

The Third World Circular Economy Forum 3-4 June 2019

“Living instead of consuming” was a popular refrain heard during the 2019 World Circular Economy Forum (WCEF2019), a two-day event attended by more than 2,000 “doers and thinkers” that introduced a flurry of new ideas to reduce the overuse of raw materials, stem overconsumption, and move from ownership to sharing, among other goals that fall under the circular economy framework. The circular economy refers to a way of thinking that redefines economic growth so that it is restorative and regenerative by design. To accomplish this, participants shared a variety of innovative solutions that included actions such as moving away from linear business models, ending perverse economic incentives, mainstreaming the circular economy in trade, encouraging disruption in business, collaborating with the private sector, and educating consumers to change mindsets and behaviors.

Many participants called for an in-depth assessment of the main barriers preventing a transition to the circular economy and for education that breaks silos and promotes interdisciplinarity. While individual countries and regions are stepping up their efforts to advance the circular economy, discussions frequently highlighted the importance of global governance, particularly with regards to regulation, taxation, and subsidies.

WCEF2019 stressed the urgent need to scale up the circular economy and participants frequently noted that the time to act is now, as there are opportunities to mainstream circular solutions such in filling the massive global infrastructure gap. In this regard, participants emphasized the private sector’s role in promoting the leap from linearity to circularity.

During 16 plenary and parallel sessions, panelists highlighted that the transition to the circular economy should become fairer and more inclusive, while supporting the UN Sustainable Development Goals (SDGs). Discussions focused on:

- methods for growing investments into circular economy businesses;
- ways to spread and scale up new technologies; and
- tools for making significant regulatory changes that enable scaling up the circular economy.

WCEF2019 complemented the outcomes from the first and second Forums, which took place in Helsinki, Finland, and Yokohama, Japan, respectively, and where circular economy

experts discussed the needs to reach a truly circular economy by 2050.

Other key messages included the importance of international trade and investment, as well as broad engagement by governments, the private sector, and consumers. The hope and expectation are that the ideas shared at WCEF2019 will enrich ongoing policy discussions in Europe and elsewhere. Finland’s upcoming Presidency of the European Union and plans by the European Commission to update its second circular economy plan both present key opportunities to promote circularity. The discussions will continue at the fourth WCEF to be held in Canada in 2020.

As a global initiative of the Finnish Innovation Fund Sitra, WCEF2019 was convened in Helsinki, Finland, from 3-4 June

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2019, and received the support of the European Investment Bank (EIB), Ministry for Foreign Affairs of Finland, Ministry of Agriculture and Forestry of Finland, Ministry of Economic Affairs and Employment of Finland, Ministry of the Environment of Finland, Nordic Innovation, and partners Climate-KIC, the Ellen MacArthur Foundation, the European Commission, the European Environment Agency, Helsinki Metropolitan Smart & Clean Foundation, United Nations Environment Programme (UNEP), and the World Bank.

A Brief History of the Circular Economy

Given trends in global population growth, the economic model of ever-increasing production and consumption presents substantial challenges to policymakers. These include scarcity of, and unequal access to, natural resources and energy, as well as climate, social, and geopolitical disruption.

In response, the concept of circular economy decouples virgin and non-renewable resource-use from economic growth and seeks to put an end to an era of overconsumption—an era that has caused climate change, dangerous loss of biodiversity, and the overuse of natural resources.

The notions of circularity and non-linear thinking can be traced back to rich historical and philosophical traditions, including the Japanese teachings of the 13th century philosopher Dogen on inhabiting “being time” with total intention and care, and in the conservation ethic of the “*mottainai* mind,” which was taken up by Wangari Maathai’s Green Belt Movement to promote the “3Rs” (reduce, reuse and recycle). The work on circular economy also builds on contemporary ideas developed by the Ellen MacArthur Foundation and others such as Walter Stahel (performance economy), William McDonough and Michael Braugart (cradle-to-cradle design), Janine Benyus (biomimicry); Amory and Hunter Lovins and Paul Hawken (natural capitalism), and Gunter Pauli (blue economy systems). A circular economy is thus based, *inter alia*, on the purposeful design and production of more durable, repairable, reusable and recyclable products, as well as harnessing disruptive new technologies (e.g. blockchain, artificial intelligence, and the internet of things) and the other services and intelligent digital solutions associated with the Fourth Industrial Revolution. Ideally, waste is designed out of the production system, as it comes to be regarded as a valuable resource. Products are shared, leased or rented, rather than necessarily owned by an end user.

During 2016, Finland developed the world’s first national road map to circularity entitled “Leading the Cycle – Finnish Road Map to a Circular Economy 2010-2025.” It was drafted under the direction of Sitra, in co-operation with the Ministry of the Environment, Agriculture and Forestry, Economic Affairs and Employment, the business sector, and other key stakeholders. The Road Map, which is currently being revised and updated, aims to help cultivate and enable a shared mindset and capabilities for promoting the circular economy among all stakeholders, as well as determine the most effective means to bring about a systemic change in the economy. The Finnish Road Map’s design allows it

to be scaled up at both the national and international levels. The Road Map included the organization of the first WCEF in June 2017 in Helsinki, Finland, and has five focus areas: a sustainable food system; forest-based loops; technical loops; transport and logistics; and joint actions.

In parallel with Finland’s actions, the European Commission has been working on policy and guidance in the area of circular economy. In 2015, it adopted a Circular Economy Package, which includes revised legislative proposals on waste to stimulate Europe’s transition towards a circular economy, stating that this “will boost global competitiveness, foster sustainable economic growth and generate new jobs.” In 2016, the Commission published a review of the implementation of the Action Plan, and established a Circular Economy Finance Support Platform together with the European Investment Bank (EIB). As part of continuing efforts to implement the Circular Economy Action Plan, in January 2018 the Commission adopted a new set of measures, including a European Union (EU) Strategy for Plastics that calls for all plastic packaging to be recyclable by 2030. In addition, China and the EU have signed a joint Memorandum of Understanding on Circular Economy Cooperation at the 20th EU-China Summit in 2018.

