"Eco-Leftist" Solutions to the Waste Crisis: Luxury or Simplicity in the Transition Towards a Waste-Free Future

Alejandro Huete[✉]
Faculty of Social Sciences, Chiang Mai University

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Abstract

The world today is increasingly having to deal with exponential amounts of waste. This is not only an environmental problem, but a social and political issue. Solutions to deal with this waste crisis have generally involved expertise-driven, advanced technological fixes that are driven by capitalism's fundamental need for ever-increasing profits and the belief in infinite economic growth. These solutions have overwhelmingly proven to be unsuccessful, with waste generation continuing to rise drastically. This article will elaborate on the two "eco-leftist" approaches of *Degrowth and Fully Automated Luxury Communism (FALC)* in order to understand how they can provide potential alternative solutions to the current situation. It will then discuss these two approaches alongside contemporary waste management case studies in order to understand which one may prove to be more practical and socially and ecologically beneficial. The article will attempt to demonstrate that a combination of the two approaches, a combination in which a strong state is secured by the working class through electoral politics, is able to pursue a *degrowth* agenda that calls for a total transformation of production and consumption practices. This agenda also involves a core critique of the idea that economic growth and technological advances will lead to the further progress of humanity and the environment as a whole.

Keywords: Fully Automated Luxury Communism, degrowth, waste management, waste pickers

Introduction

The ecological, social and economic calamities that have emerged due to capitalism's fundamental need to accrue ever-increasing profits, and the failure of the world's governments to adequately address these adversities, can clearly be seen in today's waste crises. For the past half century, national and municipal governments all around the world have continually attempted and failed to come up with solutions to overflowing landfills, polluted rivers and oceans, and toxic chemicals seeping into surrounding ecosystems. Socially, it is the most vulnerable that are impacted by this situation; as landslides from overflowing landfills destroy homes and lives, those dependent on waste-picking for their livelihoods are forced into unsanitary and dangerous working conditions, and the dumping of toxic chemicals most frequently occurs in those natural environments that the most disenfranchised agricultural, fishing and indigenous communities depend on to survive. Furthermore, environmental racism is perpetuated, with high income countries and communities continuing to export their waste scraps to those regions less well off; this occurs at the global level with countries such as the US and Japan exporting their waste to Africa and Southeast Asia as well as nationally, with the more affluent cities sending their waste to the countryside. This distribution also has extreme ecological consequences, with mountains of trash releasing toxic chemicals into surrounding soils and water sources and massive islands of garbage floating in the middle of the Pacific and

✉ janowete@gmail.com

Atlantic (the Great Pacific and North Atlantic garbage patches) due to illegal dumping and littering. We have all seen the increasing number of reports about dead marine life washing up on shore, their corpses full of plastics. In addition, solid waste treatment and disposal, primarily originating from open dumping and the use of rudimentary landfills, have had extreme climate change implications, with an estimated 1.6 billion tons of CO2 being released in 2016 (Kaza et al., 2018). Although recycling rates have increased over the years, they cannot compete with the production rates of "virgin" plastics and other recyclable wastes. In fact, it is estimated that the annual worldwide generation of municipal solid waste will increase from the current 2.01 billions tons to 3.40 billion by the year 2050 (World Bank, 2018).

Traditional Waste Management Solutions

For the first few decades that waste management started to become an issue, open air dumps and incineration were the typical solutions (Chandrappa & Bhusan Das, 2012). These dumps were rudimentary in nature, involving no safety measures for the seeping of toxic residues, the occurrence of methane gas explosions, or the generation of noxious smells. Landfills were generally situated on the outskirts of the city centers, where the most poor and disenfranchised lived. Eventually, many of these communities would organize to form numerous "Not in my Backyard" (NIMBY) movements to force the government or private enterprise either to shut these landfills and incineration plants down or to pressure them to relocate. For example, from the years 1989 to 2003, approximately thirty-five anti-landfill/waste disposal facility protests occurred in the surrounding villages of the municipality of Chiang Mai, Thailand. Municipal solid waste became referred to as "gypsy garbage," moving from one village to another after locals would protest the dumping of waste onto their lands (Kokpol, 1998). During this period, multiple local authorities were forced to resign (Matichon, 1998b; Khaosod, 1998), local anti-landfill activists were kidnapped or threatened (Khaosod, 2003), waste collection equipment was destroyed (Matichon, 1998c) and Chiang Mai, being one of the top tourist destinations in Thailand, became a national embarrassment due to piles of uncollected waste's being left on the city streets for days (Matichon, 1998a). Moreover, in 2001 toxins from the first landfill site in Chiang Mai (in use from 1957-1989) were discovered to have seeped into the groundwater, thus preventing water consumption by surrounding communities (Matichon, 2001b). Similar situations were occurring all around the world at this time.

