Research Paper

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Promoting a Just Transition to an Inclusive Circular Economy

Contents

Summary

- Many social and political issues have so far been neglected in planning for the circular economy transition. This research paper aims to redress this by considering how 'just transition' and social equity may be achieved through policy and practice.
- The prevailing economic model is linear, in that resources are extracted, transformed into products, used, and finally discarded. In contrast, the circular economy recognizes that natural resources are finite, and aims to keep the materials in products in circulation for as long as possible: reusing, repairing, remanufacturing, sharing and recycling. While the concept of the circular economy is largely focused on developing new technologies and businesses to enable keeping materials in circulation, it also includes the notions of 'designing out' waste, substituting renewable materials for non-renewable ones, and restoring natural systems.
- The UN 2030 Agenda demonstrates that environmental, social and economic sustainability objectives cannot be separated. As the links between the environmental issues of climate change, overconsumption of resources and waste generation, and social issues of inequality and the future of work become increasingly obvious, the urgency to connect environmental with social justice is gaining in significance. The language of 'just transition' – a transition that ensures environmental sustainability, decent work, social inclusion and poverty eradication – has started to penetrate debates and research on sustainability policy, particularly in the contexts of climate change and low-carbon energy transition.
- A just transition framework for the circular economy can identify opportunities that reduce waste and stimulate product innovation, while at the same time contributing positively to sustainable human development. And a just transition is needed to reduce inequalities within and between countries, and to ensure that the commitment of the UN Sustainable Development Goals to leave no one behind is fulfilled.
- It is important to identify the likely impacts on employment as a result of digitalization and industrial restructuring. Combining circular economy policies with social protection measures will be important in order to ensure that the burden of efforts to promote circularity will not fall on the poor through worsening working conditions and health impacts, reduced livelihoods, or job losses. Identifying potential winners and losers through participatory 'roadmapping' can help shape effective cooperation mechanisms and partnerships nationally and internationally.
- Many low- and middle-income countries that rely heavily on 'linear' sectors such as mining, manufacturing of non-repairable fast-moving consumer goods, textiles and agriculture, and the export of these commodities to higher-income countries, are likely to be negatively affected by the shift to circularity. These countries will need support from the international community through targeted assistance programmes if international trade in established commodities and manufactures declines in the medium to long term.

- International cooperation to create effective and fair governance mechanisms, and policy coordination at regional, national and local levels will play an important role in shaping a just transition. Multilateral technical assistance programmes will need to be designed and implemented, in particular to support low- and middle-income countries.
- Governments, international development finance institutions and banks are among the bodies beginning to establish circular economy investment funds and programmes. Just transition principles are yet to be applied to many of these new finance mechanisms, and will need to be integrated into development finance to support the circular economy transition.
- New international cooperation programmes, and a global mechanism to mobilize dedicated support funds for countries in need, will be critical to successful implementation across global value chains. Transparent and accountable institutions will also be important in ensuring that just transition funds reach those affected as intended.

1. Introduction

Since 2017, annual global primary resource extraction and use has exceeded 100 billion tonnes per year; and estimates by the International Resource Panel[1] indicate that by 2050 annual global material use could amount to between 170 billion and 184 billion tonnes – an unsustainable level that increases global environmental risks. Today, only 8.6 per cent of the resources and materials in the global economy are reused or recycled.[2] A transition to circular economy is required to move away from the current linear economic model of 'take–make–throw away'. This transition is crucial for reaching the environmental goals of the 2030 Agenda for Sustainable Development, and to achieve countries' climate targets as set out in the 2015 Paris Agreement.[3] In the context of these two critical multilateral undertakings, it is important to ensure that the transition to a resource-efficient and circular economic model will also deliver on social objectives – poverty eradication, improved livelihoods and well-being, decent work, and reduced inequalities.

The concept and the political agenda of 'just transition' has gained significant traction in international and national debates on climate change and energy transitions. In this context, it refers to deliberative political processes that:

- Support regions, industries, workers and communities that are adversely impacted by climate change mitigation measures and environmental policies through reskilling and training;
- Give affected stakeholders a seat at the table in decision-making processes about future economic and social development in their regions and countries;
- Recognize rights to resources and resolve competing development interests through participatory processes;
- Anticipate and address unintended social consequences that emerge from industrial restructuring and phasing out of high-polluting industries and sectors; and
- Rectify existing inequities at an international level between countries, and mitigate emerging conflicts between countries through collaboration and support mechanisms.

The political economy of the transition from a linear to a circular economy has a number of similarities with that of low-carbon transition. As pointed out by the UN *World Social Report 2020*: 'A just, equality-enhancing transition towards green economies calls for the integration of climate action with macroeconomic, labour and social policies aimed at job creation, skills development and adequate support for those who will be harmed.'[4] So far, the circular economy narrative

[1] International Resource Panel (2017), *Assessing global resource use: A systems approach to resource efficiency and pollution reduction*, Report of the International, Resource Panel, Nairobi: United Nations Environment Programme.
[2] Circle Economy (2020), *Circularity Gap Report 2020*, Amsterdam: Circle Economy, https://www.circularity-gap.world/2020#downloading (accessed 12 Mar. 2020).
[3] Material Economics (2018), *The Circular Economy: a Powerful Tool for Climate Mitigation, Material Economics*, https://www.sitra.fi/en/publications/circular-economy-powerful-force-climate-mitigation/ (accessed 24 Nov. 2019).
[4] UN DESA (2020), *World Social Report 2020, Inequality in a rapidly changing world,* UN Department of Economic and Social Affairs, Geneva: United Nations.

has been mainly framed as a purely technological matter or a question of 'making the business case work'. As with the energy transition, the circular economy transition will not only be a technological transition; it will likely also be intensely political.

This research paper makes the case that considerations of justice and social equity are as important for the circular economy transition as they are in the contexts of low-carbon transitions and digitalization of the economy. Without social justice considerations, the circular economy transition will face challenges in getting established as an alternative new economic model, let alone in being sustained over time. Adopting a just transition approach will be critical from an ethical point of view, as well as to ensure active participation and public acceptance of policies and regulatory reforms.[5]

> Considerations of justice and social equity are as important for the circular economy transition as they are in the contexts of low-carbon transitions and digitalization of the economy.

At the international level, the structural transition to a circular economy will influence and reshape trade relations, value chains and flows of primary raw materials between countries. Most importantly, import and export demand for primary materials, secondary materials and waste may decrease in certain economies.[6] Low- and middle-income countries that are heavily dependent on extractive industries stand to lose out in the medium to long term. The impacts arising from lost exports in countries that are particularly reliant on resource exports for their economy and tax revenue are likely to be significant.[7] This may also have a negative effect on the ability of low- and middle-income countries to attain the SDGs.[8] A just transition is therefore critical in ensuring that the circular economy does not create new disadvantages for countries in the future trade system. International support for inclusive initiatives and the diversity of circular approaches that are emerging in developing and fast-industrializing economies provide an opportunity to advance just transitions on a global scale.

Some important lessons can be learned from the low-carbon transition context: efforts to reduce geopolitical friction in the international system, in which oil producing countries might need to be compensated to protect biodiverse ecosystems and keep oil and gas reserves in the ground,[9] and to avoid disruptive influences by countries' last-ditch attempts to flood the world with cheap oil and gas,[10] might also become relevant for the circular economy transition. Although it would be politically difficult, similar approaches may need to be applied to support low-income countries – for example, countries that are heavily dependent on the mining sector, which would be negatively affected by a circular economy of metals and minerals leading to reduced demand for primary materials.

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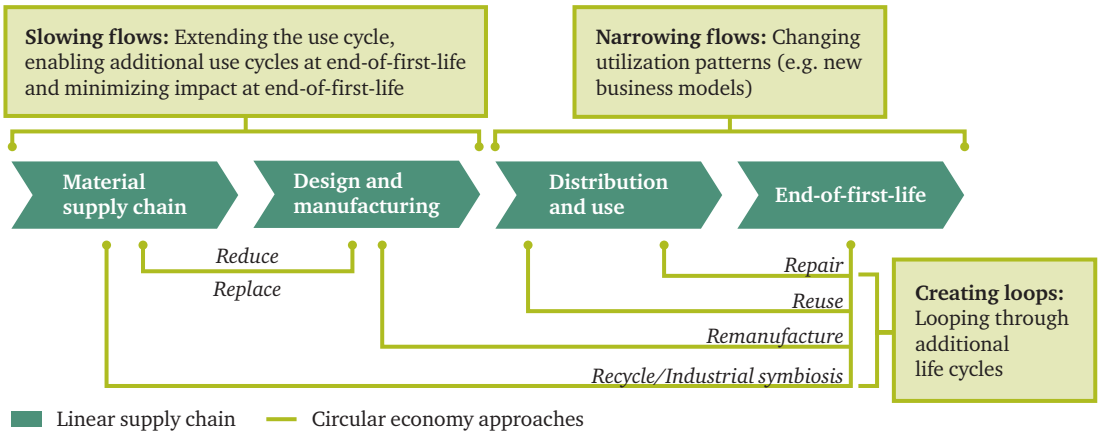
[5] Emden, J. and Murphy, L. (2019), *A Just Transition: Realising the Opportunities of Decarbonisation in the North of England*, Institute for Public Policy Research, https://www.ippr.org/files/2019-03/energy-skills-march19.pdf (accessed 20 Nov. 2019).
[6] OECD (2018), *International Trade and the Transition to a Circular Economy,* Paris: OECD Publishing, https://www.oecd.org/environment/waste/policy-highlights-international-trade-and-the-transition-to-a-circular-economy.pdf (accessed 22 Feb. 2020).
[7] de Jong, S., van der Gaast, M., Kraak, J., Bergema, R. and Usanov, A. (2016), *The Circular Economy and Developing Countries: A data analysis of the impact of a circular economy on resource-dependent developing nations*, Centre of Expertise on Resources, https://hcss.nl/sites/default/files/files/reports/CEO_The%20Circular%20Economy.pdf (accessed 22 Feb. 2020).
[8] Kettunen, M., Gionfra, S. and Monteville, M. (2019), *EU circular economy and trade: Improving policy coherence for sustainable development*, https://ieep.eu/publications/eu-circular-economy-and-trade-report (accessed 20 Nov. 2019).
[9] Friedman, L. (2012), 'Ecuador Asks World to Pay to Keep Yasuni Oil Underground', *Scientific American*, 1 May 2012, https://www.scientificamerican.com/article/ecuador-asks-world-to-pay-to-keep-yasuni-oil-underground/ (accessed 12 Mar. 2020).
[10] Brazilian, M., Bradshaw, M., Goldthau, A. and Westphal, K. (2019), 'Model and manage the changing geopolitics of energy', *Nature*, 569, pp. 29–31, doi:10.1038/d41586-019-01312-5.