The Japanese government has also been a leading advocate of the 3Rs and of the circular economy, known in Japan as the Sound Material-Cycle Society, and has shown its leadership in the international and regional arenas, including through the G-7/G-8 processes and the Regional 3R Forum in Asia and the Pacific. Japan enacted the Basic Act for Establishing a Sound Material-Cycle Society in 2001 and the Fundamental Plan for Establishing a Sound Material-Cycle Society in 2003. This fundamental plan has been revised every five years and the fourth plan was adopted in June 2018. It contains a new approach for Japanese policies on the circular economy. In October 2018, the Japanese Ministry of the Environment launched a “Plastics Smart” campaign, a multi-stakeholder initiative that promotes actions on addressing marine plastic waste. Japan took advantage of WCEF2018, which it hosted in Yokohama, to strengthen its leadership and commitment to taking a circular economy discourse to a wider range of international fora and fulfilling its presidency of the G-20 in 2019.

In 2019, the third WCEF had the goal of sharing circular economy solutions “for all,” including scaling up the best opportunities for developing countries. These efforts respond to the need to make the circular economy fairer and more inclusive by addressing the challenges of, for example, informal sectors and lack of regulatory frameworks in less developed countries and technological disparities between the North and the South.

Report of the Meeting

Grand Opening

The 2019 World Circular Economy Forum (WCEF2019) began with a live performance on the theme “wind, water, earth and fire.” Moderators Peter Woodward, Director, Quest Associates,

and Veera Heinonen, Sitra, noted the role of the World Circular Economy Forums in generating momentum and identified the upcoming Finnish Presidency of the EU as a chance to further scale up solutions.

Mikko Kosonen, President, Sitra, underlined that, while the impacts of climate change and biodiversity loss are being increasingly felt, there are nonetheless positive examples of commitments to change, such as the Finnish roadmap to a circular economy by 2025 and IKEA's commitment to use only renewables and recyclables by 2030. He emphasized that the transition must: be fair and inclusive, provide new skills to those who may lose their jobs; use taxation systems to appropriately penalize or reward products and services; and channel private sector investments to meet the estimated EUR 4 trillion that such a transition would cost.

Voice of the next generation—"Our Planet Our Home":

Youth representatives from more than 70 countries then marched on stage, calling on audience members to tackle some of the key causes of climate change and environmental degradation. These included: insufficient use of public transportation; excessive air travel; soil, air, and water pollution; inadequate environmental education in schools; overconsumption; and unsustainable eating habits.

Scaling up – global solutions: Elliott Harris, Assistant Secretary-General for Economic Development, United Nations (UN), highlighted the role of cross-border collaboration, noting that individual economies are too small to be self-sufficient. He also underscored the importance of clear and predictable policy frameworks, calling on governments to step up their efforts.

Sientje van Veldhoven, State Secretary for Infrastructure and Water Management, the Netherlands, drew attention to population growth and "enormous" pressure on natural resources. She expressed hope that the new European Commission will continue to act as a forerunner in developing the circular economy and pointed to the role of government procurement as a key tool to drive market changes.

Voice of commitment – The three most important messages: Laura Tuck, World Bank, stressed that the urgent need to implement a circular economy and called for: the end of perverse incentives, which, for example, artificially reduce the costs of plastics; greater engagement of the private sector in capacity building for product design; and building a solid economic case for circularity that would also demonstrate the benefits of natural capital accounting.

Stating that circular economy is both a responsibility and a "great opportunity," Torbjörn Löf, CEO, Inter IKEA Group, announced that IKEA will function based entirely on circular economy principles by 2030. He argued that the IKEA's vision to create a better life implies that the company must act on sustainability and transition from a linear to a circular business model, while also inspiring changes in consumption patterns.

Karmenu Vella, European Commissioner for Environment, Maritime Affairs and Fisheries, warned that, while circularity is taking off and receives broad public support throughout the EU, it

is still in its early stages. He noted three requirements to scale up the transition: a comprehensive plan endorsed not only by the EU but also by international partners; stronger networks to engage all stakeholders; and leveraging greater private sector funds.

Tsukasa Akimoto, State Minister of the Environment, Japan, recalled highlights from WCEF2018, in Yokohama, Japan, and described national policy initiatives to promote circularity, such as waste management systems that have reduced waste by 80%, as well as Japan's international efforts to combat marine plastic litter.

Emma Navarro, EIB, stressed the importance of scaling up finance and investment towards circular projects. She called for leveling the playing field for circular projects, including through financial methodologies that consider the added value of circularity.

Acceleration of Circular Businesses

Daniel Kaufmann, Sitra, moderated the session and identified the need to create value without increasing material consumption, as 80% of consumer products and their materials are currently thrown away.

Under the motto "fewer products, longer lifetimes," Daan Weddepohl, CEO and Co-founder, Peerby, presented his company's app which enables borrowing and lending various things from neighbors. On scaling up technologies, he recommended platforms that would play a key role in "disruption," highlighting Wikipedia, which, he suggested, replaced encyclopedias.

Tessa Clarke, CEO and Co-founder, Olio, underscored that one third of the food people produce globally is lost, while at the same time 800 million people still live in hunger. She told the story of her company and its platform, which has more than one million users who connect with neighbors and local businesses to share food surpluses, avoiding waste.

Harald Tepper, Circular Economy Lead, Philips, noted that making the world healthier and more sustainable through innovation could improve the lives of 3 billion people by 2030. He said his company wants to have 15% of sales and services from circular products by 2020 and plans to "close the loop" by facilitating the return of discarded products by customer. He underscored the "5R policy" from Phillips, which focuses on: return, re-sell, repair, recycle, and refurbish.

Piia Maaranen, CEO, Avanto Ventures, discussed the example of Loop Ventures, a program accelerating new business models that facilitate the transition from a linear to a circular economy, noting, for example, Fjong, a Norwegian company that provides a chance for its customers to lend clothes and make money "out of their closet."

Kate Daly, Executive Director, Closed Loop Partners, said that only "9% of the world's economy is circular" and highlighted the USD 2 trillion opportunity in the US, if the circular economy is truly implemented. Observing that many technologies usually need 17 years on average to reach growth at scale, she called for more solutions related to investments in businesses that

accelerate circularity and shared the example of For Days, a company offering a subscription-based model to buy, return, and recycle t-shirts.

Henrietta Kekäläinen, CEO and Co-founder, Carboculture, explained that her company converts waste into functional carbon and noted that biochar can be used in a variety of industries, especially in cities, to filter toxins. Her company's mission, she said, is to clean the air and heal the soils.