At this point, developers began to come up with technical solutions, either upgrading the dumps to sanitary landfills to adhere to scientific principles or creating waste-to-energy facilities that were meant not only to alleviate the waste crises but also generate profits.[1] These too would also have to confront resistance from local communities. Alongside these developments, governments and private enterprises would begin to promote the recycling and the sorting of waste "at the source," thus placing responsibility onto the individual consumer rather than large corporate polluters or marketing firms that promote the consumerist and throw-away lifestyle. Waste banks and cooperatives were promoted that disseminated the idea of "garbage as gold" (Matichon, 2001a; Matichon, 2002) in an attempt to lure people into becoming "waste entrepreneurs," who would assist in solving the waste crisis. These waste banks and cooperatives were also seen as a legitimate entrepreneurial activity that had the potential to be very lucrative. Although the promotion of recycling led to the reduction of total waste outputs in countries such as Germany and Japan, most of the time these recyclable wastes were exported to the developing world to be handled, usually with less efficient technologies,

[1] Although waste-to-energy facilities increased greenhouse gas emissions (GHG), they would eventually come to be referred to as "green technologies" or placed under the label "sustainable development."

an absence of labor protections, and less strict measures for preventing illegal dumping.[2] Situated within a capitalist economic system, waste management and recycling firms (as is the case with all enterprises) are required to maximize profits in order to compete; otherwise they risk bankruptcy. Profits are the bottom line, and if the government or private sector feels that recycling or environmental policies will lead to reduced profits or economic growth, these policies will most likely never get passed, regardless of the social and ecological implications. Instead, typical solutions have principally involved profit-oriented, techno-managerial approaches which, whether government or privately-managed, have failed to put even the slightest dent into waste generation and recycling numbers.

Another common solution is the formalization of the informal waste management sector. This mainly refers to the formal recognition of the millions of waste pickers and scrap shops around the world. Although unrecognized, multiple studies have demonstrated the benefits they provide in the waste management process (Medina, 2008; Johnson & Trang, 2019; De Bercegol & Gowda, 2018; Chen et al., 2018). They not only prevent a great number of recyclables from ending up in the landfill or being incinerated (thus decreasing GHG emissions), but also save governments worldwide millions in waste management costs annually (Johnson & Trang, 2018). In these cases, formalization generally involves the inclusion of informal waste pickers into the formal wage employment relationship. They are given social security and monthly salaries and are assisted by various agencies in setting up cooperatives and micro-enterprises, as well as provided with safety and working equipment. Successful cases have been documented in India (SWaCH), Brazil (National Movement of Waste Pickers), and Argentina (The Movement of Excluded Workers). However, although there are various successful cases of waste-picker formalization, waste-pickers continue to be generally ignored by national governments and international agencies in terms of actually implementing and financially supporting waste-picker initiatives in the long term. Recycling rates and the livelihoods of waste pickers have improved due to these initiatives, but they continue to be relegated to small-scale projects with little financial support for their upscaling.

Most of the solutions discussed above revolve around the idea that technology, alongside capitalism's profit-motive, can solve any environmental problems humanity may face. According to this view, technological advances will improve sanitary landfills to better prevent the seeping of toxins into the environment; they will also lead to the development of highly advanced sorting machinery to better ensure that everything is categorized and sent to the correct recycling facilities; and they will allow for waste-to-energy plants to become ever more efficient, all of which—theoretically—can contribute towards achieving zero-waste in the near future, since all waste products are returned back into self-sustainable production and/or ecosystem cycles. These types of solutions can be referred to as "eco-modernist" solutions, which "tend to promote the necessity of endless economic growth and the role that new technologies will play in creating a sustainable global society" (Caradonna, 2015, p. 2). Similarly, although the formalization of waste picking doesn't tend to include highly advanced technologies, it does emphasize the entrepreneurial spirit of capitalism, in which waste becomes a new commodity frontier that can lead to further economic growth. As an alternative to these capitalist "solutions," this article will discuss two distinct approaches of the Marxist and libertarian socialist traditions. It will then go over some case studies relating to waste management in order to better understand which approach may be more practical in increasing our chances of creating a more pluralistic, democratic, equitable, and fulfilling future for all human and non-human lifeforms that inhabit this planet.

[2] Thus, we see again the tendency for the upper classes to relocate their wastes to those regions where the more poor and vulnerable reside.