This paper first introduces the relevance of the circular economy in the international development and SDG context. It then sets out the just transition approach, and its relevance in climate change and energy transition debates. The paper then explores how the just transition approach can be successfully applied in the circular economy context. Three examples from the priority sectors and value chains of metals, mining and electronics, the textile and fashion sector, and waste management and plastic recycling highlight the potential negative transition impacts and opportunities for just transition approaches. The roles of policy, finance and international trade are outlined as means of steering the transition from linear to circular in an inclusive manner. In conclusion, the paper offers recommendations for policymakers, business leaders, academics and social entrepreneurs on how to advance a just circular economy transition at national and international level.

2. Benefits of the Circular Economy for International Development

The circular economy entails keeping materials and products in circulation for as long as possible through practices such as reuse of products, sharing of underused assets, repairing, recycling and remanufacturing. It also encompasses restoring natural systems, designing out waste, and substituting non-renewable materials with biological and renewable ones. The circular economy stands in contrast with the current linear economic model, in which resources are extracted, transformed into products, used, and finally discarded.[11] The current linear model is characterized by inefficient use of resources, large amounts of waste, and missed opportunities to retain the value of materials and products.

Figure 1: Circular economy approaches – slowing flows, narrowing flows and creating loops



Source: Preston, Lehne and Wellesley (2019), *An Inclusive Circular Economy: Priorities for Developing Countries*.[12]

The transition to a circular economy can make a significant contribution to climate change mitigation, and is essential for reaching the goal of the 2015 Paris Agreement to limit global warming to 1.5 degrees above pre-industrial levels. A study by Material Economics suggests that in an ambitious scenario a more circular economy has the potential to reduce global carbon emissions by up to 3.6 billion tonnes CO_2 per year by 2050.[13] Up to 70–80 per cent of these circular abatement opportunities would be additional to those already addressed by existing climate policy approaches.[14]

[11] Ellen MacArthur Foundation (2019), 'What is the Circular Economy?', https://www.ellenmacarthurfoundation.org/circular-economy/concept (accessed 4 Dec. 2019).
[12] Preston, F., Lehne, J. and Wellesley, L. (2019), *An Inclusive Circular Economy: Priorities for Developing Countries*, Research Paper, London: Royal Institute of International Affairs, p. 8, https://www.chathamhouse.org/sites/default/files/publications/research/2019-05-22-Circular%20Economy.pdf (accessed 20 Nov. 2019).
[13] Material Economics (2018), 'The Circular Economy: A Powerful Force for Climate Mitigation, Transformative innovation for prosperous and low-carbon industry', https://www.sitra.fi/en/publications/circular-economy-powerful-force-climate-mitigation/ (accessed 20 Nov. 2019).
[14] Ibid.

Similarly, a joint report by Material Economics and the Ellen MacArthur Foundation argues that the adoption of circular strategies in four key sectors – steel, cement, plastics and aluminium – could decrease global emissions from key industry materials by 40 per cent by 2050.[15]

The circular economy can be an engine for economic growth, job creation and value-addition.[16] Indeed, several studies suggest that the shift to a circular economy will generate net employment gains, with new jobs created mainly in recycling, rental and repair services, remanufacturing, secondary material production, and the sharing economy.[17] The International Labour Organization (ILO) estimates that a net growth of 6 million jobs globally can be expected by 2030, notably in waste management and recycling, and the services sectors, repair and renting models.[18]

The ILO estimates that a net growth of 6 million jobs globally can be expected by 2030, notably in waste management and recycling, and the services sectors, repair and renting models.

The transition to a circular economy may, as a result of reduced dependency on virgin material resources, mitigate geopolitical supply risks, resource scarcity risks and imbalances in global markets[19] created by the current linear model. So-called 'linear risks' for businesses and countries include reliance on scarce and non-renewable resources. One example is phosphate in food production: here, there are concerns about the current rate of use exceeding absolute global stocks, with the domestic supply of countries including the US, China and India set to run out within the next generation.[20] Other linear risks are the perpetuation of business models of planned obsolescence, and prioritizing sales of new low-quality products with short lifespans, failure to collaborate with other value chain actors, and the inability to innovate or adapt. The need to avoid these risks presents strong arguments for businesses to support the transition to a circular economic model.

However, in the context of international development, the contribution of the circular economy is less clear. It is essential for reaching several of the economic and environmental goals of the 2030 Agenda for Sustainable Development, in particular Sustainable Development Goal (SDG) 6 (Clean Water and Sanitation), SDG 8 (Decent Work and Economic Growth), SDG 11 (Sustainable Cities and Communities), SDG 12 (Sustainable Consumption and Production), SDG 13 (Climate Change), SDG 14 (Life below Water) and Goal 15 (Life on Land).[21] Circular economy practices are of particular relevance to solving the global waste crisis, which disproportionately affects the populations of low- and middle-income countries, where at least 2 billion people still do not have access to solid waste collection.[22] However, the circular economy does not automatically address

[15] Ellen MacArthur Foundation (2019), 'Completing the picture: How the circular economy tackles climate change', https://www.ellenmacarthurfoundation.org/publications/completing-the-picture-climate-change (accessed 12 Mar. 2020).
[16] Preston, F., Lehne, J. and Wellesley, L. (2019), *An Inclusive Circular Economy: Priorities for Developing Countries*.
[17] McCarthy, A., Dellink, R. and Bibas, R. (2018), *The Macroeconomics of the Circular Economy Transition: A Critical Review of Modelling Approaches*, OECD Environment Working Papers, No. 130, Paris: OECD Publishing, p. 12, https://read.oecd-ilibrary.org/environment/the-macroeconomics-of-the-circular-economy-transition_af983f9a-en#page8 (accessed 23 Nov. 2019).
[18] ILO (2018), *World Employment Social Outlook 2018: Greening with jobs*, Geneva: International Labour Organization, https://www.ilo.org/weso-greening/documents/WESO_Greening_EN_web2.pdf (accessed 12 Mar. 2020).
[19] McCarthy, A., Dellink, R. and Bibas, R. (2018), *The Macroeconomics of the Circular Economy Transition: A Critical Review of Modelling Approaches*, OECD Environment Working Papers, No. 130, Paris: OECD Publishing, p. 12, https://read.oecd-ilibrary.org/environment/the-macroeconomics-of-the-circular-economy-transition_af983f9a-en#page8 (accessed 23 Nov. 2019).
[20] Williams, G. (2019), 'Phosphate Outlook 2020: Is a Global Shortage Imminent?', 31 December 2019, https://investingnews.com/daily/resource-investing/agriculture-investing/phosphate-investing/phosphate-outlook/ (accessed 16 Jan. 2020).
[21] Schroeder, P., Anggraeni, K. and Weber, U. (2018), The relevance of circular economy practices to the Sustainable Development Goals, *Journal of Industrial Ecology*, 23(1), doi.org/10.1111/jiec.12732.
[22] Wilson et al. (2015), *Global Waste Management Outlook*, ISWA and UNEP.

social goals such as SDG 2 (Zero Hunger), SDG 5 (Gender Equality) or SDG 10 (Reduced Inequalities). Specific targets under SDG 8 on creating decent work and encouraging formalization of employment are highly important social issues linked to the circular economy transition. Furthermore, achieving the transition to a circular economy will depend on achieving important goals such as a SDG 4 (Quality Education) and SDG 16 (Peace, Justice and Strong Institutions) and SDG 16 (Partnerships for the Goals).

Table 1: Circular economy in the 2030 Agenda framework: contributions and gaps

	Direct positive contributions through circular economy	Gaps in addressing social dimensions in the circular economy	Requirements to enable circular economy transition
SDG 1 (No poverty)		•	
SDG 2 (Zero hunger)		•	
SDG 3 (Good health & wellbeing)	•		
SDG 4 (Quality education)			•
SDG 5 (Gender equality)		•	
SDG 6 (Clean water and sanitation)	•		
SDG 7 (Affordable and clean energy)	•		
SDG 8 (Decent work and economic growth)	•		
SDG 9 (Industry, innovation and infrastructure)	•		
SDG 10 (Reduced inequalities)		•	
SDG 11 (Sustainable cities and communities)	•		
SDG 12 (Sustainable consumption and production)	•		
SDG 13 (Climate change)	•		
SDG 14 (Life below water)	•		
SDG 15 (Life on land)	•		
SDG 16 (Peace, justice and strong institutions)			•
SDG 17 (Partnerships for the goals)			•

The need to ensure that the circular economy will be socially inclusive and that it can deliver on the broader sustainability objectives of the SDG agenda underscores the critical need to take the just transition approach.

3. 'Just Transition': Principles, Origins and Applicability in Climate Action Debates

The term and the concept of 'just transition' brings together concerns about social justice in the transition to a sustainable economy and society.[23] First used by trade unions in North America in the late 20th century, the call for just transition emphasizes the need to assist workers who lost their jobs through energy transition, in a context of limited support measures and social security. The focus has been on coal producing regions that have been hardest hit by mine closures and the shutdown of coal-fired power plants – in particular the Appalachian states of the eastern US, which have suffered almost nine in 10 of the country's coal-related job losses.[24]

The meaning and use of the concept have expanded to include broader efforts to promote jobs, sectors and economies that are both environmentally and socially sustainable. As awareness of the global climate change threat grows, the term is increasingly associated with action on climate change and low-carbon transitions.[25] The concept of just transition has also risen in salience on the international agenda, as manifested by its inclusion in the Paris Agreement, which states the need to take account of the 'the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities'.[26] The rationale is to ensure that climate mitigation actions do not disproportionally affect poor and vulnerable communities and countries. Just transition was also the focus of the Solidarity and Just Transition Silesia Declaration, signed by 56 governments at COP24 in Katowice, Poland, in December 2018.[27]

Notwithstanding these high-level political declarations, it is worth pointing out that there is legitimate concern that the concept of just transition may be misused by parties seeking to protect incumbent industry as a means of slowing the low-carbon transition. There is concern, too, that the adoption of just transition in the international policy realm brings the risk that 'its propagation in bureaucratic policy-making circles will not only dilute the vision but undermine it'.[28]

But mainstream acceptance and implementation of just transition approaches are necessary, not least in order to avoid further delay: sustainability transitions require urgent action, and have to be made against the clock if the SDGs are to be met and runaway climate change is to be averted. On the face of it, this seems to create a contradiction. In the short term, decisive action from above may mean