Julien Guerrier, Director, EASME, said that his organization helps small and medium-sized enterprises (SMEs) to create new business models for circularity, underscoring that the projects it funds make both environmental and economic sense. He added that only a holistic plan involving all stakeholders could move the circular economy forward.

During the discussion, key takeaways were: business-to-business experiences can provide information on how to deal with consumer relationships; companies that want to last will have to align their manufacturing methods with a circular economy; the multi-trillion dollar infrastructure gap that exists in countries such as the US represents significant opportunities for disruption and innovation; business models are moving from owing to sharing; and consumer mindsets remain a barrier for the circular economy.

Circular Economy in Cities

This session focused on participants sharing the stories of the cities of Helsinki, Amsterdam, London, and New York, including their experiences and best practices, with Amsterdam hailed as the “leading circular economy city in the world.”

Moderator Siiri Mäkelä, President of the Finnish Agenda 2030 Youth Group, said the fossil fuel underpinnings of the current economy are already “stranded assets.” Tiina Kähö, Smart & Clean Foundation, said plastic is a “wicked problem” for Helsinki and leadership is required to direct more plastic waste into the recycling system.

A discussion on leadership in cities began with Jan Vapaavuori, Mayor of the City of Helsinki, stressing that cities must be involved “in the right way,” in order for global and national efforts to succeed. Vapaavuori said Helsinki will become the second city in the world to report to the UN on its SDG progress with a “voluntary local review” in July 2019 and noted that mapping the city's strategy against the SDGs serves two purposes: it identifies areas of progress and for improvement, and creates comparable data, enabling peer learning.

Annerieke Douma, Circle Economy, said a circular economy is not just about the environment but also about healthy and resilient cities with a good life for all. She said Circle Economy is working with the City of Amsterdam to “collaborate across silos” and that Amsterdam is the pioneer in using “doughnut economics” at the city level to make all cities part of a “safe and just space,” where one city does not deprive others of their basic needs.

Esther Agricola, from the city of Amsterdam, said her city aims to become entirely circular by 2050, noting that the key to making progress is to quickly set a clear goal.

Kirsten Dunlop, CEO, EIT Climate-KIC, called for connecting cities that are learning by doing so they can multiply each other's effects.

The second part of the session focused on reducing resource overuse. Pekka Lundmark, President and CEO, Fortum, said the demand for recycling plastic waste “seems unlimited” and Europe must increase its capacity to do so, while noting that every ton of plastic recycled saves 1.5 tons of carbon dioxide (CO₂) emissions. Lundmark concluded that “smart” regulation is needed to push companies towards circularity.

Lindsay Clinton, New York City Economic Development Corporation (NYCED), said the circular economy is written into the city's OneNYC Plan towards 2050, sending a signal to the marketplace. She said NYCED hopes to create a “circular economy campus” in Brooklyn.

The third round of this session highlighted new economic opportunities. Wayne Hubbard, CEO, London Waste and Recycling Board, outlined a business support programme for any small or medium-sized enterprise with a circular economy programme, noting his organization as the first venture capital fund explicitly devoted to supporting circular startups.

Sauli Böhm, CEO, ResQ Club, said cities can help find suppliers that share the goal of zero food waste and described the global food system as “the mother of all complex systems.”

Damiano Avellino, Co-founder, Fairbnb, addressed the “distortion” found in the sharing economy, particularly housing and real estate. He said big companies have invested in expanding short-term rentals for travelers, which has made apartments unaffordable for city residents. The Fairbnb platform aims to mitigate this situation by redistributing part of the commission it earns back to host communities.

Governance and Circular Economy Roadmaps

Kari Herlevi, Sitra, highlighted the importance of global governance, intergovernmental coordination and roadmaps. He identified the circular economy as crucial for achieving the Paris Agreement's objectives and called for a fair and just transition.

During discussion on governance, moderator Harald Friede, CEO, Circle Economy, explained that the world is currently only 9.1% circular.

Kirsi Sormunen, Sitra, highlighted detailed objectives for the circular economy in the Finnish government's new programme. She emphasized concrete targets, governance structures, and monitoring, saying that the private sector will play an “extremely important role” through innovations and business models that are globally scalable.

Janez Potočnik, Co-Chair, UNEP International Resource Panel, lamented that “we have terribly indebted the future generations” and called for an inter-generational agreement in line with the SDGs that will put sustainability first.

Daniel Calleja, European Commission, highlighted circular economy as a positive opportunity and said the 54 actions identified in the EU Circular Economy Action Plan have now been implemented, stressing the importance of stakeholder involvement, finance mobilization, and identifying key sectors.

Ashleigh Morris, CEO, COREO, explained that Australia does not have strong governance structure, and that the responsibility to promote circular economy rests with individuals.

The second part of the session on roadmap began with Ladeja Godina Kosir, Circular Change, presenting on Slovenia's roadmap. She highlighted the benefit of having more than one ministry involved and outlined a bottom-up process, noting that a mapping exercise of what is being done formed the basis of the roadmap.

Morris highlighted the role of individuals in driving Australia's circular economy transition and outlined her company's "circular experiment project" focusing on small businesses. She noted several recent positive developments, highlighting Australia's circular economy lab as a key example.

Guillermo Gonzáles, Ministry of the Environment, Chile, outlined challenges to circular economy transition in Chile, estimating that it will take two decades. He called for engaging all relevant actors in making sure circular economy is part of the competitiveness and productivity agendas, and also stressed the importance of being ambitious about visions of the future.

Kok Chung Cheang, National Environment Agency, Singapore, noted that having a rigorous waste management system is a good starting point but that it is not the same as a circular economy. He discussed plans to address sustainable production and consumption, noting, *inter alia*, the need to consume less and foster a culture of share and repair. He also stressed the need for the international trading system to support the movement of used materials.

Leah Canning, Environment and Climate Change Canada, identified the need to consider Canada's diversity and jurisdictional complexity, as well as the importance of indigenous peoples. She also discussed Canada's recent zero plastic waste initiative, involving extensive consultations with stakeholders along the plastics value chain, and highlighted inclusion as the key message.

Henry Roman, Department of Science and Technology, South Africa, noted that the country has a resource intensive economy and is starting to imagine what a post-mining economic landscape could look like. He identified the need to understand where the greatest demands for resources will come both in the present and future.

In the ensuing debate, participants addressed, *inter alia*: the need for a circular economy discussion in the Arctic context; availability of data and statistics in developing countries; dealing with government decisions that are more in line with a linear than a circular economy; and the importance of new narratives and storytelling to enhance public engagement.

