Foreign Investment in African Resources: The Ecological Aspect to Imperialism and Unequal Exchange

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Foreign Investment in African Resources: The Ecological Aspect to Imperialism and Unequal Exchange

A Dissertation

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Abstract

This dissertation examines the issue of foreign investment in African resources from the theoretical perspective of ecological imperialism and ecologically unequal exchange theory (EUE). Pulling from Marxist ecology, critical political ecology, and an environmental reading of Polanyi, this dissertation seeks to theoretically deepen and clarify the concept of 'ecological imperialism.' It posits that the wave of neoliberal policies that swept through the developing world in the 1980s can be interpreted as a historically distinct moment of ecological imperialism, a 'counter-countermovement' to the era of economic nationalism that sought to bring developing world resources under state control. Focusing on Africa and a case-study on Tanzania, it examines the extent to which foreign investment regimes since Africa’s colonial era reproduce a neocolonial situation whereby African political economic structures are subjugated for the ‘metabolic’ needs of core economies, in a manner amenable to the ever expanding needs of capital accumulation. It also addresses the relation of ecological imperialism to one of the most currently important theories concerning global environmental inequalities, ecologically unequal exchange theory (EUE). Building on world-systems theory/dependency theory and integrating ecological economics, EUE theory holds that the global economy is characterized by unequal, asymmetrical transfers of ecosystem goods and services from developing to developed economies in a manner that
systematically reproduces global environmental inequalities through the mechanism of international trade and foreign investment. This topic is central to issues of environmental justice and inequality, particularly in regards to North-South relations. In order to contribute to the ongoing empirical research agenda of EUE, the dissertation engages in a standardized empirical model known as an economy-wide material flows account (EW-MFA) for Tanzania over the years 1970-2010. EW-MFAs trace resource flows driven by economic activities and have been used to operationalize the concept of EUE. The dissertation finds that though MFAs have been widely used in EUE literature, they insufficiently capture many forms of environmental degradation that could be categorized as ecologically unequal exchange. This is particularly true for countries like Tanzania whose main exports are high-value, low-weight preciousities, as MFAs measure resource flows in physical weight. In sum, the dissertation argues for a comprehensive, nuanced, and non-reductionist approach to the issue of ecologically unequal exchange, and more broadly, to issues of ecological exploitation and environmental justice, one that examines unequal resource flows but also other potential forms of exploitation that can occur in the political economic and social dimension.
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Chapter 1: Introduction

In the summer of 2010 I had the opportunity of spending several months researching in Bolivia, and it was in this small country where the seeds of my future dissertation originated. At the time I was staying in Cochabamba, a city which only a few months before had hosted the World People’s Conference on Climate Change and the Rights of Mother Earth. This event drew tens of thousands of activists, journalists, policy makers and scholars from around the world to discuss the worsening global ecological crises. The summit aimed to be a ‘Southern’ counter-event to the ‘Northern’ Copenhagen climate summit and the message was distinctly political; the Earth is undergoing an ecological crisis of global and historical proportions, and the solutions posed by world leaders are shamefully inadequate, reflecting the entrenched political and economic interests of the wealthy and powerful.

Up until Cochabamba, however, I had not conceptualized inequality in environmental terms; indeed, I had not thought much about the environmental dimension to international political economy at all. The Earth’s ecosystem goods and services that provide the material basis of the economy- of life itself- are scarcely mentioned against the backdrop of economics and politics in the orthodox political sciences. But as climate change, devastating loss of biodiversity, land degradation, collapse of oceanic stocks, declining resources, among many other alarming signifiers of environmental crisis increase in severity, the social science literature on environmental issues and sustainability has proliferated. Much of the literature remains apolitical, with no
systematic discussion on power and inequality. Yet increasingly topics such as environmental justice, environmental inequality, and ecological debt, have gained traction as it is clear that benefits from the exploitation of the environment, and the burdens from environmental degradation, are distributed unequally across different social groups- and in particular, across different world regions.

