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China, the Belt & Road Initiative and waste management

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China's Belt and Road Initiative (BRI) should bring the global waste issue into the spotlight, I argued together with He Linghui in a joint paper.[1] It was a result of our participation in Stiftung Asienhaus' 2018 EU-China NGO Twinning Programme. In this Blickwechsel, I outline how China should address the issue of municipal solid waste (MSW) along the BRI.

The man-made waste crisis is impacting ecosystems on both land and water, causing permanent damage. From its position as the world's second biggest economy as well as the world's second biggest municipal solid waste (MSW) producer, China could become the leader in the global transition to a circular economy with the ultimate aim of turning Earth into a "zero waste planet".

Globalisation has enabled goods to become waste thousands of miles away from where they were created. Therefore, waste management represents a global problem and even a global threat. This is why waste requires multilateral engagement and can no longer be viewed solely as a local responsibility.

The World Bank warned that by 2050 the waste burden will spike to an enormous 3.40 billion tonnes of MSW globally[2] — a seventy per cent increase compared to 2016. China's share in the global MSW production will be substantial, due to it being such a populous country. Against this background, the government in Beijing has an obligation to address the waste crisis. Is there a better way to do this than via its own BRI platform?

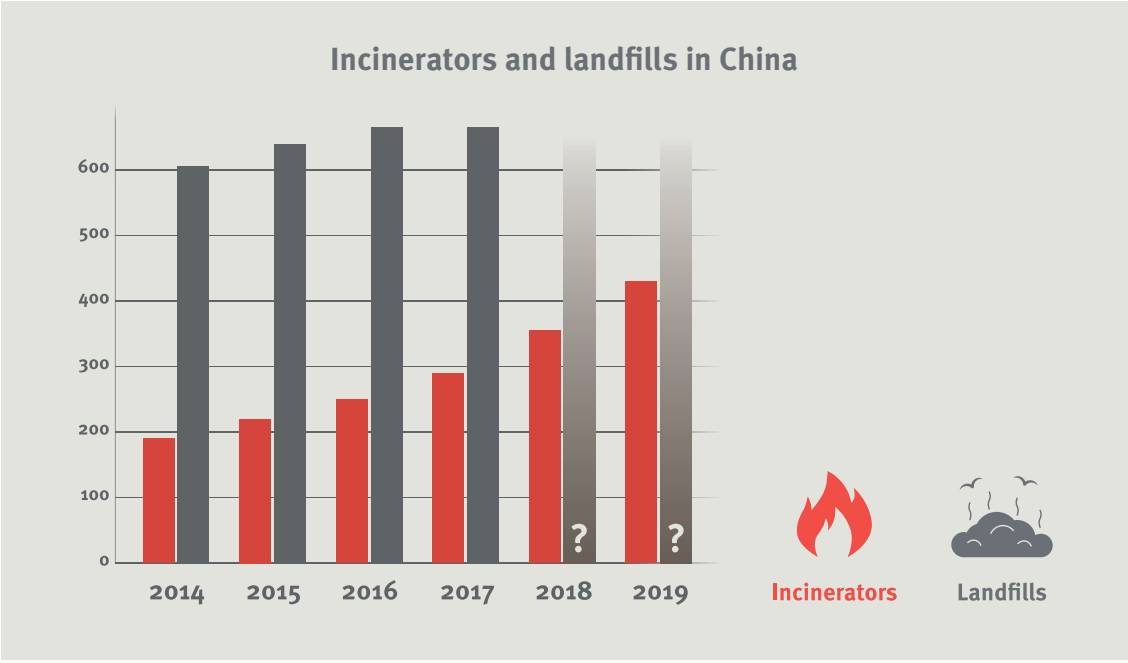
To further elaborate on this idea, I analysed the waste management situation in three Eurasian countries: China, Germany and Romania. All three belong to unique stages of societal and economic development, which strongly influence their approach to waste management. In this paper, I pursued a dual aim. First, I wish to identify the best practices, technologies and targets employed by each country. Second, I analysed the possibility for China's BRI to become a platform that calls for multilateral engagement on MSW management.