Circular Economy in Africa

Moderator Eliza Anyangwe, Founder, The Nzinga Effect, said Africa must expand its economy without repeating mistakes made in the West.

Vincent Biruta, Minister of Environment, Rwanda, spoke of national initiatives such as the development of a Resource Efficient and Cleaner Production Centre and welcomed regional

efforts, such as the African Circular Economy Alliance, launched at the 2017 UN Climate Change Conference.

Anthony Nyong, African Development Bank (ADB), noted the ADB's 10-year strategy to transition Africa's economy towards green growth, highlighting that industries must understand that economic growth can be decoupled from resource-intensive practices.

A panel of entrepreneurs, researchers and public servants then responded to questions from moderator Anyangwe on what opportunities for the circular economy they saw in their respective sectors. Panelists noted, *inter alia*, that: green buildings are a driver of change, given that buildings produce, on average, 40% of waste; plastic waste can be turned into building material; and upcycling can increase the value of products.

Speakers also responded to questions from the audience, delivered through the WCEF2019 app, noting the importance of: increasing media coverage of youth initiatives; incentivizing consumers to engage with initiatives in the circular economy; contextualizing solutions for the African context; and recognizing how indigenous knowledge can contribute to circularity. The panel also considered a question on the impact of China's investments on the continent, with Nyong responding that African countries are responsible for enforcing environmental standards, when considering international investments. Jaakko Kangasniemi, CEO, Finnfund, closed the session noting that "the time for preaching is over" and said that collaborative and contextualized solutions are the way forward.

Building an Enabling Environment for Circular Business

Peter Woodward, Director, Quest Associates, and Ligia Noronha, UN Environment, moderated the session.

Albina Ruiz, Ministry of the Environment, Peru, highlighted transparency as the most vital element for fair, circular businesses. She added that innovation and behavior change can be promoted through progressive legislation and participatory policies, citing examples from Peru, such as a partnership with Coca-Cola that helped improve regulations on single-use plastics, energy-use, and waste reduction.

Jaana Tuominen, CEO, Fiskars, said companies need to engage in long term thinking. She underscored that scaling up a successful local solution globally remains a challenge, and called for stronger legislation and taxation, as well as collaboration among different actors.

Zeenat Niazi, Development Alternatives, highlighted that "prosperity for all" must be promoted while bearing in mind planetary boundaries. She added that more efforts to facilitate investments, fiscal support, and capacity building are needed, and said that a focus on procurement could enhance consumer trust and scale up circularity.

Olli Rehn, Governor, Bank of Finland, said that in the absence of a global carbon tax, environmental tax reform could reduce emissions while creating benefits for the economy, noting a recent report by Sitra supporting the idea. He added that the financial sector currently lacks the instruments to mainstream green finance and to effectively indicate the sustainability of their business operations.

Peter Bakker, President and CEO, World Business Council for Sustainable Development, said three sets of actions are necessary to scale up the circular economy: more specificity in what the term means for each sector and value chain; tougher measures for evaluating business models against the circular economy ideal; and the importance of relating the circular economy back to pricing, suggesting, for example, that the tax system should move away from a focus on labor and move towards use of resources.

Jocelyn Blériot, Executive Director, Ellen MacArthur Foundation, warned that the current economic model is “hardwired to linearity,” with value being created through extraction and depletion. He noted that the circular economy cannot be slotted into this existing model and that a “co-creation process” involving all stakeholders, must instead take place.

Potočnik stressed the importance of creating business incentives through regulation and said global governance is the best option for a circular economy, noting EU-led governance as a better alternative to the national governance.

Tuominen explained that circularity is currently mostly an afterthought in the production cycle, while it should be embedded in product design.

Ruiz listed examples of relevant activities, including negotiations on an environmental chapter in the Pacific Alliance Treaty. Bakker called for considering what value creation means in a circular economy and how value can be created when selling less.

Niazi suggested moving from mineral-based to bio-based production, thinking “smaller and circular,” and fostering trans-sectoral collaboration.

Potočnik said the debate on sufficiency is difficult but unavoidable, given that rich countries are currently consuming thirteen times more per capita than poorer ones. Blériot said that attention to taxation would “turn off the tap,” and that consumers must be compensated for the burden this may also put on them. Panelists concluded the session by offering thoughts on what a collaborative environment for circular businesses would look like, noting more investment in education is needed to create responsible consumers.

International Trade of Circular Economy Goods and Services

Peter Woodward, Director, Quest Associates, and Eliza Anyangwe, Founder, Nzinga Effect, moderated the session, which explored the impacts on international trade and trade flows in the transition to a circular economy.

Anthony Cox, Organisation for Economic Co-operation and Development (OECD), noted the weak presence of the word “trade” during the first day’s discussions at WCEF2019. He said that trade cannot grow at the expense of the environment, and underscored that use of materials globally will more than double by 2060, with trade largely responsible for this trend. He recommended avoiding a multiplicity of agreements and the improvement of data transparency to scale up a circular economy.

Financing, standards, taxation and subsidies as means for promoting the fair trade in materials, goods and services

related to circular economy: Karin Kemper, World Bank, highlighted the need to “get the prices right.” Giving the example of inexpensive plastic bags, she recalled how analyses of global value chains suggest that products are produced at artificially low costs due to subsidies. She highlighted the need for harmonized standards and said that developing countries need further support to improve regulations.

Álvaro García, Office at the Presidency, Uruguay, acknowledged trade as a key tool to promote a circular economy, emphasizing the importance of multilateral cooperation for small countries like Uruguay. He recognized the need to engage at the political level and noted the role of inter-ministerial collaboration, explaining that in Uruguay, nine ministries and agencies are cooperating at the political and executive levels. García also lauded the Coalition of Finance Ministers for Climate Action, noting the relevance of similar fora for climate change.

Alluding to the potential of droughts to drive change, Kemper explained that a current drought influenced China’s decision to ban imports of plastic waste. She explained that the import ban means that recyclables are currently sitting in harbors and recycling sites, and many countries have been forced to rethink what to do with them since export to China is no longer an option.

Challenges to and opportunities for the global trade in secondary raw materials and remanufactured goods:

Annica Bresky, Stora Enso, said the circular economy cannot happen unless the trade system is open and fair, and unless business models are “disrupted” and change. She noted the latter must happen in collaboration with partners along the value chain, ensuring circularity across all corporate activities. She warned that companies sometimes move faster than legislation, and that policy support to take on trade barriers to, for example, cost-efficient recycling, is needed.

