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Illegal Ecologies: From Irregular Mining to the Dumping of E-waste

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Abstract: This article focuses on an inter-disciplinary and mixed-methods study of the critical circuit of minerals from irregular mines to e-waste dumps in Ghana. The move towards green energy and climate smart solutions has resulted in an increasing global demand for the minerals needed for low-carbon technology. This surge has caused a boom in irregular mining activities and trade in the Global South as the needed resources are moved north for inclusion in electronic components and products. Ironically, when depleted, these items often end up back in the same region as where the resources used to produce them were extracted. Shipped and traded as second-hand products they are discarded in e-waste dumps where they are mined once again for their mineral remains.

Green transition is a site of socio-political struggle. Our efforts to achieve sustainable environmental change are challenged by forces that profit from pollutive or exploitative practices. Forest protection is undermined by clandestine logging; the safeguarding of the atmosphere by the smuggling of ozone-depleting substances; and the use of minerals in climate smart solutions by irregular mining activities and the dumping of e-waste as energy storage devises become depleted. The
implementation of positive environmental policies is resisted or counteracted by illegal means, making environmental crime a prime matter of concern for green transition.

Taking a criminological approach to the issue, the Centre for Global Criminology, at the University of Copenhagen, has embarked upon an investigation of some of these lesser known challenges to green transition. More specifically, we are currently researching the irregular mining and movement of minerals in and from Ghana. This entails charting their flow from point of extraction to depletion. More specifically, we are tracking the global movement of minerals from Ghana through supply chains, into production sites, across legal and economic landscapes, and back to the country’s e-waste dumps where they are mined once again for their mineral remains – illuminating in the process a dark and slightly odd case of circular economy.

The perspective is a particularly timely one – and Ghana a particularly illustrative case. Due to growing green-tech demand, minerals such as gold, silver, manganese, bauxite, lithium and rare-earths are increasingly and irregularly mined with grave environmental effect (Uneca 2015; Carvalho 2017; World Bank 2019). Once mined they are traded, incorporated through and into legal structures and used, amongst other things, to produce efficient tech components such as batteries, computer chips etc. What makes the Ghanian case exceptional is that such components are, when depleted, increasingly discarded in the country. Ghana is currently home to some of the world's largest e-waste dumping-grounds, making the critical circuit of minerals, along their full life cycle, add to the initial negative ecological impact. In the current setting this means that the minerals that could be part of the solution, by providing the resources needed for efficient green-tech solutions and energy storage, become part of the problem. Their potentially positive effect is countered by the fact that their exploration is the cause of significant environmental harm by destroying forests and polluting waterways. In other words, if our attempts to minimize climate change results in an increasing demand for various minerals, a boom in irregular mining, and further detrimental dumping of electronic components and devices, then climate change mitigation ironically runs the risk of polluting the environment.

Ghana provides an interesting example of a more general problem. The fact that the Global South delivers the resources needed to sustain the consumption and ‘progress’ of the Global North is obviously old news. The ‘gold coast’, as the area used to be called, was early on a zone of plunder of slaves and minerals. Current developments, however, flaunt not just the systemic extraction, but equally highlights how areas within the Global South has come to constitute ‘zones of waste’. They have become prime points for the hazardous discarding of depleted products and materials. Ghana has, as such, turned into a central node in the global movement of waste currently struggling with unmanageable amounts of second hand clothes, with unsurmountable amounts of used plastic, and – more recently – with increasing quantities of e-waste.

Green Transition and Environmental Harm

Our research focus is thus of urgency in relation to the field of green transition. Environmental crime – defined as illicit acts causing harm to the environment – is currently “the world’s fourth largest crime sector… growing at 2-3 times the pace of the global economy, [w]orth as much as USD 91 billion to USD 258 billion annually [and] depriving countries of future revenues and development opportunities” (Nellemann et al 2016:4). It is, thus, both among the most profitable and destructive kinds of organised crime as well as the most dramatically expanding – a fact which has led leading pundits to term it a significant ‘threat to our future’ (EIA 2008). By highlighting the social, political, and economic forces that fuel environmental crime we seek to generate the knowledge needed to counter a destructive and counterproductive phenomenon (cf. Nellemann et al 2016). We are focussed on doing so by clarifying the constitution and scope of what we term ‘illegal ecologies’, defined as environments shaped by harm and pressures.