[23] Heffron, R. and MaCauley, D. (2018), 'What is the 'Just Transition', *Geoforum*, 88, pp. 74–77, https://www.sciencedirect.com/science/article/pii/S0016718517303287.
[24] Just Transition Fund (undated), 'The Just Transition Fund is dedicated to helping coal-affected communities build strong, resilient, and diversified new energy economies', http://www.justtransitionfund.org/ (accessed 21. Nov 2019).
[25] Just Transition Centre (2017), *Just Transition. A report for the OECD.* Paris: OECD, https://www.oecd.org/environment/cc/g20-climate/collapsecontents/Just-Transition-Centre-report-just-transition.pdf (accessed 12 Mar. 2020).
[26] United Nations (2015), *The Paris Agreement*, Bonn: United Nations Framework Convention on Climate Change, https://unfccc.int/sites/default/files/english_paris_agreement.pdf (accessed 19 Nov. 2019).
[27] UNFCCC (2018), 'The Solidarity and Just Transition Silesia Declaration', https://cop24.gov.pl/fileadmin/user_upload/Solidarity_and_Just_Transition_Silesia_Declaration_2_.pdf (accessed 12 Mar. 2020); UNFCCC (2018), 'List of Leaders Endorsing the Solidarity and Just Transition Silesia Declaration', https://cop24.gov.pl/fileadmin/user_upload/files/The_List_of_Leaders_and_Parties_endorsing_the_Solidarity_and_Just_Transition_Silesia_Declaration.pdf (accessed 12 Mar. 2020).
[28] Harvey, S. (2018), 'Leave No Worker Behind: Will the just transition movement survive mainstream adoption?', Earth Island Journal via Edge Funders Alliance, https://edgefunders.org/leave-no-worker-behind/ (accessed 12 Mar. 2020).

implementing 'top-down' designed policy programmes to speed up processes that will drive transition, including deploying technologies and building new infrastructure. However, ensuring social justice is contingent on there being inclusive, deliberative processes and participation, and these need more time. Consequently, context-specific, realistic transition plans and timelines are crucial. Undue haste and rapid but ill-conceived transitions implemented without social acceptance can be costly and create unexpected delays.[29] The 'gilets jaunes' protests in France against (*inter alia*) taxes on diesel fuel that began in 2018, and social unrest that erupted in the Chilean capital, Santiago, in 2019, forcing the relocation of the UN climate conference to Madrid, are pertinent here.[30]

Box 1: Justice considerations in addressing urban air pollution and industrial restructuring in China

Air pollution is a major environmental risk. It caused over 4.2 million premature deaths worldwide in 2016,[31] and has a particularly high death toll in fast-developing countries in South and East Asia. The problem of urban air pollution exposes a range of inequalities in terms of its impact on health, employment, income and education.

To combat air pollution in the Beijing-Tianjin-Hebei region, thousands of small factories in Hebei province – the centre of China's steel manufacturing industry – surrounding Beijing municipality are regularly ordered to halt production in the winter months to help reduce air pollution affecting urban populations.[32] As production grinds to a halt, hundreds of thousands of workers are often laid off. One study published in 2015 estimated that factory closures and industrial restructuring might lead to more than 1 million job losses in Hebei province alone.[33]

Research shows that the appropriateness and sustainability of the current air pollution control measures, especially for industries subject to top-down enforcement, are questionable. The large societal burden, including unemployment and social inequity, resulting from industrial restructuring brings multiple concerns. There is a lack of immediate alternative employment opportunities for often low-skilled workers.[34]

People's economic welfare and political rights are affected not only by toxic air pollutants, but also through the various policy interventions, market activities, and social practices designed to reduce or adapt to air pollution. And the poorest groups in society are affected disproportionally.[35]

Just transition approaches are necessary to ensure that people already affected negatively by air pollution in terms of their health do not also suffer as a result of pollution control measures, such as through loss of livelihood. While the Hebei government has more recently incorporated social, financial and employment support policies in its air pollution action plans, many issues concerning how to translate support measures into tangible benefits for communities remain unresolved.

[29] Newell, P. via Medium (2018), 'Squaring urgency and equity in the Just Transition debate', 24 October 2018, https://medium.com/just-transitions/newell-8d41bb570076 (accessed 15 Jan. 2020).
[30] Schröder, P. (2019), 'Chile's Social Unrest: Why It's Time to Get Serious about a 'Just' Transition', Chatham House Expert Comment, 4 November 2019, https://www.chathamhouse.org/expert/comment/chile-s-social-unrest-why-it-s-time-get-serious-about-just-transition (accessed 12 Mar. 2020).
[31] WHO (2018), 'Ambient (outdoor) air pollution', 2 May 2018, https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health (accessed 12 Mar. 2020).
[32] Xie, E. (2019), 'Small factories in northern China count the cost of Beijing's war on pollution', *South China Morning Post*, 7 April 2019, https://www.scmp.com/news/china/politics/article/3004981/small-factories-northern-china-count-cost-beijings-war (accessed 15 Jan. 2020).
[33] Bian, L. (2015), 'Study on the re-employment during resolving the overcapacity and environment control in Hebei province', *Co-Op Econ. Sci.*, 5, pp. 86–87 (in Chinese).
[34] Wang et al. (2018), 'Taking Action on Air Pollution Control in the Beijing-Tianjin-Hebei (BTH) Region: Progress, Challenges and Opportunities', *Int J Environ Res Public Health*, 15(2), p. 306, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5858375/.
[35] Shen, W., Srivastava, S., Yang, L., Jain, K. and Schröder, P. (2019), 'Understanding the Impacts of Outdoor Air Pollution on Social Inequality: Advancing a Just Transition Framework', *Local Environment: The International Journal of Justice and Sustainability*, doi:10.1080/13549839.2019.1687431.

Just transition is important not only from an ethical perspective; it is also critical in ensuring the long-term sustainability of the transition process itself. Opposition from those who stand to lose out as a result of transition could slow down the process – or even prevent it from happening at all – if competing interests are not resolved or unintended social consequences are not addressed. Among the countries of the EU, for instance, the circular economy, as a key element of the European Green Deal,[36] could become the target of populist forces and extremist parties such as the Alternative für Deutschland (AfD) in Germany and the Rassemblement National (the former Front National) in France, particularly if their supporters feel they do not have a stake in the transition.[37]

Just transition is important not only from an ethical perspective; it is also critical in ensuring the long-term sustainability of the transition process itself.

Moving from the concept of the Green Deal to declarations and specific policy measures, in January 2020 the European Commission announced the establishment of a Just Transition Mechanism, in the form of a fund to support poorer regions in the EU that will be most affected by the transition to a climate-neutral economy.[38] The objective is to provide targeted support for the most affected regions by mobilizing at least €100 billion over the period 2021–27, to alleviate the socio-economic impact of the transition.[39]

The concept of just transition has hitherto mainly been applied in the context of low- and zero-carbon transitions. However, its principles and considerations are equally relevant for the circular economy transition. If just transition principles are adopted at an early stage of this transition, the adversarial politics currently playing out in the global climate change debate may be avoided.

[36] The European Green Deal, announced in December 2019, is a macro-level policy framework to guide the EU's transition to a net zero continent by 2050. The circular economy is a main pillar of the European Green Deal. See: https://ec.europa.eu/info/publications/communication-european-green-deal_en (accessed 23 Mar 2020).
[37] Leonard, M. (2019), 'The Green Deal will make or break Europe', 17 December 2019, https://www.ecfr.eu/article/commentary_the_green_deal_will_make_or_break_europe.
[38] Simon, F. (2019), 'EU 'confident' €100bn green transition fund will see the light', Euractiv, 16 December 2019, https://www.euractiv.com/section/energy-environment/news/eu-confident-e100bn-green-transition-fund-will-see-the-light/ (accessed 16 Jan. 2020).
[39] European Commission (2020), 'The Just Transition Mechanism: Making Sure No One Is Left Behind', https://ec.europa.eu/commission/presscorner/api/files/attachment/860386/just_transition_mechanism_en.pdf (accessed 12 Mar. 2020).

4. Towards a Just Circular Economy Transition

As outlined in the previous section, the transition to a circular economy can address several of the most pressing challenges of our time. However, the transition entails a profound systemic transformation of the way the world's economies function. While it is likely that it will generate a net-positive outcome in terms of employment opportunities, many workers, industries and communities could be adversely impacted. Furthermore, the technological change through digitalization, automation and other Industry 4.0 technologies (such as additive manufacturing and smart sensors) that the circular economy will rely on in order to increase resource productivity, optimize production systems and reduce waste can potentially also exacerbate wage inequality and displace workers and jobs. Preparing to reskill a large number of the workforce will be a major challenge in the coming years and decades.[40]

Already, through the use of digital platforms and complex algorithms to analyse extensive customer data, the digital sharing economy has enabled increasingly better use and sharing of assets. But digital sharing platforms also tend to favour existing asset owners, including as regards ownership of data. This has concentrating market effects, and crowds out the businesses and often less well-educated workers that have traditionally occupied sectors such as hospitality or mobility services. Moreover, there is a real risk that the sharing economy worsens economic security by entrenching workers in uncertain, low-pay employment with limited rights.[41]

Table 2: Employment impacts in the circular economy transition

Type of impact	Examples
Job creation	Circular economic activities will increase the demand for labour in some sectors (e.g. product repair, materials reprocessing and recycling), generating new employment opportunities in some countries.[42] New product system services (PSS) and digitalization are likely to create new types jobs in the ICT sector.
Job substitution	Some employment opportunities will shift from companies, sectors and countries associated with the linear economic model to those that operate according to the circular model. One such example is job substitution through sharing economy platforms and new business models.[43]
Job elimination	In an advanced circular economy, there will be no direct replacement for certain types of employment, in particular jobs linked to linear extractive industries (e.g. mining),[44] and jobs that are already threatened by automation (e.g. textiles).
Job transformation and redefinition	Many existing jobs across multiple sectors are likely to be transformed or redefined as a result of the circular economy transition, requiring new skills and retraining of the workforce.[45]

[40] Oppenheimer, A. (2019), *The Robots Are Coming! The Future of Jobs in the Age of Automation*, New York: Vintage Books.
[41] UN DESA (2020), 'Frontier Technology Quarterly: Does the sharing economy share or concentrate?', United Nations Department of Economic and Social Affairs, 18 February 2020, https://www.un.org/development/desa/dpad/publication/frontier-technology-quarterly-does-the-sharing-economy-share-or-concentrate/ (accessed 22 Feb. 2020).
[42] ILO (2018), *World Employment Social Outlook 2018: Greening with jobs*.
[43] UN DESA (2020), 'Frontier Technology Quarterly: Does the sharing economy share or concentrate?'.
[44] ILO (2018), *World Employment Social Outlook 2018: Greening with jobs*.
[45] Oppenheimer (2019), *The Robots Are Coming! The Future of Jobs in the Age of Automation*.