Changhua Wu, CEO, Beijing Future Innovation Center, listed three key challenges in the global trade of raw materials: the “inadequacy challenge,” which she described as the gap between existing institutions and the ambition to achieve the circular economy; the “disruptive challenge,” namely the disruptions in material flows that circular economy will create; and the “reality challenge,” namely the stocktaking exercise required to assess barriers to systemic change. She then moved on to discuss catalysts and opportunities, pointing, among others, to China’s advocacy for World Trade Organization (WTO) reform.

In response to questions by the moderators, Bresky and Wu agreed there was room for optimism, particularly in light of the Chinese commitment to the circular economy. Bresky noted the need for governments to subsidize the right kind of global value chains. Wu underlined technologies must be affordable for developing countries, so these countries can use them in building the “right infrastructure.”

How can trade agreements promote sustainable and circular trade?

Aik Hoe Lim, WTO, discussed ways to mainstream the circular economy into international trade and emphasized the role of member states in reforming the WTO. He noted the relevance

of technical discussions on product classifications, for example, to distinguish waste from secondary resources as this can have important trade implications. Recognizing the role of standards, Lim said that WTO Agreements encourage or require the use of international standards, but the WTO itself does not develop standards. He highlighted the role of trade in services to advance the circular economy, identifying this as a “heavily restricted” area. He said the WTO’s ability to address subsidies depends on countries’ willingness to negotiate on this issue, emphasizing the importance of working at the country level and engaging trade ministries and trade negotiators in efforts to advance the circular economy.

Cox noted that the emphasis on deregulation in some countries makes it difficult to bring the question of harmonization into the discussions, noting the initiative must come from the business sector. He also stressed the importance of engaging trade ministers and said trade must work for the circular economy, not against it.

Plastics and a Circular Bioeconomy

Jocelyn Blériot, Executive Officer, Ellen MacArthur Foundation, described their New Plastics Economy initiative, which seeks to investigate how the functionality and usefulness of plastic can be retained while avoiding plastic waste. He also introduced the ‘Global Commitment’ which was launched through the initiative in 2018 and now has 350 signatories, including about 150 businesses, that have set targets towards the goal of avoiding plastic waste.

Flemming Besenbacher, Chairman, Carlsberg Group, said the Danish government’s strategy for the circular economy sees businesses as a driving force. He presented the work of Plastix, a Danish company transforming fishing nets, fibers, and rigid plastic waste into high quality plastic raw materials, as well as Carlsberg’s own sustainability programme, which includes efforts to replace the plastic wrapping of beer packs with glue.

Several industry leaders then showcased concrete solutions to the plastic waste problem. Stefan Randstrand, CEO, Tomra, said incentivizing consumers to deposit used plastic bottles works, pointing to Lithuania’s success in raising the bottle return rate from 35% to 92% thanks to a new bottle deposit legislation.

Markku Hämäläinen, CEO, Kotkamills, described options to respond to the rising demand in plastic-free coffee cups, suggesting that the technology to develop plastic-free coating exists thanks to water-based coating material.

Nanqing Jiang, Secretary-General, China Plastics Reuse and Recycling Association, explained the challenges that China, the world’s biggest plastic producer, faces in introducing circularity to the plastic industry. She outlined the informal nature of the plastic sector, its growing size, and the lack of a plastic sorting system, adding that, despite these challenges, China has set a 40% plastic recycling target by 2020.

Antti Vasara, President and CEO, VTT Technical Research Centre of Finland, presented on research attempting to reduce the

lifecycle effects of plastic packaging by half by 2030, as well as to recycle plastic waste into virgin plastic.

Circular Economy in Construction

Elisa Tonda, UNEP, moderated the session, noting that the building sector has a long lifetime and can play a large role in embedding circularity, relieving pressure on natural resources, and mitigating climate change.

In the keynote address, Martin Stuchtey, Systemiq, said 10-15% of building materials are wasted during construction, 50% of people report that their homes are too big, and 60% of office space in Europe is unused. Many building materials are toxic when demolished, so the materials cannot be reused. Moreover, as more cities are constructed, the industry is becoming even less circular, he said. New “greenfield” construction must be different from the start by not designing sprawl and resource-use into the process. Instead, design criteria should include: density for resource productivity and energy productivity; diversity in the use of space; reintegrating biosphere back into the city; intermodal mobility; and micro-mobility.

On how circularity relates to the built environment in their regional contexts, Zeenat Niazi, Development Alternatives, reported that China’s “floor area” will double by 2050 and India’s will triple. Most material in this new built environment will be from non-metallic mineral ores, such as concrete, as construction shifts from houses to apartments. Naizi suggested greater disclosures by manufacturers about their materials, including the social aspects such as job creation.

Jeremy Gibberd, Gauge, said solutions to Africa’s “extremely rapid” urbanization can be found within its existing circular characteristics and its “fantastic indigenous architecture,” including the use of local materials, no waste, and climatically responsive construction. He suggested that procurement practices could incentivize energy and resource efficiency and taxes and other government actions could help make circular materials more available so that their use can “happen naturally.”

Barbara Dewulf, Brussels Environment, said existing buildings do not match the changes in market demand, resulting in building vacancy and loss of value. She noted mineral waste generated by the linear construction model, saying the traditional emphasis on recycling is not enough: it is better to maintain the building, and make it adaptable and flexible. She called for a shift to circular public procurement and for regulatory frameworks to catalyze the reuse of materials.

Procurement, tax reform and regulation as tools for construction circularity were also highlighted in remarks by Anders Wijkman, Chair, EIT Climate-KIC and Circular Sweden. He said building and construction is a “very conservative” industry, with little incentive to build something that will last a long time or that has reusable materials. Wijkman suggested: legislation to create a long term orientation; regulations for design criteria; industry standards to develop a secondary

materials market; and financial benefits for material efficiency, as is already happening for energy efficiency.

Ilari Aho, Uponsor Group, called to design for flexible use and dismantling, so that products can more easily be reused. He also noted need to use locally available materials.

Circularity Metrics and the Fair Use of Data

Marleena Ahonen, Sitra, moderated the session.