China, Germany and Romania – three waste stories

According to the German Federal Office of Statistics, the waste management infrastructure in Germany consists of 14,196 waste treatment plants as of May 2020. They include: 1,052 landfills, 157 thermal waste plants, 504 combustion plants with energy recovery, 1,039 waste sorting plants, 1,209 biological treatment plants and 53 mechanical-biological waste treatment facilities. Romania has seven cement kilns for waste co-incineration, 46 compliant landfills, 151 waste transfer stations, 45 composting facilities and 19 mechanical-biological treatment plants with a capacity of 1,530,000 tons/year. Some of the mechanical-biological plants are yet to be materialized. According to the Romanian Ministry of Economy, Romania has a number of 776 economic operators that carry out waste recovery operations, including waste recycling.

Concerning China, according to the Chinese Statistical Yearbook of Urban and Rural Construction under the Ministry of Housing and Urban-Rural Development of the People's Republic of China, the country has a number of 1,091 harmless waste treatment plants. With regard to landfilling and incineration, a clear preference for the later can be observed. In 2014, China had 604 sanitary landfills and 188 incineration plants. In 2017, waste incineration plants rose to 300, while landfill numbers slightly increased to 654. By 2019, China already had 428 incinerators flanking its big cities (see Fig. 1).[3] Unofficial sources say that the Fourteenth Five-Year plan will provide for the construction of 191 new incineration plants, with a planned incineration capacity of 151,750 tons/year between 2021 and 2030. This indicates that China intends to use waste incineration as a tool to phase out landfilling. Concerning recycling, I could not find any data in the China Statistical Yearbook. However, the Thirteenth Five-Year Plan indicates a 35 percent recycling target to be met by the end of 2020.

Fig. 1



Which country produces the most waste and which country is the most technologically advanced in MSW management?

China and Germany both have access to sophisticated technologies for MSW management. However, the order of priority given to each technology is different. Whereas China focuses on incineration, with or without energy recovery, Germany aims to move away from such technologies, in favour of measures for waste prevention and recycling. Another chief difference is the usage ratio of landfilling and recycling in the handling of waste (see Fig. 2).