As set out in Table 2, the implementation of climate mitigation policies, circular economy business models and new technological innovation will likely affect employment in four areas: job creation, job substitution, job elimination, and job transformation and redefinition.[46]

How might these dynamics play out across various sectors of the economy and in different countries? In the long-term, the enhanced circularity and slowing of material flows through reduction, reuse and repair of products, recycling and sharing of assets will, all other things being equal, lower the demand for fossil fuels and other non-renewable primary resources. As a consequence, workers, firms, regions and countries that rely on the extraction and export of fossil fuels, metals and minerals will be adversely affected by the circular economy transition. However, lower revenues will increase the pressure to diversify, which may, if successful, eventually generate developmental benefits in terms of job opportunities and increased productivity.[47]

Applying just transition approaches to the circular economy is important for identifying which countries, sectors, communities and workforces may be adversely affected by the process, as well as for developing policies and programmes to support those at risk of being left behind. It also involves including relevant stakeholders in decision-making processes, and recognizing their rights. Three types of justice – distribution, procedures and recognition[48] – need to be taken into consideration when planning for and designing interventions to support the circular economy transition, raising important questions and principles for a just circular economy transition:

1. **Distributive justice.** In the circular economy context, distributive justice concerns access and rights to resources – including waste, by-products and secondary materials – and the impact of the transition on employment. Pertinent questions to ask are: How are the costs and benefits of the current linear system distributed, and how will the burdens of transition be distributed? In which sectors and countries are jobs gained, and where are jobs lost? And who carries the burdens of the transition?

2. **Procedural justice.** Inclusion and exclusion in decision-making processes are central components of procedural justice. It is essential that various stakeholders, especially communities that are particularly adversely affected by the transition, are included in discussions at an early stage, to ensure that social justice considerations are taken into account. Pertinent questions to ask are: Who has influence, who decides, and who is involved? Is the decision-making process managed or inclusive, and do all stakeholders have a seat at the table? And do all stakeholders have adequate capabilities and skills to participate in the circular economy, contribute their ideas and, if necessary, voice their concerns?

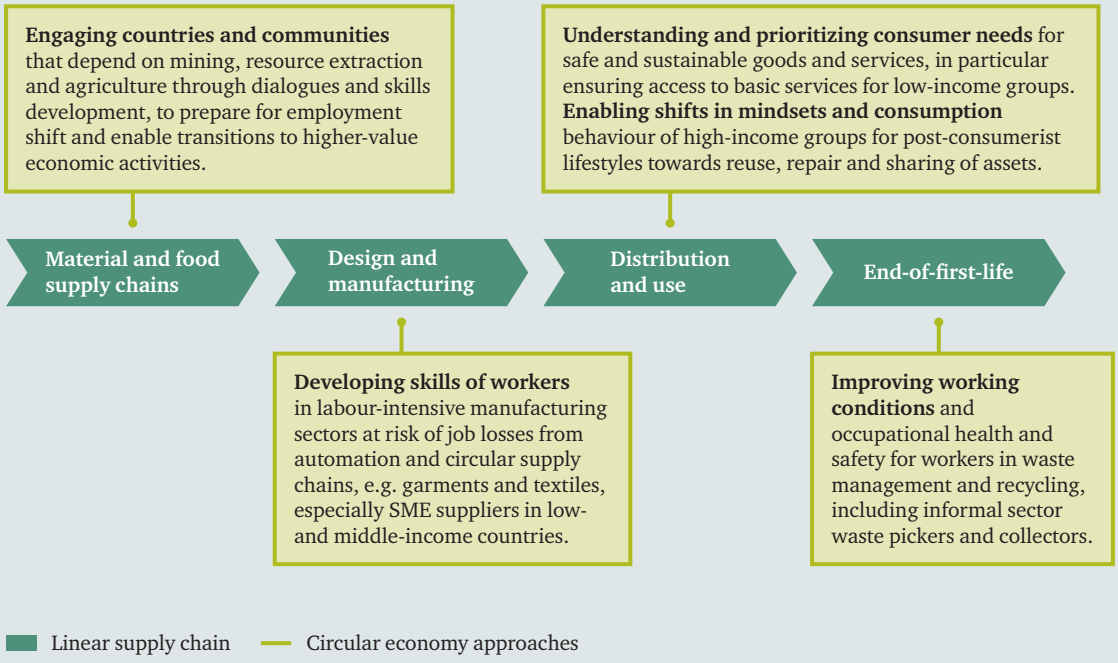
3. **Recognition of rights.** This aspect includes a range of rights, for example ownership rights over natural resources and land, rights to repair of products, and consumer protection rights. Pertinent questions to ask are: How are marginalized circular economy views and narratives, knowledge and values recognized and integrated into dominant narratives? How can competing development interests be resolved through participatory processes? And which institutions can guarantee recognition and protection of rights during the transition processes?

[46] UNEP (2008), *Green Jobs: Towards decent work in a sustainable, low-carbon world*, Nairobi: United Nations Environment Programme, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_158733.pdf (accessed 25 Nov. 2019).
[47] Preston, F., Lehne, J. and Wellesley, L. (2019), *An Inclusive Circular Economy: Priorities for Developing Countries*.
[48] Williams, S and Doyon, A. (2019), 'Justice in energy transitions', *Environmental Innovation and Societal Transitions*, 31, pp. 144–153.

Box 2: The social dimensions of the circular economy transition

In visual diagrams, the circular economy is generally explained as redirecting flows and closing loops of materials, resources and waste along the life cycle of products. However, critical groups such as consumers, workers and communities are often missing from the descriptions. To ensure a just transition, the needs and concerns of various stakeholders need to be considered. Furthermore, active involvement and participation is required along different stages of value chains. Some of the priorities and needs for a successful and just transition from linear to circular value chains are summarized in Figure 2.

Figure 2: Priorities and stakeholder needs for just transition



Source: Author's own analysis.

Discussed below are three key industry sectors, and their value chains, that are the focus in many circular economy agendas – mining and electronics, textiles and garments, and waste management and recycling, as examples of how the just transition approach applies to the circular economy.

Mining and electronics

The transition to a circular economy poses significant challenges to the way the mining sector operates. As the lifetimes of electronic products such as smartphones and laptops expand, their reuse, repair and recycling rates increase, and the sharing economy becomes ever more salient, it can be anticipated that the need for primary extraction of minerals will decrease. The example of electronic companies' circular economy strategies has the potential to severely disrupt the way the current extractive system operates. Apple's push to become a closed-loop manufacturer and end mining – starting with bauxite and cobalt – is a case in point.[49]

[49] Stone, M. (2019), 'Behind the hype of Apple's plan to end mining', *Gizmodo,* 3 June 2019, https://earther.gizmodo.com/behind-the-hype-of-apples-plan-to-end-mining-1833045476 (accessed 12 Mar. 2020).

Current recycling rates of some metals are already encouraging. Copper and aluminium can be recycled repeatedly without any loss of performance, and recycling requires up to 85 per cent less energy than primary production. At present, about 67 per cent of scrap steel, more than 60 per cent of aluminium, and 35 per cent of copper (45–50 per cent in the EU) are recycled.[50] Metal recycling provides 40–50 per cent of the US metal supply.[51] However, to date, less than 5 per cent of rare earths are recycled from end-of-life electronic devices.[52] Many of the technologies that can facilitate the transition to a low-carbon economy – such as digital devices, battery storage systems and electric vehicles – are dependent on metals and minerals like lithium, copper, cobalt, uranium, gold and rare earth minerals. Demand for some of these resources exceeds what can currently be obtained through recycling. As a consequence, demand for these commodities is likely to increase as the transition progresses. In the case of cobalt, a critical material for batteries, this increased demand is already expected to lead to potential supply bottlenecks over the next several years.[53] In the case of copper – essential to power renewable energy systems, which use up to 12 times more copper than conventional power systems[54] – recycling rates are already about 50 per cent but would still need to increase substantially. The circular economy, and recovery and recycling of these materials, is essential to ensure reliable long-term supply to enable the low-carbon transition.

Many of the technologies that can facilitate the transition to a low-carbon economy – such as digital devices, battery storage systems and electric vehicles – are dependent on metals and minerals like lithium, copper, cobalt, uranium, gold and rare earth minerals. Demand for some of these resources exceeds what can currently be obtained through recycling.

The circular economy may also help optimize tailings valorization in the mining sector, and reduce the dangers of chemical leaching and dam failure stemming from the 3,500 active tailings dams currently in existence globally.[55] Tailings valorization means the recovery of residual metals and utilization of the minerals, and otherwise hazardous waste can potentially be transformed into valuable secondary metal resources. However, the current value chains for tailings valorization are lacking or incomplete, and it is important to involve innovative small and medium-sized enterprises (SMEs) that could fill needs gaps.[56]

For many European and other high-income countries, the negative effects on primary sectors are likely to be limited, as extractives do not play major roles in their respective economies; notable exceptions here would include Canada, Australia and Russia. High-income countries are likely to see job gains through enhanced 'urban mining' activities – i.e. recovering raw materials from electronic waste in cities, or mining municipal landfills – as the economic case for these becomes more attractive

[50] Visser, W. (2014), 'Why metals should be recycled, not mined', *Guardian*, 5 November 2019, https://www.theguardian.com/sustainable-business/2014/nov/05/metals-recycled-mine-extractive-business (accessed 25 Nov. 2019).
[51] Mandler, B. (2017), 'Recycling as a source of mineral commodities', American Geosciences Institute factsheet, https://www.americangeosciences.org/geoscience-currents/recycling-source-mineral-commodities (accessed 25 Nov. 2019).
[52] Linnenkoper, K. (2019), 'Is it now or never for rare earth recycling?', Recycling International, 10 May 2019, https://recyclinginternational.com/non-ferrous-metals/rare-earth-metals/19629/ (accessed 27 Nov. 2019).
[53] Stratfor (2018), 'Cobalt: a metal poised to break', 8 January 2018, https://worldview.stratfor.com/article/cobalt-metal-poised-peak (accessed 25 Nov. 2019).
[54] European Copper Institute (undated), 'Circular Economy', https://copperalliance.eu/benefits-of-copper/circular-economy/ (accessed 27 Nov. 2019).
[55] CleanMining (2019), 'The dangers of tailing dams', 25 Nov. 2019, https://www.cleanmining.co/2019/11/25/the-dangers-of-tailing-dams/ (accessed 12 Mar. 2020).
[56] Kinnunen, P. and Kaksonen, A. (2019), 'Towards circular economy in mining: Opportunities and bottlenecks for tailings valorization', *Journal of Cleaner Production*, 228, pp. 153–160.

and profitable than that for classical mining.[57] Mining companies and countries that best understand changing patterns of demand, and position themselves accordingly, are likely to gain competitive advantage and reap significant economic benefits.[58]

The circular economy transition would entail enhancing the longevity of electronic and electrical products, as well as increasing their sharing, reusage, repair and recycling rates. This can be expected to reduce the demand for newly produced items, with likely substantial negative financial implications for many firms – and workers – in the manufacturing sector.[59] The implications will vary across the long value chains of electronics. On the other hand, it is likely that many new business opportunities will emerge as the transition to the circular economy progresses.[60] Likely winners from the transition are the firms, countries and regions that are able to produce new products in an environmentally friendly and 'waste-free' way using recycled materials. New business opportunities are also likely to emerge in recycling, repair, rental and sharing services.