Hans Bruyninckx, Executive Director, European Environment Agency, said the necessary metrics for measuring circular economy are not yet in place, noting a lack of understanding on how materials stay in the economy. He called for innovation and “thinking outside the box,” including beyond national borders.

Jaana Sinipuro, Sitra, identified the need to merge the new concepts of data economy and circular economy. She emphasized the importance of access to different broad datasets and the role of consumers and individuals.

Arturo de la Fuente, European Commission and Eurostat, highlighted an award for the Commission’s circular economy work at the World Economic Forum in Davos, including for the EU monitoring framework. He identified positive elements in the framework while recognizing the need for more details, *inter alia*, on plastics, fossil fuels, innovation, jobs, and investment.

Luca Meini, Enel, highlighted company-wide data flow on circularity and discussed its relevance for procurement and assets. He noted that metrics are easier to harmonize once there is a common vision.

Amanda Rejström, Co-founder and CEO, Spark Sustainability, highlighted consumers as agents for change with data from consumers enabling sharing economies, and data packaged into stories changing consumers’ worldview and choices.

Jelmer Hoogzaad, Founder, Shifting Paradigms, emphasized the importance of reaching consumers and using anecdotes to understand where the opportunities for improvement are. He drew attention to Circularity Gap Reports, which highlights that Europe’s greenhouse gas (GHG) emissions from production are declining while emissions from consumption are rising.

Stientje van Veldhoven, Minister for the Environment, the Netherlands, stressed the need to speed up and scale up, highlighting new jobs and other benefits from the circular economy. She called for translating data into stories, and collaborating internationally, including with companies and NGOs.

Participants discussed different metrics for products and services with Bruyninckx saying the distinction between products and services is artificial. Participants also addressed, for example, differences between the metric of how circular you are and the metric of how to become more circular; as well as alternative measures to gross domestic product. Summarizing the session, Bruyninckx identified the need to improve the knowledge-base on production and consumption, as well as work to fill in existing gaps.

The Circular Economy in Lifelong Learning

Nora Clinton, Ellen MacArthur Foundation, moderated the session.

Monika Koncz-MacKenzie, Ellen MacArthur Foundation, noted that the most effective way to learn about circularity is to integrate it into people’s working lives. She also noted the rise of peer-to-peer engagement and called for a multidisciplinary approach when helping people to transition to a circular economy.

Nani Pajunen, Sitra, and Riitta Silvennoinen, Sitra, jointly shared their experiences in promoting circularity education in Finland during the past two years. They reported that the government of Finland is interested in their courses and said 1,800 teachers already took part in this initiative. They cited recycling stores independently created by students as success stories.

During his keynote speech, Ken Webster, University of Exeter Centre for the Circular Economy, discussed the power of myths and storytelling in driving societies’ values and creating change. He explored how people can move from ownership to sharing and argued that, according to the theory of systems thinking, learning evolves spontaneously, there’s an interplay between resilience and efficiency, and most of the action happens when communities are empowered and social narratives are developed.

Alan Organschi, Principal and Partner, Gray Organschi Architecture, noted that new options for design students are growing and that the building sector is opening up to insights from other disciplines to understand how circularity can be expanded, highlighting carbon storage as the most popular area.

Paavani, Student Ambassador for India, World Summit of Students for Climate, highlighted the 5Rs (refuse, reduce, reuse, repurpose, recycle), lamenting that her country is lagging behind on them. She emphasized that children should not be working on complex problems to compensate for the inaction of adults.

During debate on priorities for the transition, Bruno Oberle, École Polytechnique Fédérale de Lausanne, called for using public funds to make lifelong education compulsory and aligning all the education institutions to promote the vision of circularity.

Millie Yoshida, recent graduate, Yale University, shared her challenges during architecture studies, which currently prioritizes “designing beautiful buildings.” She lamented the lack of focus on green buildings in Yale’s programs and called for broader exposure to other disciplines as a way to overcome this challenge.

Key takeaways were: education should be lifelong; time is needed to achieve meaningful transformations; there’s resistance to making education on circularity compulsory; a different narrative related to values and lifestyle is needed to engage citizens into circularity; and there is a need to further engage the media and expand cultural diversity into the agenda.

Investing in Circular Economy Businesses

Jamie Butterworth, Co-founder and Partner, Circularity Capital, explained how he contributed to a report on profitability in the circular economy, which gained traction at the 2011 World Economic Forum and helped create awareness to the topic. He noted that his company chooses SMEs to invest in based on whether they have a proven solution and technology, as well as some commercial traction.

Jyri Arponen, Sitra, spoke of the Circular Economy Playbook, which seeks to assist SMEs in moving from a linear to a circular

business model and to explain why the latter increases customer value as well as attracts investors.

Liesbet Goovaerts, EIB, explained how the EIB helps circular businesses attract more investments, considering that they can be considered riskier. This included not only investing in the businesses but also assisting with designing their business models and attracting public funding to encourage private investments.

Ditte Lysgaard Vind, Managing Partner, Lendager TCW, said business cannot be disassociated from climate given their interlinkages, and described efforts to promote the idea that value and growth must be decoupled from unsustainable material uses and emissions among businesses.

Massimiano Tellini, Intesa Sanpaolo, said a cultural shift is needed to enable the transition to the circular economy. He explained that his company has set up a circular economy lab and fund in Milan, Italy. The former helps foster new ideas on the circular economy and the latter offers credit to innovative circular economy businesses.

Aaron Ratner, Managing Director, Ultra Capital, noted that converging trends in the US make circular economy ventures more profitable as electricity is becoming less expensive, disposal of waste more expensive, and waste more valuable. He described successful institutional investment into sustainable infrastructure, such as the Red River Biorefinery in North Dakota that turns agricultural waste into biofuel.

Juha Koponen, Co-founder, Swap.com, said the unsustainable clothing market has created a business opportunity. He presented his pre-owned clothing platform, which was launched in 2013 in the US and has raised more than EUR 50 million to date.

Circular Economy for Water

Riku Vahala, Aalto University, moderated this session.

A keynote presentation by Tomás Michel, President, European Water Platform, urged participants to think about treated wastewater as a resource. He highlighted the need to further change the sequence of treatment, depolluting water earlier in the process, recovering phosphate and nitrogen, and avoiding sending carbon, methane and biosolids back into the land and air.

Miriam Otoo, International Water Management Institute, said the technologies to recover resources from water are not yet applicable in developing countries. She encouraged cost recovery for municipalities through water reuse in agriculture and forestry. She underscored the need for regulatory support and ensuring that treated wastewater costs less than freshwater.

