

Six Proposals for Future Policies towards Circular Economy and Society

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This policy brief suggests six priorities for developed and emerging economies represented by G20 countries to mainstream circular economy and society globally, as follows: 1) need to capture the momentum raised by public attention on marine plastic pollution; 2) raise the level of ambition of Extended Producer Responsibility; 3) provide policy support for circular economy business models; 4) promote regional circulating and ecological spheres to enhance bottom-up initiatives at local level; 5) enhance international policy coordination and harmonisation for circular economy and society; and 6) incorporate planetary boundaries into the indicators of circular economy and society. It includes suggestions of further tasks for countries where these policies are already in place.

Challenge

It is estimated that extraction and consumption of natural resources will double by 2060 compared to 2011 levels (OECD 2019). In addition, there has been a recent decline in resource productivity both in G20 countries and around the world (UNEP/IRP 2016, 2018). Continuous expansion of resource use and consumption due to globalisation and economic development will result in ever-increasing amounts of waste, and accompanying environmental impacts. For example, marine plastic waste pollution is estimated to cause economic damages of USD 13 billion a year (UNEP 2014). To achieve the Sustainable Development Goals (SDGs) within planetary boundaries (Steffen et al. 2015), it is crucial to control the ever-expanding consumption of natural resources, and to expand the use of secondary resources, as well as to aim for increased use of a service-based economy; i.e. transition to “circular economy and society”.

Considering continuous and increasing concerns over material scarcity as well as increasing environmental impacts from ever-lasting mass material consumption (Lee et al. 2012), encouraging transformation to circular economy and society has several possible multiple benefits expressed in SDGs for emerging economies. For example, it can contribute to water security by reducing pollution and eliminating dumping, as well as minimising release of hazardous chemicals and substances (SDG 6.3). Also, it can contribute to energy saving by promoting efficient use of natural resources and recyclable resources (SDG 7). The need for urban and infrastructure development in emerging economies requires efficient use of materials as well as new modes of service provision (SDG 11). Policy attention on efficient material use also links to basic needs for environmentally sound waste management. While “circular economy and society” is widely discussed as a popular sustainability discourse within international policy processes, and is now considered as an important entry point for achieving SDG 12 (Paul 2018; IISD 2018), emerging and less developed economies, including some G20 countries, often lack sufficient capacity to manage

their waste problems and are unable take advantage of emerging circular economy opportunities.

A circular economy and society refers to concepts such as Japan's sound material-cycle society, which is defined as "a society in which the consumption of natural resources will be conserved and the environmental load will be reduced to the greatest extent possible, by preventing or reducing the generation of wastes and by promoting proper cyclical use and disposal of products" (Government of Japan 2000), or circular economy, defined by the European Union (EU) as an "economy where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised" (European Commission 2015). These concepts incorporate transition to an economy and society as well as business models (OECD 2018) less dependent on primary material consumption, and quite different from the so-called conventional 3Rs of waste. Here we are intentionally using "circular economy and society" but not using "circular economy" used at international processes such as EU and UNEA (United Nations Environment Assembly). By adding society, we are not only emphasising the importance of recycling businesses and service-oriented business model development or expansion of market for recyclable materials but also highlighting the important role of communities, local-level efforts, stakeholder engagement, and international collaboration to promote transition in infrastructure and lifestyles to be more sustainable.

Proposal

This policy brief highlights six proposals to mainstream circular economy and society as a driving force towards global sustainability. Proposals 1, 2, and 3 relate to national priority issues, which should be incorporated to policy considerations of circular economy and society. Proposal 4 relates to local-level governance of implementing policies for circular economy and society. Proposal 5 relates to international governance. Proposal 6 proposed developing a new measurement in the era of SDGs and planetary boundaries.

National Priorities

Proposal 1:

G20 countries need to capture the momentum of public attention on marine plastic pollution not as an isolated issue but as an opportunity to raise political and social priorities for circular economy and society Rationale

- Plastic pollution is a result of mass consumption of plastics. Also, marine plastic pollution is mainly land-based in origin (Horton et al. 2017; Li, Tse, and Fok 2016). Lack of proper waste management is one major cause of marine plastic waste generation (UNEP 2018a). Therefore, this emerging challenge must be tackled through the 3Rs and sustainable consumption.
- Public attention on marine plastics is a chance to prioritise circular economy and society as a way to solve this problem, leading to more effective collaboration and policy harmonization between different policy agendas such as marine plastic waste, single-use plastic, waste and recycling policies (UNEP 2018c; UNCRD and IGES 2018; UNEP 2016; UNEP 2018b).

