to trade and investment, coordinating the removal of environmentally harmful subsidies and price reform, and common public procurement policies.
- Catalysing smart approaches through joint data collection and sharing, the diffusion of best practices, common protocols and technology standards, and capacity building in developing countries.

Box 4 Recommendations

Recommendations for Germany's Federal Environment Agency:

Among existing multilateral processes and mechanisms, it is the SDGs and Paris that aim to provide a core benchmark for limiting resource use in critical areas. Given the scale and complexity of the different goals and targets across each, future research efforts should feed-in to the wider 'coherence for development' agenda, with a view to both advancing the international agenda around resource use and governance *and* contributing to coherent and effective international frameworks around sustainable development and climate. Specific actions could include;

- *Ensuring that the IntRes project contributes to the wider 'coherence for development agenda'. A scoping exercise that builds upon the IntRes project could comprehensively map the overlaps between the SDGs, UNFCCC and IntRes (as highlighted in Section 3 of this paper) in terms of data and metrics, and identify the most appropriate entry points and areas of collaboration.*
- *Exploring options for engagement within the SDG process, particularly in relation to the development of common metrics and resource and environmental accounting. Participation in the UN DESA's Inter-agency and Expert Group on Sustainable Development Goals (IAEG-SDGs) and at the UN Statistics Department's working groups and Statistical Commission, for example, could insert the IntRes project into discussions around the SDGs framework and best available statistical and accounting models, while also helping resolve outstanding questions regarding the complex interactions between and within resource-specific targets e.g. the focus of the 'horizontal issues' workshop.*
- *Supporting and/or undertaking research on INDC implementation beyond basic carbon accounting. There is significant divergence between the INDCs of different countries where implementation measures and processes are concerned, from the kinds of targets and indicators identified to the role of different stakeholder groups in implementation. In partnership with its existing international and bilateral partners, UBA could make a valuable contribution to the development of coherent reporting frameworks in the post-Paris (2015-2020) period.*

Where the wider political ecosystem is concerned, there is insufficient alignment to support absolute targets at present. The development of common metrics on resource use, flows and efficiency is crucial to building the evidence base around sustainable resource production, trade and consumption, and understanding the consequences of absolute targets. Focus areas could include;

- *Enhanced collaboration with existing information, communication and transparency mechanisms. In the energy sector this means working with*

existing institutions such as the IEA, IEF and IRENA to provide the evidence base and policy support necessary to allay strategic concerns around energy security and promote a longer-term shift away from fossil fuels and toward renewables. In other sectors (such as materials, land and water there are few comparable mechanisms at present) continued and deepening engagement with international partners on data collection mechanisms and forums for dialogue can contribute to addressing these gaps.

- *Targeted research and technical interventions* around subsidies and prices, innovation policy and new business models could significantly shift the existing ecosystem in favour of future multilateral action.

Recommendations for Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety:

- *Leverage leadership of the G20 to shape the global resource governance agenda.* As Chair of the G20 in 2017, Germany sits between China (2016) and India (2018). China has already highlighted global energy governance among its priorities for its Chair of the G20. Germany has an opportunity to build upon and broaden this agenda into a coherent narrative around resource governance and sustainable development, which can be passed on to India in 2018. If successful this could be used to promote a future IGC on resource efficiency.
- *Refocus EU-China cooperation around resource use and governance.* Given its high tech manufacturing base and commitment to Industry 4.0, Germany is well placed to drive the EU-China strategic agenda forwards and enhance data and dialogue around resource use and materials flows, particularly in relation to critical metals and minerals.
- *Cross-government promotion of 'coherence for development'.* The Ministry can play a central role in heightening cross-government awareness of the 'coherence for development' agenda, and ensuring that sustainable development is a priority across government and with other international actors.

6. Conclusion

There is no simple or easy pathway to rapidly move towards a global convention or another type of international regime to deliver specific resource consumption, productivity or efficiency targets in the current multilateral context. Global resource governance is at a critical stage in its development – managing the rise of new powers within a multilateral system where the core institutions still reflect the immediate post-world war II period. However, this does not mean that there are not opportunities to advance this agenda and build the conditions that would support much greater multilateral efforts in the future.

Two key processes stand out as shaping the locus for the resource use and efficiency agenda over the coming years: the Paris climate change agreement and the implementation of the SDGs. These processes provide a number of critical entry points that could be used to align the politics across key countries and build an evidence base and supportive ecosystem for future action. By working both at the global level and in establishing strong national links with priority countries this agenda could be achieved through a dual strategy of developing a resource efficiency IGC, and developing new metrics on resource use and flows focused on subsidies and prices, innovation policy and new business models.

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reference price (i.e. the international price for that commodity at the time). However, in certain cases – chiefly Saudi Arabia – this would not make sense because beyond a certain volume, domestically consumed oil could not be sold on the international market without affecting the international price. For further discussion of this and the Saudi fuel subsidy issue see Alyousef, Y. and Stevens, P. (2011), 'The Cost of Domestic Energy Prices to Saudi Arabia', *Energy Policy*, Vol. 31, No. 11, pp. 6900–05. In addition, it only takes into account the fuel sold at below cost to utilities, not final-use electricity prices, which some countries also subsidize.

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