The Spectrum of the Political-Ecological Left

Ecological, anti-capitalist approaches to the social, economic, and ecological crises of capitalism can be usefully classified as being situated on a spectrum between a "left productivist" extreme on one end and a "left libertarianism" on the other (Schmelzer et al., 2022). Situated on a spectrum, there are a variety of approaches that share many core aspects with one another, none of which have characteristics that are specific and/or unique only to themselves.[3] The left productivist end can be associated with traditional socialist approaches, focusing on electoral politics, technological advancements, and the use of the state to implement large-scale programs that would redistribute the means of production in order to satisfy all of humanity's basic needs without harming the environment. One could say that nearing this end is Aaron Bastani's *Fully Automated Luxury Communism* (2019). The *degrowth*perspective could be said to be a good example of the left libertarian approach, which in contrast puts more emphasis on the transformation of technology to be more convivial,[4] while stressing smaller, more autonomous, non-hierarchal and decentralized actions and governance through the formation of cooperatives, community gardens, and eco-communities. These two approaches have been chosen in order to highlight some of the main points of debate within the ecological left today; that is, the role of the state and technology in solving today's environmental crises and a critique of *economic growth.*

Communism is Luxurious, or it isn't Communism

Fully Automated Luxury Communism (*FALC*) is an approach developed by Aaron Bastani (2019) which argues that humanity has arrived at the point in which advances in technology have allowed for the opportunity to enter into a post-scarcity, post-work era. Advances in automation, artificial intelligence and processing will not only result in nearly all occupations being performed by machines in the near future but also allow for the acquisition of unlimited amounts of energy (solar and wind power) and natural resources (off-planet deposits) that would effectively disconnect or "decouple" economic growth from affecting the environment. Similar to capitalist, eco-modernist approaches, *FALC* contends that the continued development of increasingly advanced technologies will allow humanity to effectively deal with any environmental problems it may face. The main difference is that this technology would be placed into the hands of the working class in order to serve the whole of humanity and the environment as opposed to serving the continued accumulation and concentration of capital into the hands of a minority capitalist class.

In order to achieve this, Bastani calls for a populist Red and Green electoral politics (as opposed to the social movements approach), led by a "workers party against work," that would take control of municipalities, national governments, and centralized banks. After gaining control over these institutions, economic re-localization and municipal

[3] Other currents within this spectrum include social ecology/communalism (Murray Bookchin), eco-socialism (Ian Angus, John Bellamy Foster, Michael Lowy, James O'Connor), eco-feminism (Vandana Shiva, Maria Mies), Anarcho-primitivism (John Zerzan) and bioregionalism (Kirkpatrick Sale), to name a few.

[4] The concept of "conviviality" was introduced by Ivan Illich's *Tools of Conviviality* (1973), referring to "a society in which modern tools are used by everyone in an integrated and shared manner, without reliance on a body of specialists who control said instruments" (Deriu, 2015, pp. 79). It can be contrasted with "radical monopolies," also introduced by Illich (1973), which refer to the "dominance of one type of product rather than than the dominance of one brand … when one industrial production process exercises an exclusive control over the satisfaction of a pressing need, and excludes nonindustrial activities from competition" (Illich, 1973, pp. 66). Those without this product are effectively excluded from society. The most common example of a radical monopoly is the car.

protectionism would be promoted. Investments in worker cooperatives, environmentally sustainable projects, energy transition technologies and close proximity to the municipal center would be prioritized over multinational corporations, with the objective being to reverse the neoliberal path towards privatization and instead revitalize the local economy to make it more resilient and socially just. Bastani argues that this would call for a strong state that would not only implement large-scale reforms such as the universal literacy and electrification campaigns in the past, but also protect new advancements such as complete decarbonization and Universal Basic Services (UBS) from reactionary groups.

Although he does not critique economic growth itself, Bastani argues that in a post-capitalist society, GDP, the current measurer of progress, will need to be replaced with an "Abundance Index." This index would take into account and integrate many factors such as "CO2 emissions, energy efficiency, the falling cost of energy, resources and labour, the extent to which UBS had been delivered, leisure time, health and life span, and self-reported happiness (Bastani, 2019, pp. 235), while also accounting for regional and cultural diversity. Thus, economic growth would still be pursued, but the success of this growth would be measured by how well these benefits are fairly distributed within society as well as how minimally they negatively impact the environment.

The Objective is not to Make the Elephant Leaner but to Turn the Elephant into a Snail

Degrowth is a heterogenous theoretical field which borrows from anti-utilitarianism, bioeconomics, post-development theory, and political ecology, while having the spirit of 19th century critiques of industrialism from the likes of William Morris, Leo Tolstoy, and Henry David Thoreau (Alexander, 2015). Although heterogenous, what unites all degrowth theorists is a critique of the present-day commonsense belief that "economic growth" is a fundamental requisite for the further progress and contentment of society, and thus, "a radical reorganization of society that leads to a drastic reduction in the use of energy and resources (…) is deemed necessary, desirable, and possible" (Schmelzer et al., 2022, Introduction, para. 5). The drastic reduction of the use of energy and resources and a large emphasis on "simplicity" make *degrowth* very much at odds with *FALC*, which propounds a more technological utopianism with an affluent and luxury lifestyle for all.