Box 3: Can metals and minerals leasing models mitigate impacts on producer countries?

One possible way to address the negative impacts on countries heavily dependent on extractive sectors, and thus facilitate a just transition in the mining sector at an international level, could be through new models of leasing metals and minerals. Leasing is an established practice for traders and refining companies in the precious metals (gold, silver, platinum group) sectors.[61] In an advanced circular economy, a range of mined minerals and/or manufactured metals could be leased, rather than sold, to companies by producer countries, with the country of origin retaining ownership. The idea is that the resource, in whichever form, is leased for a certain period of time and then 'returned'. The country would receive revenue from leasing the materials, while a failure to return would lead to purchase at a premium price.[62]

This type of leasing mechanism would thus help ensure that producer countries retain long-term ownership of their natural resources, to the intended benefit of lower-income economies. It would also provide high incentives for recycling and improved design of high-tech equipment and electronics to ensure easier recovery of metals from devices. Metals would be extracted from waste by-products during processing and from end-of-life devices, and reintroduced to the manufacturing cycle. Transparent governance measures at both international and country level would be critical to ensuring a just transition: this would entail channelling revenues from leasing of minerals and metals to national transition funds, and potential direct cash transfers to the communities and workers affected by the transition.

In terms of implementation and governance, it has been suggested that multilateral organizations such as the World Trade Organization (WTO) would need to play a facilitating and supervisory role.[63] A multilateral mechanism could also enable technology transfer to producer countries in the developing world, and ensure that the minerals needed for high-tech products are made available, while a lease is transferred to the developing world using new technologies such as blockchain to ensure high degrees of transparency. Furthermore, the development of digital product passports, as intended by the EU in the context of its Circular Economy Action Plan,[64] would facilitate the implementation of metal leasing models.

[57] Recupel (2019), '7 reasons why urban mining is overtaking classical mining', https://www.recupel.be/en/blog/7-reasons-why-urban-mining-is-overtaking-classical-mining/ (accessed 27 Nov. 2019).
[58] Bartels, R., Drewell, Q. and Morrison, H. (2019), *Mining new value from the circular economy*, Accenture, https://www.accenture.com/_acnmedia/pdf-98/accenture-circular-economy-in-mining.pdf (accessed 27 Nov. 2019).
[59] Ellen MacArthur Foundation (2018), *Circular Consumer Electronics: An Initial Exploration*, https://www.ellenmacarthurfoundation.org/assets/downloads/Circular-Consumer-Electronics-2704.pdf (accessed 24 Nov. 2019).
[60] *The Economist* (2018), 'Introducing a More Circular Economy Will be Met with Resistance', 27 September 2019, https://www.economist.com/special-report/2018/09/27/introducing-a-more-circular-economy-will-meet-with-resistance (accessed 17 Aug. 2019).
[61] Kitco (2016), 'Gold leasing explained', https://www.kitco.com/commentaries/2016-05-06/Gold-Leasing-Explained.html (accessed 22 Feb. 2020).
[62] Hagan, A., Tost, M., Inderwildi, O., Hitch, M. and Moser, P. (2019),' The license to mine: Making resource wealth work for those who need it most', *Resources Policy,* 101418, doi.org/10.1016/j.resourpol.2019.101418.
[63] Ibid.
[64] European Commission (2020), 'EU Circular Economy Action Plan', https://ec.europa.eu/environment/circular-economy/ (accessed 12 Mar. 2020).

Textiles and garments

The circular economy is seen as one of the strategic areas of innovation for the future development of the textile and clothing sector. The industry has begun engaging with the circular economy in multiple ways. Many global brands are supporting the transition to circularity by nurturing and scaling innovation,[65] and leading companies in the garment industry have committed, at CEO level, to creating a circular fashion system.[66] The frontrunners in the sector will be: companies that are able to produce new clothes from 'old', e.g. through redesign or retailoring or from recycled materials; companies that use renewable resources such as hemp fibres[67] or bamboo and produce fashion items in an environmentally sustainable way; and companies that are able to successfully establish clothing rental business models. All these models are expected to expand as the transition progresses, providing new business opportunities, especially for local economies, and reducing the amount of clothes currently sent to landfill.[68]

The transition to circular will require critical shifts in how the international textile sector functions, and in how consumers behave. Clothes and fabrics will have to be 'eco-designed' to ensure recyclability from the outset, and produced using environmentally friendly material inputs that do not include harmful substances or plastic microfibres. Items will also have to be used for a much longer period of time than at present. Sharing or renting clothes is one way of achieving variation. Eventually, when clothes cannot be used or repaired any longer, their materials and textile fibres will have to be recycled.[69]

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As demand for clothes changes, it is possible that some existing textile manufacturing firms will go out of business and that workers will be displaced. A circular textile sector could even see the demise of the current 'fast fashion' industry, with production volumes of wholly new garments decreased in tandem with increased rates of reuse and repair of higher quality textiles and recycling of fibres. And in a circular textile system with high degrees of automation and other disruptive technologies such as 3D printing, which, by reducing costs, could potentially bring production closer to markets, it is possible that parts of production may be 'reshored' back to Europe and North America,[70] with negative effects on workers in low- and middle-income countries with large textile manufacturing sectors. There would still be a need for garment workers in countries where production is currently concentrated, but there would potentially be fewer of these workers, and they would need to be upskilled to handle new technologies.[71]

[65] C&A Foundation (2018), 'Circular Fashion', https://www.candafoundation.org/impact/circular-fashion (accessed 25 Nov. 2019).
[66] Global Fashion Agenda (2019), 'CEO Agenda 2019', https://www.globalfashionagenda.com/ceo-agenda-2019/# (accessed 20 Nov. 2019).
[67] Danziger, P. (2019), 'Why The Fashion Industry Needs To Turn On To Hemp', *Forbes*, 3 October 2019, https://www.forbes.com/sites/pamdanziger/2019/10/03/why-the-fashion-industry-needs-to-turn-on-to-hemp/#6a9d8e4e154a (accessed 16 Jan. 2020).
[68] Braithwaite, N (2018), 'Clothing rental could be the key to a stylishly sustainable fashion industry', The Conversation, 31 July 2018, https://theconversation.com/clothing-rental-could-be-the-key-to-a-stylishly-sustainable-fashion-industry-100106 (accessed 16 Jan. 2020).
[69] Ellen MacArthur Foundation (2017), *The New Textiles Economy: Redesigning Fashion's Future*, https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf (accessed 2 Dec. 2019).
[70] Chang, J., Huynh, P. and Rynhart, G. (2016), *ASEAN in transformation: textiles, clothing and footwear: refashioning the future*, Geneva: International Labour Organization, https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---act_emp/documents/publication/wcms_579560.pdf (accessed 2 Dec. 2019).
[71] Schröder, P. and Howarth, J. (2019), 'Circular garments: What About the Workers?', Institute of Development Studies, 3 June 2019, https://www.ids.ac.uk/opinions/circular-garments-what-about-the-workers/ (accessed 27 Nov. 2019).

The impact on workers, especially women, in for example Asian or North African countries that specialize in textile and garment industries may be especially stark, particularly if the degree of automation in the garment sector increases as the transition progresses and production shifts to places with a higher-skilled workforce. Garment value chains linked to fast fashion are major contributors to the economy and employment for women in many of these countries, including Bangladesh, Cambodia, Vietnam, India and China. To take just two examples of the potential scale of the impact, there were some 3.7 million workers in the textile, clothing and footwear sector in Indonesia in 2014, accounting for almost 25 per cent of the country's total manufacturing employment; in Vietnam there were around 2.6 million workers in the equivalent sector in 2013, or 36 per cent of total manufacturing workers.[72]

Box 4: Social entrepreneurship in Bangladesh's circular textile industry

Bangladesh's ready-made garment industry is already experiencing increased 'circular' demands from international brands – including better waste management, recycling of products and the components used, controlling carbon emissions, and greater control of microplastics.[73] The textile industry produces some 500,000–700,000 tons of waste material annually, comprised of yarns, cutting scraps and rejected garment pieces. In some cases, the waste per output can be almost half of the total raw material input needed for the final garments produced. With a combination of different reuse and recycling techniques, the textile waste could be repurposed into about 1 billion new garments.[74] While lower-value scraps end up in landfill, higher-quality garment scraps are passed on to a chain of traders, eventually being transported to India or China to be recycled into yarns for export-grade products by third-party suppliers. Bangladesh is missing an opportunity to use the garment waste products effectively.[75]

Social entrepreneurs in Bangladesh have started finding new uses of the textile waste, developing innovative solutions to address a broader spectrum of issues related to the sustainability of the textile sector, including basic hygiene needs for women, education and skills development, and improving the working lives, health and well-being of millions of garment factory employees. The Ella Pad initiative,[76] for instance, works with women in garment factories to produce washable sanitary pads using scraps from textile manufacturing for their own use as well as for distribution to others. Begun in 2012, the initiative aims to reach the 4 million women working in the garment industry in Bangladesh, and 10 million girls in education, as well as to promote a zero-waste textile sector. The initiative is helping women become entrepreneurs by supporting them in working with factory owners and developing business skills.[77]

Inclusive circular economy initiatives like Ella Pad demonstrate that addressing environmental issues of waste can go hand in hand with social objectives to reduce gender inequality, improve education and health, and generate new employment opportunities for women.