Fig. 2

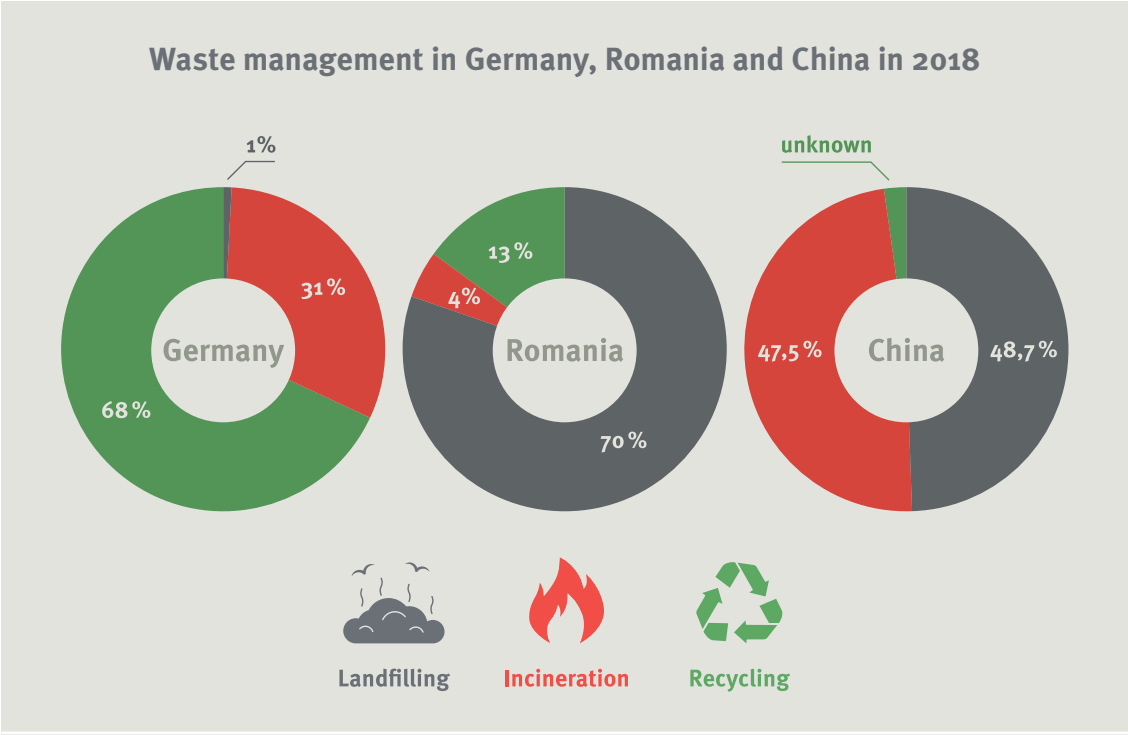
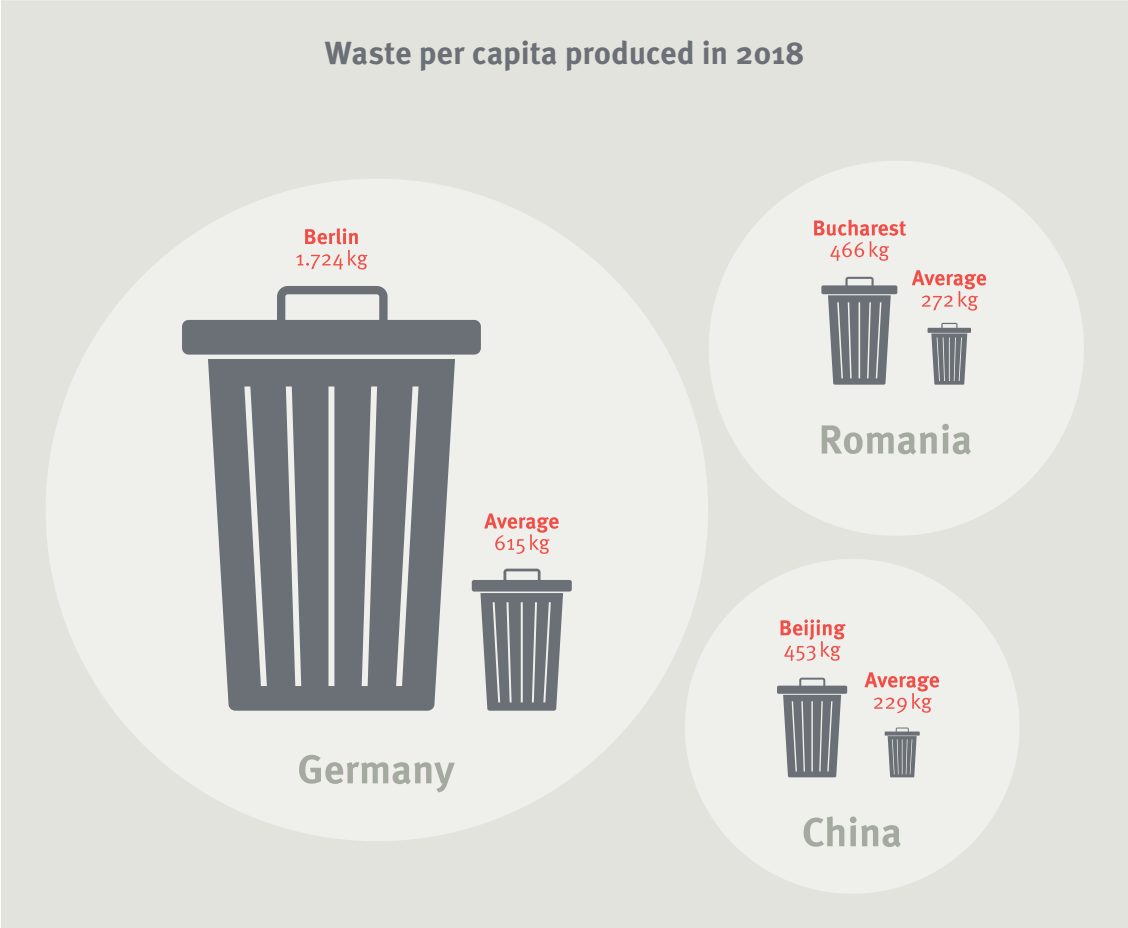