One of *degrowth's* main critiques of economic growth is based on biophysical analyses. Borrowing from bioeconomics, which combines the physical and biological sciences with economics, *degrowth* proponents argue that economists cannot ignore the constraints imposed upon economic growth by the laws of physics, specifically the law of entropy which states that the degree of disorder in a closed system will always increase (Bonaiuti, 2015). The continued dependence on a limited supply of fossil fuels, as well as the exponential increase in waste generation, has resulted in chaotic events such as climate change and the current waste crises we are experiencing today, both of which could be considered increased degrees of disorder in the planet's socio-natural system. Even with the advances in sustainable technologies such as solar and wind power, their production generally involves the mining of new minerals, which often release great amounts of GHG emissions into the atmosphere. For this reason, *degrowth* proponents argue that unlimited economic growth is incompatible with the basic laws of nature, regardless of technological advances.

However, although the two currents differ in this respect, many of their strategies are similar. Both do indeed call for a strategic combination of both top-down and bottom-up actions which work alongside the state, an emphasis on worker-owned cooperatives, re-localization and economic democracy, a critique of the capitalist work ethic and wage

employment, a call for internationalism, and the North's reparations to the South. Slight differences reside in *degrowth* proponents' placing greater importance on social movements and grassroots activities ("nowtopias"), exhibiting more suspicion towards the state (from the municipal to national level), and having a large, variable distaste for centrally planned, hierarchal organizations.

FALC and Degrowth in relation to Waste Management

Waste management and waste in general is usually an ignored topic in society. Since waste is taken out of sight of most of the middle and upper classes and generally considered to be valueless, this doesn't come as a surprise. However, although out of sight, it persists in those unrecognized places in the material world and our minds, emerging at times, leading to some sensationalist reporting, and then returning to the background, but always continuing to accumulate, waiting for its next sudden eruption into public view. This accumulation is a type of "material climate change," a crisis that most of humanity cannot see but that we know exists in some distant far-off land. Alongside this are the millions of humans and non-human life forms that both benefit and are negatively impacted by this situation.

In regards to *FALC* and its emphasis on technological solutions, the most updated waste-to-energy and separation technologies would be the most probable approaches. With the entire world living the luxurious lifestyle of the present day First World, household and consumer waste would increase exponentially (*FALC* does not address waste from consumerism), so these technologies would need to increase in efficiency at the same rate as the new waste-generation rates. Of course, under *FALC,* waste-management technologies would be placed in the hands of the working class, and thus present-day case studies cannot fully portray how they would unfold in the future; nevertheless, they can highlight some issues that may emerge in the transition towards *FALC.*

There are generally three issues that should be considered in regards to waste-to-energy facilities: the influence of neoliberalism, the dispossession of waste pickers from their livelihoods, and NIMBY movements. There have been multiple studies on how waste-to-energy and other low-carbon restructuring initiatives reinforce neoliberal urban resource management (Brenner & Theodore, 2005; Schindler, et al. 2012; Demaria & Schindler, 2015; Silver, 2017). Because they generally have low budgets, municipalities, especially in the Third World, rely on securing investments in order to transition to low-carbon infrastructure. These investments most often come from the World Bank and other international financial banks, which are able to "exert power and financialize local resources, in order to pilot, test and develop neoliberalised operation and management of low-carbon, urban infrastructure" (Silver, 2017, p. 3). As waste increasingly becomes to be seen as a valuable resource, outside transnational private firms rush in to obtain these lucrative contracts with municipal governments and form public-private partnerships, which are typically viewed as a result of neoliberal governance (Brenner & Theodore, 2005). However, as Bastani proposes, under a municipal protectionist policy, these contracts would go to local waste-to-energy cooperatives and be financed by local credit unions in order to contest this privatization process, *if* the political will is present and sufficiently organized.

Another problem is that transitioning to more energy efficient and "green" waste management systems results in the dispossession of a large number of informal waste pickers. What many studies have shown (Schindler, et al. 2012; Gillespie, 2015; Samson, 2015; Silver, 2017) is that these techno-managerial "end-of-pipe" solutions that are favored by governments around the world result in the commoditization of waste and its subjection to capitalist laws of

value. Consequently, the owners of capital, in this case of the new waste-to-energy facilities, begin to prevent (usually by force) waste pickers from accessing their previous sources of livelihood. This follows what David Harvey (2005) has termed "accumulation by dispossession," which refers to the need of neoliberal governments to assist capital in [addressing crises of overaccumulation by creating new spheres of accumulation in order to reinvest surplus capital. Generally, the new spheres of accumulation are created by privatizing what were previously public goods and services as well as facilitating the enclosure of various commons, in this case landfills and street waste. Furthermore, Samson (2015) argues that it is waste pickers themselves who put in great amounts of labor and time to transform landfills from "wastelands" to "resource mines," only to be dispossessed from them by the state and private sector, who seek to capture these newly created spaces of capital accumulation. Generally these studies demonstrate that waste pickers continue to be left out of the decision-making processes of these programmes, even if the developers emphasize "integration" or "participation." The authors generally recommend more correspondence between waste pickers, the private sector, and the municipal government, emphasizing the need to understand the fundamental power inequalities that exist throughout the processes of energy transition.