[72] Chang, Huynh and Rynhart (2016), *ASEAN in transformation: textiles, clothing and footwear: refashioning the future*.
[73] Uddin, M. (2019), 'Clothes that don't stain the environment', *Dhaka Tribune*, 8 April 2019, https://www.dhakatribune.com/opinion/op-ed/2019/04/08/clothes-that-don-t-stain-the-environment (accessed 20 Feb. 2020).
[74] Reverse Resources (2017), 'Production Leftovers – a new market opportunity in Bangladesh', 1 March 2017, https://reverseresources.net/news/production-leftovers-a-new-market-opportunity-in-bangladesh (accessed 19 Feb. 2020).
[75] Uddin (2019), 'Clothes that don't stain the environment'.
[76] Ella Pad Initiative website: https://ellapad.org/.
[77] Bealing, J. (2019), '"My responsibility is to give something back to society"', University of Sussex Broadcast, 6 December 2019, http://www.sussex.ac.uk/broadcast/read/50474 (accessed 15 Jan. 2020).

Waste management and recycling

The transition to a circular economy will entail the end of many single-use plastic items used today. Already, many countries are implementing or planning legislation to phase out production and ban the sale and use of single-use plastics. However, these policy efforts are often strongly opposed by companies that might suffer from narrower profit margins under bans. Examples from India show that effective implementation of bans both at state and national level has been difficult.[78] Reduced demand for virgin plastic will have a large and negative impact on the plastics industry and the petrochemical industry. There are strong parallels with the issue of carbon lock-in of energy systems, where incumbent actors and existing infrastructure inhibit transitions.[79]

The transition to a circular economy requires significantly improved recycling practices. Countries that put adequate facilities in place could reap rewards in terms of increased revenues and enhanced access to critical resources. In addition, several studies suggest that employment opportunities in the waste management and recycling industry will increase as a result of the circular economy transition.[80]

Addressing the challenge of eliminating single-use plastics can create new winners. Already, for instance, there are companies taking advantage of new product packaging rules and plastic waste policies.[81] As the circular packaging economy advances, new forms and materials (such as mushrooms or seaweed) to manufacture food packaging will replace unsustainable single-use plastics.[82] However, more durable types of plastics that can also be easily reused and recycled may remain in circulation, to the benefit of certain producers – especially if they are able to use renewable materials in their processes.

In many developing countries, informal waste pickers and collectors play an important role in municipal waste collection, sorting and recycling. Many of these workers are exposed to hazardous conditions, and subsist on very low incomes. As countries and cities seek to modernize their waste management and recycling processes, this group is at risk of being marginalized and seeing its livelihood endangered. Some countries have made efforts to include informal waste pickers in new processes; these are mostly bottom-up initiatives, offering services that create synergies between local authorities, private enterprises, state and citizens.[83]

As part of a just transition, more targeted support measures will be needed to formalize substandard, informal jobs in sectors such as recycling and waste management, in order to transform them into decent employment.[84] Municipal governments will need to work with waste pickers' organizations and collectives to build workers' capacity and develop new skills. It should be noted that in many cases, waste management solutions developed in highly industrialized countries or cities do not work for developing countries (see Box 5). To counter this, it is critical to contextualize and ground transition schemes at country and local level.

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[78] Phartiyal, S. and Jadhav, R. (2018), 'Indian state softens plastic ban after industry lobbying', Reuters, 3 July 2018, https://www.reuters.com/article/us-india-plastic-ban/indian-state-softens-plastic-ban-after-industry-lobbying-idUSKBN1JT1H4 (accessed 20 Feb. 2020).
[79] Janipour, Z., de Nooij, R., Scholten, P., Huijbregts, M. and de Coninck, H. (2020), 'What are sources of carbon lock-in in energy-intensive industry? A case study into Dutch chemicals production', *Energy Research & Social Science*, 60, https://doi.org/10.1016/j.erss.2019.101320.
[80] ILO (2018), *World Employment Social Outlook 2018: Greening with jobs*.
[81] Van Doorn, P. (2020), 'These companies have the most at stake when the world clamps down on plastic pollution', MarketWatch, 6 February 2020, https://www.marketwatch.com/story/these-companies-have-the-most-at-stake-when-the-world-clamps-down-on-plastic-pollution-2020-02-04 (accessed 12 Mar. 2020).
[82] Royte, E. (2019), 'Eat your food, and the package too', *National Geographic*, August 2019, https://www.nationalgeographic.com/environment/future-of-food/food-packaging-plastics-recycle-solutions/ (accessed 10 Mar. 2020).
[83] Gutberlet, J. (2019), 'Waste picker social economy organizations addressing the Sustainable Development Goals: Draft paper prepared in response to the UNTFSSE Call for Papers', United Nations Inter-Agency Task Force on Social and Solidarity Economy, https://unsse.org/wp-content/uploads/2019/06/199_Gutberlet_Waste-picker-social-economy_En.pdf (accessed 12 Mar 2020).
[84] UNFCCC (2016), *Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs*, Technical Paper, Bonn: United Nations Framework Convention on Climate Change, https://unfccc.int/sites/default/files/resource/Just%20transition.pdf (accessed 12 Mar. 2020).

Box 5: Informal settlements and waste management reform challenges in Lagos

The largest city in Nigeria, with its dynamic high-tech and creative industries, Lagos is a city of opportunities for many, including people arriving from poorer parts of the country. With a growth rate of 3.25 per cent a year, it is estimated that the population of Lagos could double to reach 27 million in the next 20 years. Its public infrastructure has not kept pace with the city's rapid expansion, and many new arrivals end up in the more than 200 informal settlements where living conditions are often poor and unsafe. The growth of these settlements is also accelerating the city's waste crisis, with cascading environmental and health impacts particularly for the most vulnerable inhabitants.[85]

While in the past two decades there have been some promising improvements in basic infrastructure and tax compliance in Lagos, resulting from a combination of technocratic management, improved bureaucratic capacity and, critically, buy-in from local elites, the more recent failure of a 'circular' reform initiative for waste collection and management services exemplifies the combined impact of poorly planned reforms, short-term political aspirations and vested interests.

In 2016, in an attempt to solve the city's waste problem once and for all, the then governor of the state initiated the Cleaner Lagos Initiative.[86] It terminated the long-standing waste collection agreement with state-run Lagos Waste Management Authority and instead signed a 10-year contract with a Dubai-based company that proposed to deliver a waste and recycling service on a circular economy model. Disputes quickly emerged between the new contractor and the local collectors who had fulfilled the previous collection contracts. Existing door-to-door collection systems were changed, without sufficiently consulting and informing the public, and as a result municipal waste soon started piling up on the streets. By the time the new state governor assumed office in 2019, waste collection operations in the city had been completely broken down.[87]

As the example from Lagos illustrates, a perhaps well-intended but badly executed transition, entailing reforms that are incompatible with local circumstances and the needs of affected communities, can have more harmful environmental and social outcomes than the status quo. An inclusive circular economy transition in the waste management sector cannot be achieved overnight; rather, this requires policy coherence, education of consumers, and well-planned integration of the informal sector and social protection, particularly for those likely to be adversely impacted by the change.

The role of governments and policy in guiding transitions

Well-designed public policy is critical for advancing the circular economy transition and ensuring that it is inclusive. To promote a circular economy, many governments have already started deploying smart industrial policies, new infrastructure developments for waste management and reverse logistics, and have established targets in specific areas, notably in recycling, recovery and resource efficiency.[88] Examples include China's Circular Economy Promotion Law of 2008, Colombia's National Strategy for the Circular Economy for 2018–22, or the EU's updated Circular Economy Action Plan of 2020. However, more holistic approaches and multi-stakeholder collaboration are needed in order to create decent, high-value work throughout value chains, and with a focus on vulnerable communities and regions affected by the transition. Not only does the circular economy have to become an integral part of national industrial strategies; governments also need to achieve

[85] Lahn, G., Grafham, O. et al. (2020, forthcoming), *Six case studies of the security implications of environmental change*, Research Paper, London: Royal Institute of International Affairs.
[86] Ihua-Maduenyi, M (2018), 'Lagos: When waste challenges a mega city', *Punch*, 14 August 2018, https://punchng.com/lagos-when-waste-challenges-a-mega-city/ (accessed 22 February 2020).
[87] Pilling, D. (2019), 'Lagos life overwhelmed by Nigeria infrastructure crisis', *Financial Times*, 22 November 2019, https://www.ft.com/content/3d304f0a-e446-11e9-b112-9624ec9edc59 (accessed 21 February 2020).
[88] Morseletto, P. (2020), 'Targets for a circular economy', *Resources, Conservation and Recycling*, 153, https://doi.org/10.1016/j.resconrec.2019.104553.

policy integration and coherence with socio-economic planning and employment policies. For instance, policies that enable job creation in sectors such as eco-design, services, repair, recycling, remanufacturing and materials reprocessing may compensate for job losses in sectors that will be negatively impacted by the transition, and contribute to generating tax revenue to fund the social protection mechanisms needed to support displaced workers and marginalized communities.[89]

> A combination of policy tools including regulation, taxation, training and incentives are considered to be the main instruments that foster a circular economy with maximum benefits for society.

A combination of policy tools including regulation, taxation, training and incentives are considered to be the main instruments that foster a circular economy with maximum benefits for society.[90] Social protection schemes – including, *inter alia*, skills training, the provision of financial support during a transition phase, and early retirement schemes – are a critical component of just circular economy transitions, and must be planned for and put in place to help ensure social equity for affected workers and communities.[91] The EU's Cohesion Policy, designed specifically to support regions in transition and to reduce economic and social disparities, is one pertinent example.[92] The new European Green Deal will need to build on existing experience and advance its aims through the Just Transition Mechanism and other social support policies. Transparency and accountability will be crucial to ensure that transition funds do reach the intended workers and affected regions.[93]

Extended producer responsibility (EPR) programmes, which can help reduce waste for a wide range of product categories including packaging, electronic equipment, textiles or end-of-life tyres, represent an important set of policy levers for the circular economy.[94] EPRs require manufacturers to take financial and/or physical responsibility for managing their used or end-of-life products, often involving the creation of take-back schemes so that consumers return these products, for which currently only limited incentives are in place. EPRs can also enable public–private partnerships to share the costs of waste management and recycling between the public sector, producers and consumers.