Suggestions on means of implementation

Echoing the recent joint statement on "Threats to Coastal and Marine Ecosystems and Conservation of the Ocean Environment" of national academies of G20 (S20)(S20 Japan 2019), Proposal 1 suggests cities and local governments, along with stakeholders, are crucial for solving this crisis. It is vital to enhance the capacity of cities and local governments for reducing the use of single-use plastics, implementing the 3Rs and proper waste management through stakeholder collaboration, and science-based target setting and its follow-up.

It is essential to establish a common vision to align different policy sectors both at national and local level, and to involve businesses and consumers in global collective efforts to tackle marine plastic pollution as well as establish roadmaps to position and encourage various individual practices and experiments to turn into collective efforts (Bleischwitz 2019).

Proposal 2: G20 member countries should raise the ambition of policies incorporating Extended Producer Responsibility (EPR) by envisioning phasing out of single-use items and difficult-to-process products.

Rationale

- The EPR system is an effective policy programme to promote proper management of used products, recycling of secondary resources, and to encourage design for easy recycling by shifting physical and financial responsibility of managing end-of-life products from the public sector to producers (including both manufacturers and importers) (OECD 2016).
- Calls are increasing for a solution to plastic pollution and single-use items. This requires a life-cycle and multi-stakeholder approach as suggested in Proposal 1. In that sense, implementation and expansion of EPR system is a good model for lifecycle and multi-stakeholder approach for circular economy and society (Akenji et al. 2011).
- This principle has been introduced in most G20 countries, although there is a difference in degree, ranging from just a reference in the waste-related legal system to the establishment of a comprehensive recycling mechanism. EPR has been applied to packaging (including plastics), electric and electronic appliances, end-of-life vehicles, batteries, and textiles.

Suggestions on means of implementation

It should be effective to expand the scope of the EPR policy from focusing on collection and recycling of end-of-life products, to phasing out of single-use items, or to combine taxation and fee collection systems for single-use items supporting new business models. Taxation on single-use products and difficult-to-process products (such as composite products) can be useful here. Tax revenue could be used to finance subsidies, beyond recycling and treatment of end-of-life products, and extending to the development and dissemination of alternative products and services including fashion businesses, food industry, retailers, electric appliances, mobility, or housing for developing a new business model, as described in Proposal 3.

Proposal 3: G20 member countries should provide policy support for a business model for circular economy and society.

Rationale

- As infrastructure and diffusion of durable consumer goods develops, material stocks in society also accumulate (Bleischwitz et al. 2018). More efficient infrastructure and products mean that maintenance, as well as dematerialisation and expansion of a service-based economy, could become mainstream economic activities, rather than supplying new products for individual ownership.
- Some demand for products driving unsustainable material and energy consumption can be met by services rather than products. Systems and business models could be developed providing services to substitute for over-consumption of primary materials. The Internet of Things (IoT) enables development of new business models based on servicising and dematerialisation (Benkler 2006).
- Dematerialisation businesses in the sharing economy can contribute to a resource-efficient society through less individual ownership of products, thereby reducing resources inputs to the economy (Schröder et al. 2018). For example, sharing automobile services may reduce CO2 emissions per user by approximately 5-11 % (Firnkor and Müller 2011).
- However, the business operations of the sharing economy have the potential to induce additional resource inputs from a life cycle perspective (Mont 2004), with significant hidden resource flows to operate such services. Additional product consumption, the so-called "rebound effect", could occur as the sharing economy becomes more prevalent (Schröder et al. 2018). Possible effects of different sharing services are summarised below. Life cycle analysis of possible policy outcomes could be useful.

Type of services	Possible positive effects	Possible negative effects
Sharing of products	Reduction in the amount of production	Increase in transportation of

	amount of production of new products	transportation of products
Car sharing		Encourage additional demand for automobile movement
Ride sharing	Reduction in the total travel distance	
Sharing of spaces	Utilisation of unused spaces	Energy demand for space uses

Suggestions on means of implementation

Emerging business models should be promoted in the target market based on: 1) characteristics of a product-service bundle to reduce resource throughputs in each market, so that policy can promote expansion of the “right bundle for the right place”; 2) product design and development for sharing, e.g. improved durability, integrated universal design, and facilitation of concurrent use; and 3) consumption pattern data upon introduction of sharing economy. Such data is critical to identify rebound effects, then design a business model preventing them.

To fully realise the potential of service-oriented economy such as sharing economy, information development and communication infrastructure is key.

By supporting new business models, expanding the scope of EPR (Proposal 2) to single-use items can be used to combine taxation and fee collection systems for material-intensive products and services.