Referring back to NIMBY movements, large waste-to-energy facilities and landfills generally experience popular backlash from the surrounding communities where they are established. Although supposedly such facilities are becoming cleaner, there remains a high distrust towards these types of expert-led projects, since they have generally led to unintended chemical leaks seeping into the surrounding water supply, chemical smog due to incineration and noxious smells that can be extremely irritating local residents. In any case, large infrastructural projects still tend to come up against local resistance by these communities. Consequently, intense debate and collaboration between urban communities (who make up most of municipal waste generation) and rural communities (where these facilities are usually located) would need to be prioritized. On the other hand, more small-scale solutions could be implemented, solutions that don't rely on large-scale, centralized techno-managerial solutions—which brings us to the *degrowth* approaches.

While both technologically advanced facilities and the informal practices of waste pickers would be needed in order to deal with the large amounts of waste that currently exist, *degrowth,* with its emphasis on "conviviality," would more likely lean towards anti-consumerist policies that would cut back on waste generation, as well as more small-scale, technologically independent forms of waste collection and management. This can include biodegradable packaging, the promotion of a culture of reusable, durable and long-lasting products, as well as community waste banks and composting systems, all which help reduce the community and individuals' dependence on the state and highly technical, expertise-dependent infrastructure. For waste pickers, the use of bicycles and motorbike sidecars could also prove beneficial, since they not only decrease our dependence on fossil fuels but also decrease the seemingly never-ending need to expand or construct wider roads. Localizing waste management in a convivial manner, i.e. in a manner in which waste management techniques are more understandable, manageable, accessible and controllable by all (Kallis et al., 2015), rather than sending waste far distances to large, centralized techno-managerial waste facilities, will not only facilitate the transition away from the fossil fuel industry but also ensure that this process is more democratic and takes into account the diversity of the distinct contextual conditions of each region.

The fact that there are many waste-picking cooperatives and associations demonstrates that many people do in fact find contentment in the profession. Research has shown that, depending on its particular style of management, waste-picker cooperatives are able to increase and stabilize their income (Medina, 2008; Ferrell, 2006; Chikarmane & Narayan, 2009; Calafate-Faria, 2013), strengthen their autonomy (Ferrell, 2006; Millar, 2008), promote grassroots development (Medina, 2005) and facilitate the creation of solidarity or popular economies (Millar, 2008). Exceptional cases can be found in Pune and Pimpri Chinchwad, India, with the KKPKP,[5] a membership-based trade union founded by waste pickers, and the National Movement of Waste Pickers in Brazil.

However, while both *degrowth* and *FALC* emphasize the need to create worker cooperatives, research has demonstrated some of their downsides. This can include a decrease in individual autonomy (Millar, 2018), high member turnover rates as cooperative salaries generally cannot compete with those of private enterprise, and certain members becoming more authoritarian (Medina, 2005). Samson (2020) in particular, has conducted research on a South African municipal informal waste picker integration programme (S@S) which emphasized the establishment of waste picker cooperatives and buy-back centers. However, soon after its creation, it was lobbied by the private sector to ensure that "the new S@S model would not push the private sector out of business" (Samson, 2020, pp. 70). Thus, with the interference of the private sector, the programme ultimately failed because the municipality chose not remunerate them for their services but rather told them that they would have to cover the expenses themselves. Additionally, the municipality was not able to provide the cooperatives with sufficient collection vehicles, which were available only at designated times, in which case non-cooperative waste pickers would usually beat the members of the cooperative to the recyclables. Lastly, this programme and others like it usually require cooperatives to sell their materials to a private company at lower prices than other shops. Ultimately, Samson concludes, "joining the cooperatives and being integrated into S@S resulted in members of the Robinson Deep cooperatives earning less money, waiting longer to be paid and losing autonomy (Samson, 2020, pp. 66-67). Thus, although both *degrowth* and *FALC* emphasize the creation of worker cooperatives, it is fundamental that waste pickers enter the decision-making process at the very initial stages. As Samson's (2020) research demonstrates, even with a municipal emphasis on supporting cooperatives, neoliberal-oriented actors generally influence the decision-making process, ensuring that the needed capital to systematically implement radical reform, in this case authentic waste picker cooperatives with the support of municipal protectionism, cannot begin to develop.