From a just transition perspective, it is important to note that EPRs can have different impacts on different consumer and income groups. Critically, they must be designed and implemented in such a way that they are not regressive, notably including active stakeholder involvement. For example, Quebec's EPR regulation for electronic waste, implemented in 2011, included consumers, labour organizations and other stakeholders on the demand side in the consultation process, and its

[89] Healy, N. and Barry, J. (2017), 'Politicizing energy justice and energy system transitions: Fossil fuel divestment and a 'just transition'', *Energy Policy*, 108, pp. 451–459.
[90] European Economic and Social Committee (2019), 'The social dimension of the circular economy', Circular Economy Stakeholder Conference workshop report, 6–7 March 2019, https://circulareconomy.europa.eu/platform/sites/default/files/ecesp_2019_workshop_3_social_report_final.pdf (accessed 22 Feb. 2020).
[91] Conway, M. (undated), 'Developing and Implementing Just Transition Policies', World Resources Institute Expert Perspectives, https://www.wri.org/climate/expert-perspective/developing-and-implementing-just-transition-policies (accessed 15 Nov. 2019).
[92] European Commission (2019), 'The Cohesion Fund', https://ec.europa.eu/regional_policy/index.cfm/en/funding/cohesion-fund/ (accessed 12 Nov. 2019).
[93] Gabor, D. (2020), 'The European Green Deal will bypass the poor and go straight to the rich', *Guardian*, 19 Feb 2020, https://www.theguardian.com/commentisfree/2020/feb/19/european-green-deal-polish-miners (accessed 22 Feb 2020).
[94] Park, J., Díaz-Posada, N. and Mejía-Dugand, S. (2018), 'Challenges in implementing the extended producer responsibility in an emerging economy: The end-of-life tire management in Colombia', *Journal of Cleaner Production*, 189, pp. 754–762, https://doi.org/10.1016/j.jclepro.2018.04.058.

objectives critically included supporting local employment. Encouraging refurbishing and reuse, and reducing the environmental impacts of products through modulated fees, can reduce negative impacts on local businesses and employees.[95]

It is necessary also to establish monitoring frameworks to measure progress of circular transitions. In addition to 'hard' indicators about resource productivity, material footprint, waste generation or recycling rates, progress can be measured using indicators that report circular economy achievements in systems that fulfil societal needs such as housing, mobility, nutrition, health and education.[96]

Box 6: The role of national circular economy roadmaps in guiding transitions

Some national governments, among them Colombia, Finland, France, Malaysia and Slovenia, have initiated circular economy policy roadmaps. These can be designed in inclusive and participatory ways to involve various stakeholder groups, including governments, municipalities, the private sector, academia, citizens and labour unions. The evolution of Finland's circular economy roadmap, with the first roadmap developed in 2016 and an update in 2019, is one example of how deliberative processes can catalyse action towards ambitious targets.[97] The roadmap for 2016–25 exemplifies a policy toolkit, examples of best practice and pilot programmes that can be easily replicated and provide added value on a national scale.

Since 2019 the UN Industrial Development Organization (UNIDO) and the Climate Technology Centre & Network (CTCN) have initiated analytical roadmapping processes in selected countries in Latin America. The objective is to assess the current state of the circularity of the respective national economies, and to develop an initial roadmap proposal for a specific circular economy model for each country. The roadmaps will be general, sectoral, and focused on processes, taking into consideration the particular needs of each country. The analysis leading to the final roadmaps will identify the key actors, stakeholders, public and private initiatives, and geographic areas, as well as opportunities and barriers to implementation of a circular economy.[98]

As part of the circular economy roadmap processes, specific policies can be identified, including support schemes, key projects in priority sectors, and pilot regions or cities, which can be used to initiate a country's transition towards a circular economy.

The role of circular economy finance and transition funds

Investments in new infrastructure are crucial to making the transition to a circular economy happen. The financial sector has a key role to play in connecting action on climate change, minimizing waste and pollution, and advancing inclusive development pathways. At COP24, in 2018, more than 120 institutions with a combined $6 trillion in assets under management made a public commitment

[95] Leclerc, S. and Badami, M. (2020), 'Extended producer responsibility for E-waste management: Policy drivers and challenges', *Journal of Cleaner Production*, 251, 119657.
[96] Alaerts, L. et al. (2019), 'Towards a more direct policy feedback in circular economy monitoring via a societal needs perspective', *Resources, Conservation and Recycling*, 149, pp. 363–371, https://doi.org/10.1016/j.resconrec.2019.06.004 (accessed 20 Nov. 2019).
[97] Sitra (2016), *Leading the cycle: Finnish road map to a circular economy 2016–2025*, https://www.sitra.fi/en/publications/leading-cycle/ (accessed 22 Nov. 2019).
[98] CTCN (2019), 'New CTCN/UNIDO Call for Proposals: Assessment of the status of the circular economy in Brazil, Chile, Mexico and Uruguay', https://www.ctc-n.org/news/new-ctcnunido-call-proposals-assessment-status-circular-economy-brazil-chile-mexico-and-uruguay (accessed 22 Nov. 2019).

to support a just transition.[99] Large institutional investors are now beginning to offer thematic circular economy funds as a way for investors to tap into the circular economy trends.[100] An important question that arises in the context of distributive justice is: Who will benefit from these investments?

How to finance just transitions has until recently been missing from the majority of climate investment,[101] and even more so from circular economy investments. In the context of climate change, a global framework for investor action on the just transition has been developed to mobilize investors to pursue a just transition as part of their core operating practices.[102] These frameworks can be tailored to the circular economy transitions to integrate concepts and solutions for zero-waste, circular value chains, or product-service systems.

Part of financing just circular transitions will include the creation of funds for affected sectors and communities to support the economic redevelopment of affected regions and communities. Tax reforms that promote better environmental practices and reform of environmentally harmful subsidy schemes for fossil fuels and other non-renewable resources can create an important source of revenue for just transition funds.[103] Planning for the transfer of funding from industry subsidies that encourage the use of non-renewable resources to transition funds is an important starting point, and should be considered in long-term policy and financing strategies.[104]

In Indonesia, for instance, where national fuel subsidies were reformed in 2015–16, the removal of major energy subsidies cut government subsidy spending, for which some $22.6 billion had been allocated in 2012, to $8 billion in 2015, and then to $4 billion in 2016.[105] Although the overall impacts of the reforms are as yet difficult to evaluate, the reallocation of Indonesia's fuel subsidies is considered a major step forward in improving public expenditure.[106] Money not disbursed as a result of the phasing-out of subsidies has been used to finance increases in social protection and transfers to villages, and poverty reduction programmes. Although the diverted finance did not reach all vulnerable groups, and the fuel price increases resulting from the reduction in subsidies gave rise to public protests, the reform overall is considered to have generated positive social outcomes. In particular, it improved the efficiency of social welfare policies by replacing indiscriminate fuel subsidies (whereby a disproportionate share of subsidies went to the wealthiest households) with the Bantuan Langsung Tunai (BLT) Cash Transfer programme targeted at low-income households.[107] The challenge for the future will be sustaining these reforms once political and international market conditions change, in particular as regards energy prices.

[99] Robins, N. (2019), 'Investors can have a big role in supporting a just transition in the UK', Green Alliance blog, 13 February 2019, https://greenallianceblog.org.uk/2019/02/13/investors-can-have-a-big-role-in-supporting-a-just-transition-in-the-uk/ (accessed 20 Nov. 2019).
[100] BlackRock (2019), 'Understanding the Importance of the Circular Economy, https://www.blackrock.com/uk/intermediaries/insights/circular-economy?switchLocale=y&siteEntryPassthrough=true (accessed 24 Nov. 2019).
[101] Smith, S. (2017), *Just Transition: A report for the OECD*, Just Transition Centre, http://www.oecd.org/environment/cc/g20-climate/collapsecontents/Just-Transition-Centre-report-just-transition.pdf (accessed 20 Nov. 2019).
[102] Robins, N., Brunsting, V. and Wood, D. (2018), *Climate change and the just transition: A guide for investor action*, London: Grantham Research Institute on Climate Change and the Environment, http://www.lse.ac.uk/GranthamInstitute/publication/climate-change-and-the-just-transition-a-guide-for-investor-action/ (accessed 12 Mar. 2020).
[103] Gerasimchuk, I. et al. (2018), *Fossil fuel phase-out and a just transition: Learning from stories of coal phase-outs*, Winnipeg: International Institute for Sustainable Development, https://unfccc.int/sites/default/files/resource/69_IISD%20Fossil%20fuel%20phase%20out%20and%20just%20transition%2C%20stories%20for%20success.pdf (accessed 20 Nov. 2019).
[104] Conway, M. (2017), 'Developing and Implementing Just Transition Policies', World Resources Institute Expert Perspectives, https://www.wri.org/climate/expert-perspective/developing-and-implementing-just-transition-policies (accessed 24 Nov. 2019).
[105] Asian Development Bank (2015), *Fossil fuel subsidies in Indonesia: trends, impacts, and reforms*, Mandaluyong City, Metro Manila: Asian Development Bank, https://www.adb.org/sites/default/files/publication/175444/fossil-fuel-subsidies-indonesia.pdf (accessed 20 Nov. 2019).
[106] Ibid.
[107] FuturePolicy.org (undated), 'Phasing out Indonesia's Fossil Fuel Subsidies', https://www.futurepolicy.org/renewable-energies/indonesia-fossil-fuel-subsidies/ (accessed 15 Feb. 2020).

Just transition funds have some similarities to ecological compensation funds, but their objectives are different. Ecological compensation is a mechanism to protect biodiversity and ecosystem service by counterbalancing ecological damage caused by infrastructure developments in a specific region.[108] In China, for example, ecological compensation schemes have been in place since 1998, with a value to date of approximately $150 billion.[109] Such mechanisms include not only direct payments for environmental services, but also an array of comprehensive measures taxes, fees, subsidies, funds and compensation payments. The aims are to resolve issues resulting from unequal development, imbalanced and ecological economic interests, and unequal distribution of ecological assets.[110]

The aim of dedicated just transition funds, in contrast, is to help affected communities withstand the impacts of industrial restructuring, and to build strong, resilient and diversified new economies. They can create economic opportunities and industrial restructuring in places hardest hit by the energy transition, and help scale community-based transition efforts.[111] In 2019 the European Parliament issued the call for the creation of a new €5 billion 'Just Energy Transition Fund', the objective of which would be to 'address societal, socio-economic and environmental impacts on workers and communities adversely affected by the transition from coal and carbon dependence'.[112] Relevant funds and investment plans have since been included under the Just Transition Mechanism of the European Green Deal, and are also highlighted in the new European Circular Economy Action Plan. The mechanism currently focuses chiefly on local energy transitions, but as implementation progresses it will need to include additional considerations beyond energy and support other industrial sectors to reduce resource consumption and waste generation.