Fig. 3



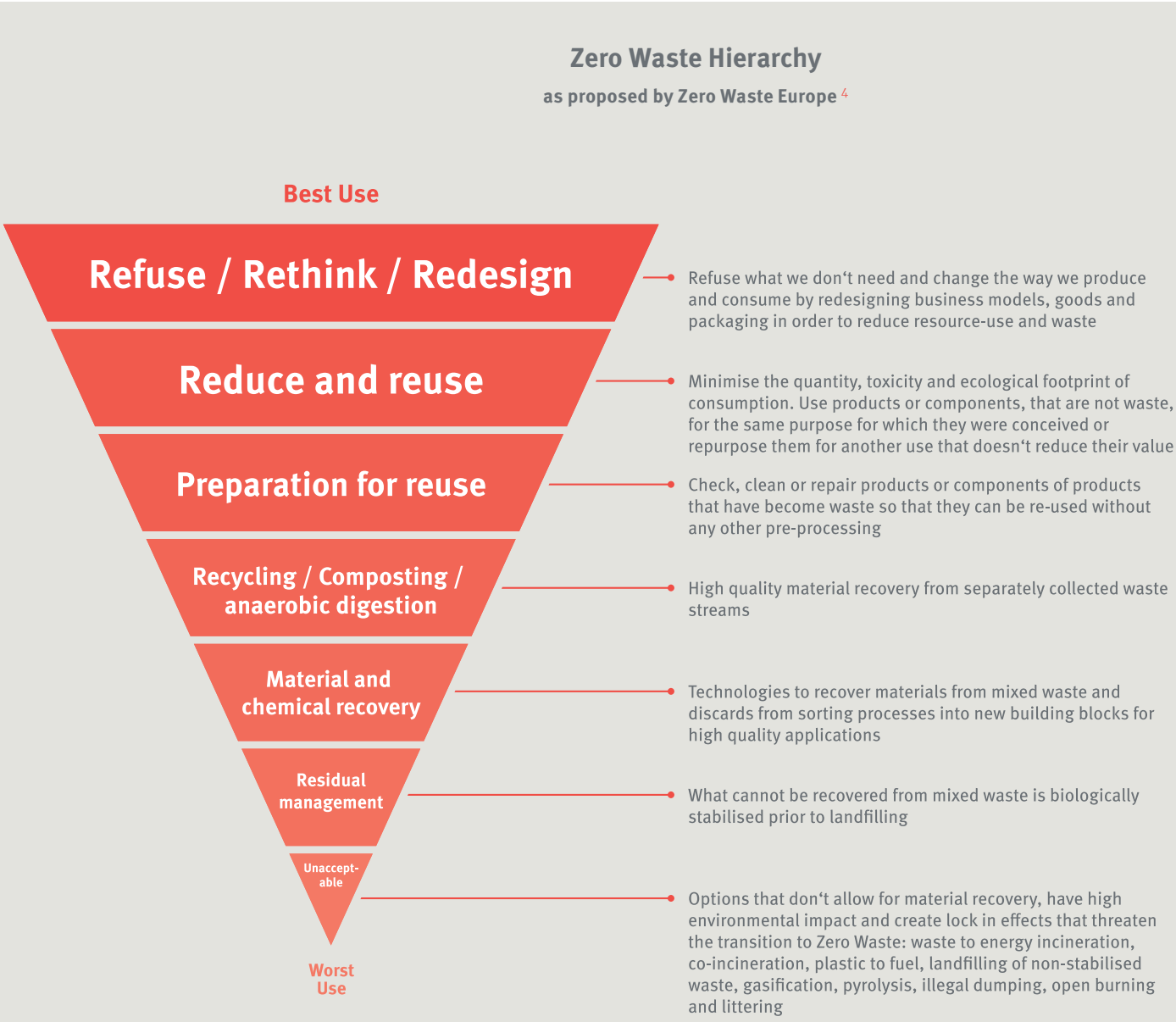
Who has the highest advantage in the circular economy pursuit?

From a circular economy standpoint, Romania enjoys two key advantages: it generates the lowest amount of waste per capita in the EU and has zero waste-to-energy facilities. By comparison, incineration-based technologies are widely used in Germany and China, making the transition to the circular economy much more costly and lengthy for them. Although Germany performs best at recycling among the three, it produces more waste per capita than China and Romania combined (see Fig. 2 and 3).

According to the waste pyramid, waste prevention is the cornerstone of the circular economy (see Fig. 4). Romania performs best in Europe in this respect, generating almost half the EU average of waste/capita (489 kg, Eurostat). Sadly, this performance is due, mostly, to the low purchasing power of the average citizen, rather than to governmental measures. If Romania does not invest soon in separate waste collection and recycling, it risks to lose this advantage.