Proposal for Local Governance

Proposal 4: G20 member countries should facilitate local/community-based initiatives of circular economy and society (Regional Circulating and Ecological Spheres) to rebuild social capital to help revitalize local areas.

Rationale

- Initiatives for transitioning to sustainability in the era of SDGs require changes in the socio-technological system at city and local levels (Schröder et al. 2018).
- Existing social networks in emerging economies will be supported and maintained, encouraging circular use of materials and products, including repairing products for longer life, and food donation.
- Local-level model cases should be developed focusing more on overall wellbeing of society and maintaining satisfactory services at community level.
- Initiatives encouraging local actions towards sustainable living should employ systems in the context of local needs, instead of separately adapting the concepts of decarbonisation, circular economy and society, or maintenance of biodiversity.

Suggestions on means of implementation

Local activities require promotion of existing good initiatives and practices through networking and local-level platforms, thereby facilitating cooperative activities and mutual learning, and building consensus. Developing and diffusing information communication technology makes this easier (Liu 2018).

Moreover, local initiatives are ways to encourage residential groups to be responsible for change in local society without being regarded as isolated consumers, leading to increased well-being of the entire area (Liu, Onogawa, and Premakumara 2018).

An effective way to facilitate transition to circular economy and society at local level is to form a visible local “loop” of “material”, “finance” and “people”, taking advantage of local resources and returning benefits to local people. G20 countries should build capacity of local governments as facilitators / planning organisations for transition to circular economy (Liu, Onogawa, and Premakumara 2018; Liu 2018).

However, continuous and sustainable stakeholder engagement may take time to establish mutual trust and understanding. Communication and decisionmaking support tools to facilitate collaboration and dialogue of stakeholders are therefore keys for driving transition to circular economy and society at local level. Decentralized, collaborative approaches require the G20 to encourage development and utilisation of such support tools. This is also an opportunity to share mid to long-term visions and mutual social learning from individual initiatives and practices, which should be promoted as proto-type business and community models for wider socio-economic transition to circular economy and society.

International Cooperation

Proposal 5: G20 member countries should encourage international mechanism development for policy coordination and harmonisation for circular economy and society.

Rationale

- The G20 is expected to introduce powerful policies encouraging further resource recycling, control of primary material consumption, and utilisation of abundant resources to facilitate sustainable resource management, as well as to encourage new business and service models which are not dependent on mass consumption of primary materials.
- Nevertheless, policies promoting a circular economy and society cannot be detached from trade issues (Hotta et al. 2008; Yamaguchi 2018). Secondary resources (or recyclable wastes) collected in one country will not be contained in that country; rather they will be recycled and used as resources internationally (Kojima and Michida 2013). If one country intervenes in the recycling market to increase recovery of secondary resources (or recyclable wastes), collected recyclable wastes may not be absorbed into the domestic market for proper recycling but instead lead to unexpected exports (Terazono 2005).
- For example, the recent import restrictions on waste plastics by China have had a major impact on developed countries' exports of recovered secondary plastics (Morita and Hayashi 2018). This means that strengthening regulations in one country can lead to problematic, ad hoc solutions by recycling businesses in exporting countries, simply relocating the problems. This suggests that international coordination, harmonisation and transparency of standards, regulations, and policies are indispensable for building a circular economy and society (Hotta et al. 2008).

Suggestions on means of implementation

Definitions related to technical standards and policy indicators including recycling rate and biodegradability should be shared and harmonized. Similar to the policy coordination function played by the OECD (Organisation for Economic Cooperation and Development) in developed economies, expert analysis of policy issues on circular economy and society can be useful for policy coordination that includes emerging economies, provide specific policy guidance to emerging challenges and opportunities, such as those in this policy brief, associated with circular economy and society. However, the G20 process itself does not have a formal permanent mechanism to provide such functions. One possible approach is to enhance and expand roles played by existing mechanisms such as the OECD and accelerate contributions of emerging economies for specific policy issues such as circular economy and society.

It could be more feasible to set up mechanisms regionally using existing integration mechanisms, starting with Association of South-East Asian Nations (ASEAN)+X (+3 or +6). These countries in particular are leading this trend in increasing material consumption, economic integration, transboundary movement of primary and secondary materials, and associated impacts including those related to waste. In 2017