This dissertation seeks to contribute to the literature on environment and inequality through focusing on the current inflow of foreign investment in African resources, with a case study on Tanzania, from the theoretical perspective of ecologically unequal exchange theory (EUE) and ecological imperialism. It is a central contention of this dissertation that a discussion of ‘ecological’ exploitation, whether of the Global South by the Global North, or now increasingly of certain developing regions by emerging economies, necessitates the revival of a theory of imperialism, one that can grasp the relationship between the ever expanding drive for capital accumulation and the ever multiplying ecological concerns of today. Because of this, much of the theoretical work of this dissertation is devoted to addressing the question, how we can conceptualize an ecological rendition of imperialism? How can we clarify and deepen a concept of ‘ecological imperialism,’ so that it can be used as an analytical tool that allows us to make sense of the logic of the system? Or more specifically, to grasp the relation between the expanding drive for capital accumulation and the subsumption of peripheral resources?

Relatedly, this dissertation attempts to contextualize neoliberal policies in the framework of ecological imperialism, and offers a critical re-interpretation of the policies that structure our global economic integration from a political ecological perspective. As
such, a central guiding research question is how can a theory of ecological imperialism help us to make sense of the connections between neoliberal policies, capital accumulation, ecology, and exploitation and resistance? In regards to the specific subject matter of this dissertation, how can a theory of ecological imperialism help us to grasp the deeper dynamics and potentially negative consequences of the current inflow of foreign investment in African resources?

Finally, this research looks more closely at other current theories that address Northern exploitation of Southern resources, in particular the important theory of ecologically unequal exchange. Building on world-systems theory/dependency theory and integrating ecological economics, EUE theory posits that the global economy is characterized by unequal, asymmetrical transfers of ecosystem goods and services from developing to developed economies in a manner that systematically reproduces environmental inequalities across different social groups through the mechanism of international trade and foreign investment. This topic is central to issues of environmental justice and inequality, particularly in regards to North-South relations. In regards to ecologically unequal exchange, the central research questions which guided this dissertation were what do we already know about such ‘environmental’ disparities between different regions of the globe? What has been theorized in the extant literature and what has been empirically measured? What are the theoretical as well as practical challenges to empirically measuring ecologically unequal exchange to-date? How would a theory of ecological imperialism complement the research agenda of ecologically unequal exchange, and how does it differ?
Economic integration, technology and the environment: the literature and central debates

One of the major schisms among different socio-environmental schools of thought concerns perceptions of the market system, industrial development and technology. A broad and nuanced debate surrounds these issues originating since at least the 1970s, and this section presents only the key ideological differences with the aim of situating this dissertation within it. Overall, ‘ecological modernization theory’ is a school that theorizes that the economy and environment can reinforce each other positively. Further, ecological modernization theory views industrial development and technological innovation as offering the best solution to the environmental crises of the developing world.

While ecological modernization theory has been used in multiple contexts, certain core characteristics of the theory consistently promulgate this view (Spaargaren, Mol, and Buttel, 2000). First, ecological modernization theory identifies modern science and technology as central institutions that can be used to avoid or mitigate ecological crises. The reasoning behind this assertion is that scientific and technological trajectories, through confrontation with ecological crisis, are able to adapt and reform reflexively. Second, and most salient to the issues of this dissertation, in contrast to theories that propose a direct conflict between the market and the environment, EM theory argues that market dynamics can be conducive to ecological reform.1 Innovators, entrepreneurs, and