Neither Germany, nor China or Romania, have a truly circular approach to MSW management. To be in line with the circular economy principles, China should halt investments in waste-to-energy plants; instead, it should put more focus on waste prevention measures and recycling. Germany, on the other hand, should focus on waste prevention measures, as well as decrease the use of waste incineration technologies. Romania, on the other hand, should prioritise investments in separate door-to-door waste collection and recycling, as well as sharply decrease its reliance on landfilling.

Fig. 4



How does China's Belt and Road Initiative fit in this picture?

As stated above, I believe that China has a responsibility in finding answers to the global waste crisis. Currently, China is the second largest waste generator in the world, after the US (World Bank data). This was the inevitable result of three decades of outstanding economic growth, without consideration of the environmental costs. Pollution, in its many forms, took a heavy toll on the lives of millions of people, prompting the Government to seek a change. Thus, in 2012, the Chinese Communist Party (CCP) has listed the creation of a "ecological civilization" on par with other economic and political party goals.[5]

We may think that the shift to a consumption-driven economic model came in timely, easing the pollution associated with traditional industrial activities. However, pollution continued to haunt China in the form of municipal waste. The often forceful urbanization phenomenon[6], coupled with an increasing spending capacity of the middle class, generated huge amounts of urban municipal waste. Thus, waste became the new national emergency.

In response, the Chinese Government pumped billions of yuan into the development of the MSW incineration infrastructure, enticed by promises of quick results and fewer short-term headaches. By doing so, China went against the global trend of seeking a more circular economy, a trend that discourages waste-to-energy technologies, because they destroy the waste in the energy recovery process.

Nevertheless, China has the capacity and the resources to advocate for sustainable waste management within the BRI network of countries. For this, it should change its current waste management strategy domestically, for a boost of credibility. The way a country looks at waste is of core importance. It will influence its economy, the industry and, ultimately, the well-being of its own citizens.

The BRI, the circular economy and the global waste crisis

Chinese President Xi Jinping launched the BRI in 2013. The initiative was initially seen as a massive infrastructure project aiming to connect Eurasia and Africa by land and sea. Several years later, observers noticed that the BRI lacked a specific agenda and started digging for the hidden geopolitical motivation on China's part. Some even argued that the BRI is only a cover-up for exporting dirty technologies to less-developed countries.[7]

To dismiss such allegations, at the First BRI Forum for International Cooperation in 2017, Xi Jinping claimed that the BRI is devoted to the ecological progress and that he wishes for a Green Belt and Road, compatible with the United Nations' Sustainability Development Goals (UN SDGs). Soon after, the Chinese government issued a *Guidance on Promoting Green Belt and Road* and *The Belt and Road Ecological and Environmental Cooperation Plan*, formally committing itself to the United Nations' 2030 Agenda for Sustainable Development.

The BRI Guidance stated that a *"Green Belt and Road responds to the international trend of seeking green, low-carbon and circular development."* The document further stated *"(...) efforts will be made to incorporate the principles of being resource efficient and environment friendly into the whole process of international cooperation"* as well as *"to enhance China's capability to participate in global environmental governance."*

However, China's road to becoming a global sustainability leader must first pass the waste management test at home. Sadly, its current strategy shows a clear deviation from the circular economy principles. Waste incineration is passionately promoted, in sharp contrast with waste prevention, recycling and other similar measures. In this regard, China can draw several important lessons from Germany and Romania.

China, Germany, Romania, and a BRI convention on waste

China sees both Germany and Romania as important partners in Europe. Even if Germany has not officially signed a BRI agreement with China, it is active in China's Iron Silk Road, especially through its Port of Duisburg. For example, the Robert Bosch GmbH uses the China-Europe railways to transport parts and products from Germany to its factory in Chongqing. Moreover, Germany is one of the biggest recipients of Chinese investments worldwide.

Romania, on the other hand, was among the first countries to sign a memorandum with China on the BRI in 2015. The memorandum was signed between the Chinese Ministry of Commerce and the Romanian Ministry of Economy. However, to date, there has not been any BRI project completed in Romania.

From a circular economy standpoint, China and Romania share similar advantages and challenges. First, they produce a low amount of waste per capita (see Fig. 3). Second, their landfilling rate is too high. Third, the recycling rate is too low (see Fig. 2). A major difference between them, however, is that, whereas China has the financial power and the resources to develop green technologies on its own, Romania relies mostly on EU funds and on western technologies.