integration, transboundary movement of primary and secondary materials, and associated impacts including those related to waste. In 2017, the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and ASEAN secretariat published “Complementarities between the ASEAN Community Vision 2025 and the United Nations 2030 Agenda for Sustainable Development” (UNESCAP 2017). IGES and Commonwealth Scientific and Industrial Research Organisation (CSIRO) researchers played major roles in drafting this report, which proposed creating an ASEAN Resources Panel. Building on that proposal, this policy brief recommends to consider establishing an ASEAN+X Resources Panel involving Japan, Korea, Indonesia, India, China, and Australia from the G20, and aiming to contribute to prioritisation and policy harmonisation in the areas of resource efficiency, sustainable materials management, and circular economy at the regional level. The definition could also include harmonisation. Rather than a scientific panel, it could be organized as a practical policy working group, to develop practical policy guidance and guidelines. OECD now includes more Latin American countries, with OECD LAC (Latin America and Caribbean) Programme launched in 2016. Therefore, Latin America will soon be part of a OECD-style policy coordination mechanism. Africa is also set to have increased economic importance, so a similar Panel can be proposed and encouraged in Africa.

Specific functions could include:

- ✓ Solid policy research and a knowledge base on resource use, resource circulation, waste management issues and priorities at the regional level (trend analysis and anticipatory research)
- ✓ Shared agenda and priorities for a policy framework for resource use and resource circulation, and policy recommendations on resource efficiency and circular economy
- ✓ Capacity support on knowledge for policy design and implementation
- ✓ Road map and action plan for achieving sustainable materials management under complementary international frameworks

Indicators and Measurements

Proposal 6: G20 member countries need to adopt a new measurement of wealth and development by incorporating planetary boundaries into the policy concept of circular economy and society.

Rationale

- Currently, economic growth is undermining itself by damaging the ecological foundation of human civilisation. Thus, with mid- and long-term targets for planetary boundaries and decarbonisation, a development model is required that does not depend on perpetually expanding natural resource consumption (Steffen et al. 2015), along with new ways of measuring wealth (Stiglitz, Fitoussi, and Durand 2018).
- Following the Paris Agreement and SDGs, long-term goals such as decarbonisation and maintenance of planetary boundaries became key for harmonising decentralised initiatives for transition to sustainability. These targets aim at limiting impacts associated with energy and material consumption.

Suggestions on means of implementation

It is necessary to examine new evaluation measurements and indicators of development under the era of planetary boundaries and the Paris Agreement, and with increasing attention on plastic pollution. Initiatives towards sustainability will focus more on consumption-based actions. For evaluating efforts towards circular economy and society, applicability of material, water, biological and carbon footprints should be examined for measuring genuine wealth generation and the relationship between planetary boundaries and actions to be taken. Consumption-based policy requires further examination on per capita-based indicators and targets.

Different types of intangible capital —infrastructure, human resources, and the natural environment — can be considered to promote intergenerational wellbeing (Managi and Kumar 2018).

Conclusion

This policy brief highlighted six proposals for the G20 on future policies towards circular economy and society — one of the most effective ways to achieve the 2030 Agenda. To make use of increasing global interest in the circular economy and society, the following roadmap is recommended.

First, as Proposal 1 emphasised, the G20 needs to utilise public attention on marine plastic issues as an opportunity to share a global vision for establishing a circular economy and society. The G20 must thus focus not only on EU-led discussions on circular economy but on emerging economy views, including those developed through the Regional 3R Forum in Asia and the Pacific.

Second, it is vital to support business and service models contributing to circular economy and society. Proposal 2 emphasised that EPR can be utilised by raising ambitions on policies for phasing out single-use products and difficult-to-manage products. Following this, Proposal 3 emphasised that investment is necessary for the environmental sustainability of new business models emerging from digitisation of the economy.

Proposal 4 emphasised a new business model and also looked at local-level actions as a key for transition towards circular economy and society. Initiatives in the era of SDGs, decarbonisation, and a circular economy and society depend on networking of innovative and decentralised actions and projects.

To avoid the unintended effects of unilateral actions to accelerate a circular economy and society, the above actions should be internationally coordinated and harmonised, thereby associating promotion of circular economy and society with multilateral collaboration. The G20 and regional integration organisations play crucial roles. Proposal 5 pointed out mechanisms for policy coordination and harmonisation at regional organisational level. Additionally, multilateral collaboration requires common targets and indicators for a vision of circular economy and society. Proposal 6 emphasised mainstreaming of footprint indicators to examine target and indicator-setting within planetary boundaries. International collaboration is vital at both governmental and expert levels to graduate from conceptual discussion and enable the next step towards policy coordination and harmonisation.

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Existing Initiatives & Analysis

Existing Policies and Monitoring (1)

G20 Japan: Implementation Framework for Actions on Marine Plastic Litter

The G20 members recognize the increasing urgency to tackle the issue of marine litter, especially marine plastic litter and microplastics, on a global scale, further building on existing efforts. [G20 Implementation Framework for Actions on Marine Plastic Litter](#)