Philippa Roberts, Low and Behold Ltd, presented the UK urban perspective and cautioned against providing services in a fragmented manner, encouraged innovation as the way forward, and stressed the need for extra financial resources to promote circularity.

Suvi Sojamo, Aalto University, highlighted the concept of water stewardship as complementary to a circular economy. She said water stewardship refers to the socially and culturally equitable use of water in a way that is environmentally sustainable, economically beneficial, and achieved through a stakeholder-inclusive process. Sojamo shared lessons for a “fair circular economy for water,” including that inward-looking

measures are insufficient. For example, 77% of Finland’s “water footprint” lies abroad, she said.

Norhan Sadik, World Bank, said “water pricing is political” and that prices for water and sanitation services are artificially low due to subsidies, which creates a disincentive to move towards more circular approaches. A success story in San Luis Potosi, Mexico, was created by a “take-or-pay” purchase agreement that guaranteed a source of revenue for a wastewater treatment plant and made treated wastewater 33% cheaper. The treated water was used in agriculture and allowed farmers to diversify and plant higher-value crops, thanks to the more predictable, regular quality of services.

During discussions, panelists called for clear guidelines for different standards for water, in order to protect human health and long term environmental accumulation of pollutants.

Carbon Neutral Industry in the Circular Economy

Janne Peljo, Sitra, moderated the session.

Per Klevnäs, Material Economics, emphasized the potential for a carbon neutral industrial transformation by 2050, highlighting the role of materials and identifying four strategies: materials efficiency and business models; material recirculation and substitution; new processes; and carbon capture. Klevnäs noted circular economy as a key part of the transformation, and discussed relevant policy areas, such as enabling high-quality recirculation and capturing materials efficiency potential.

Gwénoné Cozigou, European Commission, noted that, as the Paris Agreement is implemented, pressure on the use of fossil fuels will be replaced by pressure on the use of other raw materials. He highlighted the circular economy as an “exponentially growing market” with benefits for the security of material supplies. He discussed the Commission’s ongoing work on the second circular economy plan, which is subject to support from the new commissioners to be appointed.

Industry representatives then provided comments. Martin Pei, SSAB, discussed mitigation potential in the steel industry, and outlined an initiative to replace coal and coke with hydrogen and to emit water instead of CO₂.

Lorraine Francourt, Dow, discussed the plastics industry, indicating that “zero carbon” is possible through recycling and end-of-life management. Egil Hogna, Hydro, highlighted: the importance of educating the industry and society on what constitutes greener materials and products; investment in greener production; and differentiating and marketing greener products.

During panel discussion, issues discussed included: the importance of recycling plastic waste; differentiated products and the roles of consumers and brand owners; and the role of governance and incentives, including taxes.

Circularity in Our Day to Day Lives

Per Stoltz, Ingka Group (formerly IKEA Group), moderated the session, which discussed how consumption patterns must

change in order to meet ambitious CO2 reduction goals, considering that people in many developed countries would have to cut their carbon footprints by about 80-90% or more, and some in developing countries by between 30-80% within the next 30 years.

Vanessa Timmer, Executive Director, One Earth, discussed sustainable living, inviting participants to “scale deep” as a way to explore individual CO2 impact and household footprints. She said shifting habits, notably during life transitions, such as when becoming parents, moving houses, or changing careers, could be scaled up during these windows of opportunity. She recommended: shifting from consuming to living; redefining values; and engaging circles of support, such as among the elderly and the youth.

Markus Terho, Sitra, focused on how individuals can reduce their personal environmental impact using examples of carbon footprints on food and transport. He recommended either “working with amounts” or choosing products according to their carbon footprints. He said that the “1.5 degree lifestyle” is not an impossible task and can be achieved in the next 10 years.

Stoltz then presented the vision of his company, Ingka Group. He said that IKEA’s vision was key to moving towards circularity, given that sustainable living could not occur without a circular economy. He noted that IKEA started enabling customers to produce their own electricity by selling of photovoltaic panels. On behavior change, he noted how the perception of ownership has changed compared to past generations and underscored designing for reuse, repurpose, repair, and recycle. He closed saying “people want an emotional connection and be part of the change.”

Joost de Kluijver, Director, Closing the Loop, said circularity for the mobile phone industry should be realistic by being inclusive, easy, effective, and pragmatic. He shared his solution for the circularity of phones, emphasizing that consumption and waste must be combined, and emphasizing his company’s practices of collecting scrap phones and reducing e-waste.

During a panel discussion, speakers: explored opportunities for circularity to reduce global waste; discussed individual challenges to reduce personal footprints due to established wasteful lifestyles; and highlighted the potential of storytelling and art to engage citizens.

Grand Finale

Peter Woodward, Director, Quest Associates, and Veera Heinonen, Sitra, moderated the closing session, which featured a WCEF2019 summary video highlighting key moments of the event.

Peter Börkey, OECD, praised the optimism in the room during WCEF2019 and the importance of looking at value chains to leapfrog the linear system. Analyzing and collecting data as well as bringing stakeholders together, he said, is the best way to kick-start a circular economy roadmap.

Siiri Mäkelä, President, Finnish Youth Agenda 2030, underscored the WCEF as an opportunity to rethink daily lives and a platform to learn about the most relevant projects in circular economy. She remarked that a remaining challenge is to establish a common vision that is inclusive, fair, and holistic, pointing to the need to focus on new values that embrace the motto “living instead of consuming.”

The moderators identified key driving themes of WCEF2019: scaling up standards for circularity and reducing trade barriers; issues around equity and opportunities to share natural wealth fairly; and leadership, with the EU leading the way on circularity.

Hans Bruyninckx, Executive Director, European Environment Agency, said WCEF2019 had a larger and more diverse audience than the previous Forums. He warned that, despite such positive developments, voices from science, civil society, business, and politics urge to continue moving away from the current system of production and consumption, which he described as unsustainable at its core, and that there is an urgent need to identify what is locking us in the “old system.” In an answer to a question from Woodward, Bruyninckx noted it was essential to improve science communications to make people feel part of the solutions.

Paula Lehtomäki, Secretary General, Nordic Council of Ministers, said Nordic countries had the responsibility to lead the way in the circular economy, as well as to assist lower income countries in becoming more sustainable. She added that the 2019 European elections have showed that while sustainability is a priority for some of the electorate, others have more pressing issues to deal with and inequality is thus an essential dimension for policymakers to tackle.