At the international level, there is also the issue of the transnational trade of waste and recyclables. Although there are international treaties in place, such as the Basel Convention—which is designed to prevent the movement of hazardous and plastic waste from rich to less developed nations—there continue to be many loopholes and "ecomafias" that allow this trend to persist illegally (D'Alisa et al., 2010). For instance, in 2017 China announced that it would ban all waste imports. Prior to this, China imported a cumulative 45% of the world's plastic waste (Brooks et al., 2018). The ban threw the global recycling market into disarray. With developed countries no longer able to send their waste to China, they had to find new regions that would be willing to take it in. Central Europe and Southeast Asia would eventually take up this task. Thailand became one of these countries, with waste imports from the US increasing by 300% in the first quarter of 2018 (Interpol, 2020). Not only did this create more environmental problems for the country, but the sudden increase in recyclable imports drastically reduced their domestic price, which in effect greatly reduced the income of Thai

[5] Kagad Kach Patra Kashtakari Panchayat

waste pickers. Although the Thai state soon began introducing policies to reduce these new waste imports, the plastics industry, along with Thailand's Department of Industrial Works, argued that this would lead to a drastic reduction in employment and thus waste imports continue to this day. To make things worse, many of these imports are illegal, as police to discover the smuggling of large quantities of waste into their nations' ports (Phanit, 2021). In these cases, what is needed is a strong state similar to the *FALC* approach. Although in Thailand's case, the state sided with the industrial capitalist class over environmental NGOs, civil society, and waste picker organizations, it would be difficult to enforce effective environmental policy without the existence of a strong entity, in this case the state, that could not only go up against the business interests of a united capitalist class, but also against illegal entities such as the vast network of ecomafias and their connections to elite groups all around the world.

Conclusion

Thus, we see that there are issues relating to both *degrowth* and *FALC* approaches at various levels in regards to the waste crises. There are issues at the grassroots level with waste picker cooperatives, at the national level with large-scale technological infrastructure, and at the international level in regards to the waste trade, all of which influence each other. At all levels, there have been multiple issues due to the interference of neoliberal actors and the favoritism afforded them by the state. Furthermore, and most importantly, although both large-scale technological solutions and the informal practices of waste pickers have been mildly successful in increasing recycling rates, they have had little success in reducing waste generation rates and neoliberal governance, or ensuring that waste management is done with the democratic participation of civil society.

Therefore, in regards to waste generation, this author supports the *degrowth* critiques of economic growth and capitalism's need for continuous production and consumption rates over *FALC's "*luxury for all" and technological utopianism. A more convivial way of living, in which society doesn't adhere to consumerist and throwaway habits, and which is less dependent on technological and state infrastructure, requires a transformation of social norms and production and consumption habits in order to truly decrease waste generation rates. However, in order to implement policies directed towards this, a strong state is needed in order to promote and defend *degrowth* practices and reform; for small grassroots networks and social movements are not strong enough to force companies to change their production practices and their need to continuously increase profits. The state would enforce the production of various products to be more durable, reusable, and environmentally-sustainable to ensure that total waste generation is kept to a minimum. Thus, the use of electoral politics and the acquisition of state institutions is needed; but that doesn't mean that they shouldn't be supplemented with other strategies.

One strategy that could prove beneficial is the "dual power" approach. This idea refers to the construction of a system of power that is managed parallel to that of the state and which has the capacity to determine its own future (Schmelzer et al., 2022). This parallel system of power would consist of networks and alliances between the various social movements (migrant, labor, climate, racial justice, anti-imperialist, LGBTQ+, feminist, waste pickers, etc.), and would be implemented by establishing systems of communication and resource-sharing, which would facilitate the coordination between all of its members. This would ensure that even if electoral politics fails due to "politics-as-usual" and corruption, a supplementary foundation would still be economically and politically independent due to the support of

worker cooperatives, and could continue revolutionary reforms from outside of the state system. It would also protect against neoliberal interference as cooperatives would no longer be dependent on outside funding but would have the support of this parallel power. Lastly, the dual power approach would allow for a more democratic decision-making process in regards to the siting of landfills and large-scale waste management facilities and the relations of (re)production of waste workers and other groups.

REFERENCES

Alexander, S. (2015). Simplicity. In G. D'Alisa, F. Demaria, & G. Kallis (Eds.), *Degrowth: A vocabulary for a new era* (pp. 133-136). Routledge.

Bastani, A. (2019). *Fully automated luxury communism: A manifesto.* Verso.

Bonaiuti, M. (2015). Bioeconomics. In G. D'Alisa, F. Demaria, & G. Kallis (Eds.), *Degrowth: A vocabulary for a new era* (pp. 25-29). Routledge.

Brenner, N., & Theodore, N. (2005). Neoliberalism and the urban condition. *City: Analysis of Urban trends, Culture, Theory, Policy, Action, 9*(1), 101-107. DOI:10.1080/13604810500092106

Brooks, A.L., Wang, S., Jambeck, J.R. (2018). The Chinese import ban and its impact on global plastic waste trade. *Science Advances, 4*(6). DOI: 10.1126/sciadv.aat0131

Calafate-Faria, F. (2013). *Countercycling: An ethnographic study of waste, recycling, and waste-pickers in Curitiba, Brazil.* [Doctoral dissertation, University of London]. Research Online. https://research.gold.ac.uk/id/eprint/10144/1/SOC_thesis_Calafate-Faria_2013.pdf

Caradonna, J., Borowy, I., Green, T., Victor, P.A., Cohen, M., Gow, A., Ignatyeva, A., Schmelzer, M., Vergragt, P., Wangel, J., Dempsey, J., Orzanna, R., Lorek, S.,

Axmann, J., Duncan , R., Norgaard, R.B., Brown, H.S., & Heinberg, R. (2015). A degrowth response to an ecomodernist manifesto. *Resilience.org.* https://www.resilience.org/stories/2015-05-06/a-degrowth-response-to-an-ecomodernist-manifesto/

Chandrappa, R., & Bhusan Das, D. (2012). *Solid waste management: Principles and practice*. Springer.