1 Ghana is both an importer of e-waste proper as well as a major importer of second-hand electronics. As second-hand electronics can be shipped and imported without adherence to the rules and regulations attached to e-waste the trade in such defunct or depleted electronics provide a bureaucratically ‘lean’ way of getting rid of such waste.
The concept of ‘illegal ecologies’ builds on earlier work within political ecology (Wolf 1972), a perspective further developed in the 1980s with a focus on ecosystem change and the role of political and economic forces (Bryant and Bailey 1997). It follows a tradition that shifts our perspective from a technical, natural-scientific focus on ecosystems to a socio-ecological and political perspective (Blaikie 1985, Escobar 1999). In doing so we apply a cross-disciplinary approach to environmental problems (Robbins 2012), which traces the political constitution of environmental degradation across scale (Rocheleau et al 2013; Bedford et al 2019). Political ecology obviously predates yet resonates with later work on the Anthropocene (Crutzen 2002; 2006), and not least the so-called ‘Capitalocene’ (Harraway 2015). However, the specific idea of illegal ecologies extends political ecology into the field of criminology (Stretesky et al 2013). The theoretical approach thereby adds to ‘green criminology’ (Bernie and South 2013), a sub-field focused on environmental crime, and the roles of corporations and states in the exploitation and degradation of ecosystems (Sollund 2015). It echoes more global-cum-transnational perspectives (White 2013; Spapens et al 2016) as well as ‘southern criminology’ initiatives (Goyes 2019), which have addressed the international, (extra)legal, capitalist, and post-colonial issues involved, thereby granting us a unique capacity to explore the shadowy underbelly of green transition.

**Tracking Illegal Movement**

The Ghanaian case provides a particularly striking example of the linking of the local to the global, the legal to the illegal, and the progressive to the destructive within the current move to green transition. Not only is the country home to a large irregular mining industry –
ranging from small-scale artisanal ‘galamsey’ mining to large-scale irregular mining exploitation (Botchwey et al 2018; Yankson & Gough 2019; Hilson 2019) – it also serves, as said, as the dumping grounds needed to tend to the end-stage of the product life-cycle of electronic components such as, for example, larger energy storage devices. It thus constitutes a fieldsite from where to fathom both the detrimental effects of irregular mining, its social and political dynamics, the larger global circulation of minerals, and the issues related to their depletion (cf. Spabens et al 2016).

However, while both irregular mining, smuggling and dumping are matters of growing local and global concern little is known about the interconnectedness of these. We know that the need for minerals to power the transition to clean energy is estimated to increase up to a 1000% – leading to increasing prices and causing a further rush in irregular exploitation and movements (World Bank 2017). We know that the move toward climate smart solutions is currently hampered not just by a mineral shortage in relation to, for example, the production of batteries and electronic chips, but also that they generate increasing irregular activities to meet the demands and produce increasing amounts of e-waste². Yet we still have little clarity of the illicit extraction and trade of minerals, and the dumping of the resulting e-waste.