In 2019 the European Parliament issued the call for the creation of a new €5 billion 'Just Energy Transition Fund', the objective of which would be to 'address societal, socio-economic and environmental impacts on workers and communities adversely affected by the transition from coal and carbon dependence'.

As well as support for large industries during the transition, investing in SMEs will also be critical to making the circular economy happen. In 2019 the European Investment Bank (EIB) and five major European national banks launched a Joint Initiative on Circular Economy (JICE) to provide loans, equity investment and guarantees to eligible circular economy projects, including for SMEs.[113] This and similar initiatives point to the development of innovative financing structures for public and private infrastructure, municipalities, and private enterprises of various sizes, as well as for research and innovation projects. However, as most value chains have global dimensions and involve many

[108] Swedish Academy of Agricultural Sciences (2018), 'Ecological Compensation', 5 December 2018, https://www.slu.se/ecologicalcompensation (accessed 11 Mar. 2020).
[109] Busch, J. (2016), 'China's Eco-Compensation Programs for Improving Environmental Quality', Center for Global Development', 13 December 2016, https://www.cgdev.org/blog/chinas-eco-compensation-programs-improving-environmental-quality (accessed 11 Mar. 2020).
[110] Zhanfeng, D. (2019), 'Yangtze River: Actions Toward Ecological Compensation', 20 September 2019, China Water Risk, http://www.chinawaterrisk.org/opinions/yangtze-river-actions-toward-ecological-compensation/ (accessed 2 Nov. 2019).
[111] Just Transition Fund (undated), 'The Just Transition Fund is dedicated to helping coal-affected communities build strong, resilient, and diversified new energy economies'.
[112] Mazzucato, M. (2019), 'Just Energy Transition Fund', Energy Cities, June 2019, https://energy-cities.eu/policy/just-energy-transition-fund/ (accessed 24 Nov. 2019).
[113] European Investment Bank (2019), 'EUR 10 Billion to Support the Circular Economy in the EU', 18 July 2019, https://www.eib.org/en/press/all/2019-191-eur-10-billion-to-support-the-circular-economy-in-the-eu (accessed 20 Nov. 2019).

suppliers in lower-income countries, it is important also to consolidate and streamline existing and new development and climate finance outside Europe. Only if this happens can the circular economy be successful globally.[114]

Furthermore, investments are also needed to formalize the waste management and recycling sectors in low-income countries. Donor agencies and NGOs should invest supporting the creation of more formal and equitable work structures for waste pickers, specifically in contexts where formal associations currently do not exist or are weak. The process of integrating waste pickers requires governments and the private sector to understand the complexities of this work, as well as willingness to think creatively in order to facilitate inclusion, the development of higher-value employment opportunities, and better livelihoods.[115]

The role of multilateral cooperation for trade

High levels of public awareness of the issue of marine plastic pollution are among factors that have contributed to greater engagement in thinking about current problems in the trade of waste plastics. China's 2018 import ban on certain types of low-grade plastic waste highlighted the injustices in the current global trade in waste and recycling value chains, the lack of transparency and accountability in the international waste trade, deceptive practices such as the mislabelling of waste shipments as recyclable materials, and low levels of law enforcement and customs inspections, all of which have facilitated the proliferation of illegal waste trafficking under the guise of recycling.[116] Notably, it had an immediate impact in disrupting trade flows in plastic waste – in some cases directing plastic waste from consumer societies like the UK to low- and middle-income countries with inadequate waste management infrastructure, in many cases illegally.[117]

Issues of power, corruption, marginalization, and unequal distribution of burdens and access to resources are all in strong evidence in the current global trade in waste. Effective governance mechanisms to regulate waste trade will be required to reduce tensions between high- and lower-income countries in all these respects, as well as to make equitable use of the circular economy opportunities associated with the hundreds of millions of tonnes of waste generated each year.[118] One example of these trade tensions between exporting and importing countries can be seen in the issue of plastic scrap import bans and plastic waste shipments that violate the newly amended Basel Convention. In 2019 parties to the Convention adopted a legally binding framework to regulate and enhance transparency in the global trade of certain plastic waste streams.[119] Notably, the new hazardous waste classification for certain plastic waste streams prohibits participating countries from accepting shipments of these kinds of waste from non-parties, such as the US. It also prohibits shipments of hazardous waste without the consent of the importing country. To give one example of the scale of the challenge, Malaysia's imports of plastic waste from its 10 biggest country sources –

[114] Tagliapietra, S. and Zachmann, G. (2020), 'Europe's Green Deal must reach beyond its borders', Bruegel Opinion, 4 February 2020, https://www.bruegel.org/2020/02/europes-green-deal-must-reach-beyond-its-borders/ (accessed 15 Feb. 2020).
[115] Dias, S. (2018), 'Three ways waste pickers can be included in the new circular economy', Equal Times, 23 March 2018, https://www.equaltimes.org/three-ways-waste-pickers-can-be (accessed 12 Oct. 2019).
[116] Khan, S. A. (2019), 'Basel Convention Parties Take Global Lead on Mitigating Plastic Pollution', *American Society of International Law*, 23(7), https://www.asil.org/insights/volume/23/issue/7/basel-convention-parties-take-global-lead-mitigating-plastic-pollution (accessed 23 Oct. 2019).
[117] Ross, A. (2018), 'UK Household Plastics Found in Illegal Dumps in Malaysia', Unearthed, 21 October 2018, https://unearthed.greenpeace.org/2018/10/21/uk-household-plastics-found-in-illegal-dumps-in-malaysia/ (accessed 12 Oct. 2019).
[118] O'Neill, K. (2019), *Waste*, Cambridge, and Medford, MA, Polity Books.
[119] Khan (2019), 'Basel Convention Parties Take Global Lead Mitigating Plastic Pollution'.

including the US, the UK, Japan, Spain and Australia – reached 456,000 tonnes in January–July 2018, up from 316,600 tonnes for the whole of 2017, after China's ban on imports of plastic scrap and other waste entered effect at the beginning of 2018. With the adoption of the amendment to the Basel Convention, the government of Malaysia began sending non-recyclable plastic back to its country of origin.[120]

The momentum of the circular economy offers the opportunity to energize discussions on the environment and trade, including on a new role for the World Trade Organization (WTO) in tackling plastics pollution.[121] In particular, the WTO's Aid for Trade initiative, which aims to assist developing countries to overcome constraints to engaging in international trade, could help support paradigm shifts in trade relations for waste and secondary resources. New trade-related programmes could support the circular economy, improved trade performance and reduce poverty. As a strategic priority, these programmes would focus on development needs along with the environmental and economic interests of developing countries.

[120] Ananthalakshmi, A. and Chow, E. (2019), 'Malaysia, flooded with Plastic Waste, to send back some scrap to source', Reuters, 21 May 2019, https://www.reuters.com/article/us-malaysia-waste-plastic/malaysia-flooded-with-plastic-waste-to-send-back-some-scrap-to-source-idUSKCN1SR1KA (accessed 24 Oct. 2019).
[121] Deere Birkbeck, C. (2019), 'Environment and Trade 2.0.', Hoffman Centre for Sustainable Resource Economy, 10 October 2019, https://hoffmanncentre.chathamhouse.org/article/environment-and-trade-20/ (accessed 20 Nov. 2019).

5. Conclusions

A transition from a linear to a circular economy is essential to address pressing environmental issues such as depletion of natural resources, biodiversity loss, marine plastic pollution and climate change. As the circular economy gains momentum internationally, it is becoming all the more important to align the economic, environmental and social agenda – as has been done in the SDG framework. And with the economy undergoing a systematic transformation from a linear to a circular model, we now have the opportunity make it more inclusive. But this will not happen automatically: it requires additional effort. To enable just circular transitions and ensure that countries and communities are not left behind, a number of factors need to be taken into account:

1. The transition to a circular economy will have consequences for how welfare gains are being distributed among countries, firms, workers and consumers. Participatory circular economy roadmap processes, coordinated by governments and involving multiple stakeholder groups, can identify specific policies including social support schemes, and key projects in priority sectors and pilot regions, which can be used to guide a country's transition towards a circular economy. Implementation will require collaboration between multiple government agencies and stakeholders from industry and civil society.

2. Just transition considerations are crucial to making the circular economy work for human development, and to align the circular economy with the SDGs. Without addressing the human elements, the circular economy will not deliver on important social goals such as improved health, decent working conditions, or reduced inequality. One of the overarching objectives of the circular economy transition should be to reduce the pollution burden of the poorest in society, especially communities affected by mismanaged waste and degraded environments in developing countries. This objective is often neglected in the dominant circular economy agenda. Waste management and recycling policies need to involve local stakeholders in planning, negotiation and implementation through partnerships for waste reduction and waste management.

3. Support mechanisms will need to be put in place for low- and middle-income countries that are heavily dependent on sectors such as extractives or textile manufacturing, as business opportunities in these sectors are expected to be negatively affected by the transition. Strategies to broaden and diversify their economic activities and business approaches will be necessary. And just transition policies will be critical to ensuring that workers and communities from sectors that are expected to decline are supported during the transition. Policymakers will need to initiate and facilitate participatory approaches to design appropriate industrial circular economy policies.

4. Multilateral approaches to trade arrangements can help to address these issues, and there is a potential role for the WTO to make trade in waste and secondary materials more transparent and environmentally sustainable, as well as to reduce social injustices. Initiatives like the WTO's Aid for Trade could have a role to play in mobilizing resources for developing countries and addressing emerging trade-related impacts of the circular economy. For stakeholders involved

in the circular economy – environment and trade alike – it is necessary to coordinate and engage politically on improving the sustainability and fairness of the global trading system for waste, secondary resources and second-hand products.

5. Discussions about just transition mechanisms need to move from the national to the international level to address and rectify existing and emerging inequities between countries. New international cooperation programmes dedicated to the circular economy, and potentially a just transition mechanism on a global level, to support low- and middle-income countries that will be affected during the transition to a circular economy, will be necessary to successfully implement the circular economy transition across global value chains. And transparent and accountable institutions will be needed to ensure that just transition funds reach and benefit workers and affected communities.

Despite the challenges that lie ahead, the circular economy has the potential to foster a just transition, and to reduce existing tensions and struggles around resource conflicts and unequal distribution of resources, in particular by reducing the pollution burden on the poor and pre-empting negative impacts on employment. It is critical to put considerations of equity and fairness at the heart of debates about the transition, and to understand the potential for just transitions in order to ensure that transition processes are not disrupted, that potential losers are supported, and that susceptible countries and vulnerable populations are not left behind.

About the Author

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Cover image: Residents of Mount Ijen take sulphur at Ijen Crater, Banyuwangi, East Java, on 2 July 2018.

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