Chikarmane, P., & Narayan, L. (2009). *Rising from the waste - Organising wastepickers in India, Thailand and the Philippines.* Committee for Asian Women (CAW). https://www.wiego.org/publications/rising-waste%E2%80%93-organising-wastepickers-india-thailand-and-philippines

Chen, F., Luo, Z., Yang, Y., Liu, G. & Ma, J. (2018). Enhancing municipal solid waste recycling through reorganizing waste pickers: A case study in Nanjing, China. *Waste Management & Research, 36*(9), 767-778. https://doi.org/10.1177/0734242X1876621

D'Alisa, G., Burgalassi, D., Healy, H., Walter, M. (2010). Conflict in Campania: Waste emergency or crisis of democracy. *Ecological Economics, 70*(1), 239-249. https://doi.org/10.1016/j.ecolecon.2010.06.021

De Bercegol, R., & Gowda, S. (2018). A new waste and energy nexus? Rethinking the modernisation of waste services in Delhi. *Urban Studies*, *56*(11), 1-18. https://doi.org/10.1177/00420980187705

Demaria, F., & Schindler, S. (2015). Contesting urban metabolism: Struggles over waste-to-energy in Delhi, India. *Antipode, 48*(2), 293-313. https://doi.org/10.1111/anti.12191

Deriu, M. (2015). Conviviality. In G. D'Alisa, F. Demaria, & G. Kallis (Eds.), *Degrowth: A vocabulary for a new era* (pp. 79-82). Routledge.

Ferrell, J. (2006). *Empire of scrounge: Inside the urban underground of dumpster diving, trash picking and street scavenging.* New York University Press.

Gillespie, T. (2015). Accumulation by urban dispossession: Struggles over urban space in Accra, Ghana. *Transactions of the Institute of British Geographers. 41*(1), 66-77. https://doi.org/10.1111/tran.12105

Harvey, D. (2005). *The new imperialism.* Oxford University Press.

Illich, I. (1973). *Tools for conviviality.* Harper & Row.

Interpol. (2020). *Strategic analysis report: Emerging criminal trends in the global plastic waste market since January 2018.* Interpol General Secretariat. https://www.interpol.int/content/download/15587/file INTERPOL%20Report%20_criminal%20trends-plastic%20waste.pdf

Johnson, O., & Trang, N. (2019). Closing the loop: Innovative partnerships with informal workers to recover plastic waste, in an inclusive circular economy approach. *United Nations ESCAP. https://www.unescap.org/resources/closing-loop-sai-mai-district-bangkok-case-study*

Kallis, G., Demaria, F., & D'Alisa, G. (2015). Introduction. In G. D'Alisa, F. Demaria, & G. Kallis (Eds.), *Degrowth: A vocabulary for a new era* (pp. 1-19). Routledge.

Kaza, S., Yao, L., Bhada-Tata, P., & Van Woerden, F. (2018). *What a waste 2.0: A global snapshot of solid waste management to 2050.* World Bank Group.http://hdl.handle.net/10986/30317

Kokpol, O. (1998). *Urban governance and the environment: Solid-waste management in two municipalities in Thailand.* University of Toronto. https://www.collectionscanada.ca/obj/s4/f2/dsk1/tape11/PQDD_0012/NQ41450.pdf 41187561

Khaosod (1998, September 29). Nạd pị dū 'ṣes̄′ h̄eľk pĕn h̄ùn ynṫ' 'krap̆xng pĕn dxkmî thī̀ ngān dī' [Make an appointment to see 'scrap metal is a robot' 'cans are flowers that do a good job'] [Newspaper]. *Khaosod,* 21. https://www.matichonelibrary.com/news/site/index (No: 41206243).

Khaosod (2003, September 23). Khên cêāk̄hxng sef ḥêāš̄ k̄hạng kæn nả [Force the owner of the safe house to imprison the leader] [Newspaper]. *Khaosod*, 11. https://www.matichonelibrary.com/news/site/index (No: 46497312).