China and Germany, on the other hand, are technologically advanced and highly innovative. They also have a similar dependence on incineration (see Fig. 2). Their challenges, however, are slightly different: China needs to lower its dependence on landfilling, while Germany needs to reduce the volume of waste produced per capita, which is currently among the highest in Europe.

A tripartite cooperation between China, Germany and Romania with the purpose to identify solutions to sustainable MSW management would be extremely beneficial. The BRI could become a hub for sharing best practices for a smoother global transition to the circular economy.

The waste crisis lags behind climate change in terms of presence in media and political discussions, but the BRI could change that, giving it a new platform. By being promoted as a green initiative, the BRI has gained a new significance on the global stage. This is a good opportunity for China to add waste management (MSW in particular) on the BRI agenda and initiate talks on global strategies for its management.

A BRI convention on MSW could revolutionise the way waste is managed globally. Sustainable solutions in line with the circular economy principles exist, but they are spreading far too slowly. A BRI Convention on waste could accelerate that. The entity that could initiate the talks for such a convention is the Belt and Road Initiative International Green Development Coalition (BRIGC), launched in 2019.

The BRIGC was initially announced in the *BRI Plan*. Now, it is comprised of over 100 international and Chinese partner institutions.[8] It aims to create a network of countries, which work together and share resources in response to common environmental challenges or threats.

In drafting the convention, the BRIGC can draw inspiration from several international documents, such as the Basel Convention, the EU Regulation No. 1013/2006 on waste shipments and the OECD's 2001 decision on the control of transboundary movements of waste destined for recovery operations.

Here are some examples of measures, which a BRI Convention on MSW could cover:

1. Voluntary/mandatory bespoke door-to-door separate collection targets for recyclable waste and biowastes;
2. Voluntary/mandatory quotas regarding the use of secondary raw materials in the production of goods intended for export;
3. Voluntary/mandatory measures to quit the „design-for-the-dump" approach by the industry, to the application of eco-design criteria (durability, non-toxicity, repairability and reusability, compostability or recyclability);
4. Voluntary/mandatory targets for reducing packaging and food waste;
5. Logistical support for the creation of a reuse and repair chain across the BRI region.

The BRIGC could invite Germany and other developed countries to participate in the talks, alongside renowned environmental experts and non-governmental organisations (NGOs) and civil society activists with an established expertise in the environmental field, such as the Zero Waste and the Energy Justice networks. For a more detailed action plan, the BRI Coalition could use the Zero Waste Europe Masterplan[9] and best practices, the EU circular economy package, as well as the lessons learned from China's "Waste-Free" pilot program.

China, Germany and Romania – one obligation to act

We live on a planet with limited resources, which are being consumed much faster than they can regenerate. Their biggest consumers need to show responsibility and act like good managers of mankind's common, limited resources. More developed economies, like China and Germany, have the responsibility to make use of their technological capacities in order to ensure the longest life possible to all products they put on the market. Also, they need to come up with solutions for the recovery of the resources embodied in these products, at the end of their life cycle, avoiding as much as possible their destruction.

Waste management and resource efficiency are the cornerstones of the circular economy. When a product becomes waste, it does not cease to be seen as a resource. This is why waste-to-energy technologies are considered non-circular solutions, as they destroy the waste in the energy recovery process. Unfortunately, developed countries (including Germany and China) have grown fond of these technologies, dedicating huge amounts of money to their development and wrongly promoting them as circular waste management solutions. Globally, most of the waste ends up landfilled or incinerated, representing a terrible loss of resources.

The global waste volume grows much faster than the average country's capability of handling it. This calls for a multilateral approach to waste management and for a strong global political leadership. From its position as the world's second biggest MSW generator, as well as the world's second biggest economy, China has the opportunity and the resources to initiate and coordinate a global response to the waste crisis.

The best way to bring sustainable waste management to the global attention is by initiating an international convention. Now that the BRI has been set on the pursuit of green development, it can become an ambassador for sustainable municipal waste management, unveiling many new economic opportunities for the BRI countries. Under the umbrella of a municipal waste convention, China could promote investments in the waste recycling sector and support the development of new industries addressing the re-use, recovery and repair of all products that would otherwise become waste. By contrast, investments in waste-to-energy technologies should be strictly discouraged and ultimately phased out as non-circular.