The Centre for Global Criminology strives to fill the knowledge lacunae through illuminating the full lifecycle of irregularly extracted raw materials and following the minerals in question as they become entangled in trade, products and waste (cf. Wallerstein 1974, Kopytoff 1986; Marcus 1995; Tsing 2011). Doing so may clarify how the environmental harm that follows from irregular mineral exploitation and illicit dumping is engendered by social, economic, and political dynamics in and beyond their points of extraction (Spabens op. cit.). More specifically, our project traces a critical circuit by ethnographically illuminating the interconnectedness of the above mentioned three key facets, namely the irregular mining of minerals, their transnational trade, and eventual dumping. This unique approach enables us to trace the drivers and practices of such mining activities, to shed light on the grey zones between unlawful exploitation and lawful enterprise (cf. Tijhuis 2006, Richardson and Wezskalnys 2014, Sollund 2016), and to illuminate how the endpoint of such resources, e-waste, is legally traded at one point only to be irregularly smuggled and dumped in another. It thus connects the study of global crime (cf. Edwards & Gill 2004, Sausdal & Vigh 2019), with environmental crime (Situ & Emmens 1999, White 2009a, Sollund 2016) and thereby allows us to clarify what one of the world’s leading green criminologists, Rob White, has termed ‘the eco-global’ manner that such crime critically intersects and impacts green transition (White 2009b, see also Bisschop 2016). The Ghanaian case clarifies thus not just the way that green transition may lead to pollution in the Global South as a result of increasing irregular mining activity, but also how such minerals are illicitly traded both before and after their depletion: Waste, be it plastic, clothes or electronic, is shipped to Ghana through existing flows and via formerly negotiated infrastructures and transactions and dumped in sites such as Dagomba-Line, the Kpone landfill, and the Korle Lagoon, catering to the waste produced by electronics, plastics, and clothes.

Interconnecting Lines of Research

Such an approach involves a journey from local realities along trading routes, production sites, spaces of consumption and back. In this perspective, Ghana is both initium and terminus for the critical circuit described, and the larger exploration of how Ghanaian minerals are irregularly mined, smuggled. It provides a window to a set of emerging challenges to climate change mitigation and green transition. Subsequently, the research trajectory is engaged in illuminating – via long-term fieldwork engagement – how such minerals are extracted in Ghana; how are they traded, moved, and marketed; and how e-waste is traded, shipped and dumped.

Following the movement of raw minerals out of and e-waste into Ghana necessarily entails moving between sites just as both politico-legal and economic perspectives are needed in order

to grasp the dynamics at play. Taken together, the different foci of the subprojects allow for a transnational and cross-disciplinary approach that explores environmental crime from both practical, pecuniary and policy perspectives. Our focus on extraction of minerals in Ghana investigates, thus, how minerals are illegally extracted and how such irregular mining feeds into, or clashes with, local economies and livelihoods and global interests. The focus on trade, looks at the way that irregularly mined minerals are moved and how this is economically and politically negotiated and protected – just as it digs into the manner in which the transition from irregular to regular. While the similar perspective is central to the examination of the dumping of tech-waste and e-waste. It investigates the legal landscapes traversed and the economic flows navigated in which we are hard at work mapping existing accountability structures, rules, regulations and the ways that they are negotiated and sidestepped across different national, international, and transnational settings.

Our project is, in this manner, an itinerant research endeavour that follows the critical circuit in question from mine to e-waste. The combination of in-depth ethnographies, a transnational focus, and cross-cutting legal and economic analysis enables us to move in informed manner from the specific to the general in its green criminology illumination. Connecting social realities and concrete practices (ethnography) with market developments and interests (economy) and legal and policy developments (law) makes it possible to grasp a dimension of green transition that remains relatively unknown, yet which constitutes a grave matter of concern in relation to viable climate solutions. On a policy level, this may subsequently generate a knowledge base from where to secure viable solutions in mineral extraction and inclusion into green tech by strengthening regulatory policies and practices in cooperation with stake holders (ranging from 'the Ghana National Association of Small Scale Miners' to 'the Ghana Chamber of Mines' to 'the International Council of Mining and Metals') and international bodies. In a more social perspective, the focus grasps not only the movement of irregular minerals and its various stage of inclusion into, for example, green-tech products. The ethnographic fieldwork shows how minerals are mined in both their points of extraction and points of depletion, that is, from the mining in open pits to the mining of depleted electronic products and components. Yet such irregular industries mine not just minerals, they mine people. Not only are the people working in the country’s irregular mining sector similar to ones mining e-waste for mineral remains in gendered, generational and socio-economic ways, they equally compare in terms of poor health and low life expectancy.

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