Matichon (1998a, September 6). Wikvt 'k̄hya' În nkhr cheīyngh̄ım̀: 'Thāng tạn' thī̀ s̄ạmphạnṭh̄ t̄hụng pra ṗhạthr phoṭh s̄u ṭhn - wīra mus̄ik phngṣ̄ [The oe verflowing 'waste' crisis in Chiang Mai: the 'dead end' associated with Prapat Phosuthon - Weera Musikaphong] [Newspaper]. *Matichon,* 7. https://www.matichonelibrary.com/news/site/index (No: 41185877).

Matichon (1998b, September 8). P̄hû ẁā‡ cheīyngh̄ım̀ t̄hk kæ̂ k̄hya h̄elw! K̄hù̀ yub s̄p̣hā leụ̄xk the ṣ̄bāl chud h̄ım̀ [The governor of Chiang Mai discusses liquid waste! Threatening to dissolve parliament and choose a new municipality] [Newspaper]. *Matichon,* 23. https://www.matichonelibrary.com/news/site/index (No: 41187561).

Matichon (1998c, September 20). P̄hû ẁā rāchkār cạngh̄wạd cheīyngh̄ım̀ ‘s̄ud thn’ s̄ạ̀ng k̄hn k̄hya p̣hāynı3wạn chāw b̂ān lukḥū̱x k̄hù̀ p̄heā rt̄h [The governor of Chiang Mai province 'extremely patient' ordered the garbage to be transported within 3 days, the villagers rose up and threatened to burn their cars] [Newspaper]. *Matichon,*1, 21. https://www.matichonelibrary.com/news/site/index (No: 41198584).

Matichon (2001a, January 29). ‘Mi ni stor̒’ rạb læk k̄hya meū̱x k̄hxngkèā mī kh̀āthī̀ ‘nkhr cheīyngh̄ım̀’ [‘Mini Store’ accepts waste exchange when antiques are valuable ‘Nakhon Chiang Mai’] [Newspaper]. *Matichon,* 11. https://www.matichonelibrary.com/news/site/index (No: 44033454).

Matichon (2001b, June 16). B̀x k̄hya thả s̄ār tkk̂hāng xū̱x [Garbage ponds leave residue] [Newspaper]. *Matichon,* 19. https://www.matichonelibrary.com/news/site/index (No: 44202017).

Matichon (2002, November 15). “K̄hya”paỵh̄ā thī̀ chumchn t̂xng ṙwmcı kæ̂k̄hị [“Waste” is a problem that the community must come together to solve] [Newspaper]. *Matichon,* 23. https://www.matichonelibrary.com/news/site/index (No: 45403000).

Medina, M. (2000). Scavenger cooperatives in Asia and Latin America. *Resources, Conservation and Recycling. 31*(1), 51-69. https://doi.org/10.1016/S0921-3449(00)00071-9

Medina, M. (2005). Serving the unserved: Informal refuse collection in Mexico. *Waste Management & Research. 23*(5), 390-397. https://doi.org/10.1177/0734242X050576

Medina, M. (2008). The informal recycling sector in developing countries: Organizing waste pickers to enhance their impact. *The World Bank. http://documents.worldbank.org/curated/en/227581468156575228/The-informal-recycling-sector-in-developing-countries-organizing-waste-pickers-to-enhance-their-impact*

Millar, K. (2008). Making trash into treasure: Struggles for autonomy on a Brazilian garbage dump. *Anthropology of Work Review. 29*(2), 25-34. https://doi.org/10.1111/j.1548-1417.2008.00011.x

Millar, K. (2018). *Reclaiming the discarded: Life and labor on Rio’s garbage dump.* Duke University Press.

Phanit, A. (2021, September 8). Yonklxng læa t̀x rxng meū̱x sā lêng buk thwng nyobāy ĥām nả k̄hêā k̄hya phlās̄tik [Toss the drums and haggle When Saleng invaded the policy to prohibit the import of plastic waste] [Newspaper]. *Green News.* https://greennews.agency/?p=25385

Samson, M. (2015). Accumulation by dispossession and the informal economy - Struggles over knowledge, being and waste at a Soweto garbage dump. *Environment and Planning D: Society and Space. 33*(5), 813-830. https://doi.org/10.1177/0263775815600

Samson, M. (2020). Whose frontier is it anyway? Reclaimer "integration" and the battle over Johannesburg's waste-based commodity frontier. *Capitalism, Nature, Socialism*. *31*(4), 60-75. DOI: 10.1080/10455752.2019.1700538.

Schindler, S., Demaria, F., & Pandit, S.B. (2012). Delhi's waste conflict. *Economic and political weekly.* 47(42), 18-21. https://www.jstor.org/stable/41720261

Schmelzer, M., Vetter, A., & Vansintjan, A. (2022). *The future is degrowth: A guide to a world beyond capitalism.* Verso.

Silver, J. (2017). The climate crisis, carbon capital and urbanisation: An urban political ecology of low-carbon restructuring in Mbale. *Environment and Planning A. 49*(7), 1477-1499. https://doi.org/10.1177/0308518X177003