Although Germany has not yet signed any BRI agreement with China, it can work with BRI countries to formulate a global strategy on MSW management. Germany can share its experience in material recovery for recycling or composting. Via the BRI, its model of best practices can be easily replicated in other parts of the world, with huge economic benefits for Germany. A more circular approach to MSW management would reshape the entire global economy, while preventing millions of tons of waste from polluting the oceans. On the other hand, Romania, together with other states that are in a similar situation, can provide valuable case studies on how to avoid the use of waste-to-energy technologies in the circular economy pursuit.

Political leaders must start to plan in anticipation of the challenges and needs of our society in the next 50 to 100 years. Short-term solutions, resulting in the destruction of resources, should be strongly discouraged via public policies and financing restrictions. The waste crisis is a global issue, which needs a political leadership and accountability from the world's biggest polluters.

China could choose to lead by example and show environmental accountability by initiating a BRI convention on municipal waste management, thus calling for sustainability and environmental accountability among the entire global community.

Endnotes

1 The research paper is called: "Can China's BRI lead the way toward a global ecological civilization?" It includes three case studies on the MWS management situation in China, Germany and Romania.

2 The World Bank - Solid Waste Management Brief (2019), at: https://www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-management (last visit 28 May 2020).

3 The 2019 report of Wuhu Ecological Center (WEC), at: http://www.waste-cwin.org/sites/default/files/2019nian_qi_ye_she_hui_ze_ren_lu_xing_bao_gao_-wang_luo_ban_.pdf (last visit 28 May 2020).

4 Simon, Joan Marc (2019), "A Zero Waste Hierarchy for Europe", at: https://zerowasteeurope.eu/2019/05/a-zero-waste-hierarchy-for-europe/ (last visit 7 July, 2020).

5 Ishwaran, Natarajan & Hong, Tianhua & Yi, Zhijun. (2015). Building an Ecological Civilization in China: Towards a Practice Based Learning Approach. Journal of Earth Sciences and Engineering. 5. 349-362, 10.17265/2159-581X/2015.06.003, at: https://www.researchgate.net/publication/288994056_Building_an_Ecological_Civilization_in_China_Towards_a_Practice_Based_Learning_Approach (last visit 29 May, 2020).

6 Ian Johnson, China's Great Uprooting: Moving 250 Million Into Cities, The New York Times, June 15, 2013, at: https://www.nytimes.com/2013/06/16/world/asia/chinas-great-uprooting-moving-250-million-into-cities.html (last visit 28 May 2020).

7 Kelly Sims Gallagher, China's Belt and Road is conduit for polluting investments, Tufts University AUGUST 9, 2018, published in Financial Times, at: https://www.ft.com/content/f965fa22-9be4-11e8-9702-5946bae86e6d (last visit 30 May, 2020).

8 The International Institute for Sustainable Development (IISD), Coalition Aims to Build Sustainability Into Belt and Road Initiative Projects, at: https://www.iisd.org/media/coalition-aims-build-sustainability-belt-and-road-initiative-projects (last visit 30 May, 2020).

9 The Zero Waste Masterplan was created by Zero Waste Europe and its members, at: https://zerowastecities.eu/wp-content/uploads/2020/07/2020_07_07_zwe_zero_waste_cities_masterplan.pdf.

About the EU-China NGO Twinning Programme

The EU-China NGO Twinning Programme was an exchange programme for the staff of European and Chinese civil society organisations. By bringing European and Chinese NGOs together, it encouraged NGO partnerships and improved the understanding of how civil society looks at the topics they are engaged with in different parts of the world. From 2012/13 to 2019/20, the Robert Bosch Stiftung together with Stiftung Mercator awarded grants for 12 Chinese and 12 European NGOs to take part in this unique exchange experience. The programme was organised by Stiftung Asienhaus in cooperation with the Climate Action Network Europe and the China Association for NGO Cooperation.

About the Author

Andreea Leonte is an environmental activist and a fellow for China Studies at the Romanian Institute for the Study of the Asia-Pacific (RISAP). She volunteered for Energy Justice Romania and Zero Waste Romania between 2018 and 2019. She was a participant in the 2018 EU-China NGO Twinning Programme and partnered with He Linghui from Zero Waste Shenzhen.

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