Vincent Biruta, Minister of Environment, Rwanda, said that the circular economy must now be integrated in policymaking and legal frameworks. He called for more investments in small innovative initiatives, further collaboration with academia to identify “quick wins,” as well as for an inclusive transition that creates jobs for youth and women.

Kimmo Tiilikainen, Minister of the Environment, Energy and Housing, Finland, said the Finnish government will make use of its upcoming presidency of the EU to promote the circular economy as a tool to mitigate climate change. He described the origins of the World Circular Economy Forum, welcoming the wide following the event has triggered just three years later.

For their final key messages, Tiilikainen emphasized the need to act now, Biruta called on Forum participants to be leaders in driving the circular economy, and Lehtomäki urged participants “to do something that takes us to the right direction.”

Hilary Geller, Ministry of Environment and Climate Change, Canada, welcomed participants to WCEF2020 in Canada. She outlined efforts to advance circular economy and more sustainable lifestyles in Canada. She emphasized the private sector’s role and noted efforts to address plastic and mine waste, highlighting the Ocean Plastics Charter championed by Canada and endorsed by 20 other countries, as well as a number of businesses and organizations.

Sitra Director Mari Pantsar thanked partners, speakers, the Sitra team, facilitators and participants, as well as Minister Tiilikainen for his work during his term to advance the circular economy in Finland and in the EU. She highlighted the global climate, biodiversity, and overuse crises, and, identifying the circular economy as a powerful response, she stressed that “together we have the power to scale up the circular economy.” The meeting closed at 5:30 pm.

Upcoming Meetings

18th Responsible Business Summit Europe 2019: The 18th Responsible Business Summit Europe 2019 will address six key themes: strategy, innovation and impact; climate action and investment; responsible supply chains; investor focus; measure, evidence and report; and communicate and engage. The Summit will include a half-day Circular Economy Forum on 10 June, as well as numerous workshops that will discuss issues such as: integrating the SDGs into business strategies; SDG reporting; and reducing, recycling, and replacing plastics. The Summit is organized by the Ethical Corporation with support from partners, including Connect4Climate, the Sustainability Consortium, World Business Council for Sustainable Development, and CDP (formerly Carbon Disclosure Project). **dates:** 10-12 June 2019 **location:** London, England, UK **www:** <https://events.ethicalcorp.com/rbs/>

Group of Twenty (G20) Ministerial Meeting on Energy Transitions and Global Environment for Sustainable Growth: This gathering is one of eight ministerial meetings taking place in Japan alongside the 2019 G20 Summit. **dates:** 15-16 June 2019 **location:** Karuizawa, Nagano, Japan **www:** <https://www.japan.go.jp/g20japan/>

Resilient Cities 2019: The Annual Global Forum on Urban Resilience and Adaptation, launched in 2010, aims to connect local government leaders and climate change adaptation experts to discuss adaptation challenges facing urban environments around the globe and forge partnerships that could have lasting impacts for cities. **dates:** 26-28 June 2019 **location:** Bonn, Germany **contact:** ICLEI – Local Governments for Sustainability phone: +49-228 / 976299-28 email: resilient.cities@iclei.org **www:** <https://resilientcities2019.iclei.org/>

High-level Political Forum on Sustainable Development (HLPF) 2019: HLPF 2019 will address the theme ‘Empowering people and ensuring inclusiveness and equality.’ It will conduct an in-depth review of SDG 4 (quality education), SDG 8 (decent work and economic growth), SDG 10 (reduced inequalities), SDG 13 (climate action), and SDG 16 (peace, justice and strong institutions), in addition to SDG 17 (partnerships for the Goals), which is reviewed each year. **dates:** 9-18 July 2019 **location:** UN Headquarters, New York **contact:** UN Division for Sustainable Development Goals **fax:** +1-212-963- 4360 **email:** <https://sustainabledevelopment.un.org/contact/> **www:** <https://sustainabledevelopment.un.org/hlpf/2019>

UN 2019 Climate Action Summit: UN Secretary-General António Guterres will convene the UN Climate Action Summit under the theme ‘A Race We Can Win. A Race We Must Win,’ to mobilize political and economic energy at the highest levels

to advance climate action that will enable the implementation of many of the SDGs. Its aim is to challenge states, regions, cities, companies, investors, and citizens to step up action in nine areas: mitigation; social and political drivers; youth and public mobilization; energy transition; climate finance and carbon pricing; industry transition; nature-based solutions; infrastructure, cities and local action; and resilience and adaptation. **date:** 23 September 2019 **location:** UN Headquarters, New York **www:** <http://www.un.org/climatechange/>

SDG Summit: The HLPF, under the auspices of the UN General Assembly, will assess progress achieved since the adoption of the 2030 Agenda for Sustainable Development in September 2015 and provide leadership and guidance on the way forward that would help accelerate its implementation. **dates:** 24-25 September 2019 **location:** UN Headquarters, New York **contact:** UN Division for Sustainable Development Goals **fax:** +1-212-963-4260 **www:** <https://sustainabledevelopment.un.org/sdgsummit>

2019 UN Climate Change Conference: The 25th session of the Conference of the Parties (COP 25) to the UN Framework Convention on Climate Change (UNFCCC), the 15th meeting of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP), and the second meeting of the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement (CMA) will convene to review implementation of the Paris Agreement and the Climate Convention. **dates:** 2-13 December 2019 **location:** Santiago, Chile **contact:** UNFCCC Secretariat **phone:** +49-228-815-1000 **fax :** +49-228-815-1999 **email:** Secretariat@unfccc.int **www:** <https://unfccc.int>

Glossary

ADB	African Development Bank
CO2	Carbon Dioxide
EU	European Union
GHG	greenhouse gas
G20	Group of Twenty
NYCED	New York City Economic Development Corporation
OECD	Organization for Economic Co-operation and Development
SDGs	Sustainable Development Goals
SMEs	small and medium sized enterprises
UN	United Nations
UNEP	United Nations Environment Program
WCEF	World Circular Economy Forum
WTO	World Trade Organization
UNDRR	UN Office for Disaster Risk Reduction
UNFCCC	UN Framework Convention on Climate Change
WHO	World Health Organization
WMO	World Meteorological Organization