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1 The possibility of a green capitalism was first introduced to Ecological Modernization theory by Joseph Huber and has generated major debates. Ecological modernization theory, according to its major theorists, holds a nuanced position regarding capitalism. Mol and Spaargaren argue that in EM theory capitalism is not considered to be essential for environmentally sound production and consumption, but neither is capitalism inherently at odds with sustainability. Rather, capitalism is viewed as constantly changing in relation to environmental concerns. As such, environmentally sound production and consumption is
other economic agents can act as social carriers of ecological restructuring, in addition to state agencies and new social movements. It rejects the argument that there is any fundamental opposition between the market economy and ecology. Rather, EM theorists argue that modern economic institutions and mechanisms can be, and are to an increasing extent, reformed according to the criteria of ecological rationality. Third, while wary of a strong bureaucratic state, ecological modernization theory does maintain that the state can play a vital role in environmental management. Finally, ecological modernization theory argues that social movements are increasingly used to support the ecological reconstruction of modern society (Spaargaren, Mol, and Buttel, 2000).

Along these lines an extended argument has gained much attention within recent years. Theorists from the neoclassical school claim that with industrial/technological development and economic growth, spurred by the development of market relations, nations can become ‘post-consumerist.’ That is, the world’s wealthier nations are ‘dematerializing’ their economies as people become post-consumerist in their consumption pattern, increasingly valuing consumption of services and experiences over material products (Adriaanse et. al, 1997).²

Because of this, wealthier nations are supposedly decoupling economic growth from the use of energy and materials and from waste flows into the environment, reducing the environmental impact of each additional monetary increment of GDP possible. Therefore, the focus should be on redirecting or transforming free market capitalism in a way that less obstructs, and increasingly contributes to, the preservation of society’s sustenance base (Mol and Spaargaren, 2000).

²However, later research has revealed that while several studies have found examples of ‘relative’ delinking for various indicators of materials use, examples of absolute delinking are hard to find. Relative delinking means a reduction in environmental impact in terms of resource consumption or pollution per unit of GDP. Absolute delinking refers to the situation when economic growth continues, but the absolute amount of materials used declines (Fisher-Kowalski and Amann, 2001).
What is needed is not a reduction in economic growth, but to accelerate the trend toward dematerialization and to ensure that the environment is integrated within a more knowledge-driven, innovative economy. This hypothesis is often portrayed in terms of an ‘environmental Kuznet’s curve,’ an inverted U-shaped curve, applicable to advanced capitalist economies, which are said to be decreasing their physical inputs per unit of GDP after having reach a peak in this respect in the mid-to-late twentieth century. The relevance for developing countries, then, is a solution for their own ecological crises born of ‘modernization,’ that is, economic growth, rising incomes and technological advancement.

Also compatible with the above concepts of EM theory and post-consumerism is the contention that increasing economic integration between developed and developing countries is desirable, with environmental benefits arising from an inter-play of economic and technological factors. The basic logic is that with increasing economic integration between developed and developing countries, developing countries will experience higher economic growth and technological spill-over, which will eventually spur ecological modernization. Bhagwati, for example, argues that furthering policies of free trade would stimulate economic growth, leading through a variety of mechanisms to higher environmental standards. For example, the economic growth that would follow from an increase in free trade would allow for an increase in tax revenues, enabling governments to provide more financial resources for environmental protection. These resources could then be used to satisfy the desire for a clean environment, which is supposedly increasing with rising incomes (Bhagwati, 2003). In addition, the institutional capacities to respond to environmental problems in general increase with growth in
income per capita (Dasgupta, Mody, Roy and Wheeler 1999). In general, higher environmental pressures stemming from the expansion of economic activities would be overcompensated by other effects.

Like ecological modernization theory, proponents of free trade emphasize that in the developing countries, rising incomes will reduce the pressures that poverty places on the environment. With continuing development, Southern countries can shift their economic structures away from activities in the resource-intensive primary sectors toward more environmentally benign services. International trade can also foster the transfer of clean technologies. With the implementation of effective environmental policies, economic growth and liberalization of international trade would improve environmental quality. Similar logic is also applied to other policies of economic integration, such as FDI, which is perceived as an important source of technological spill-over (OECD, 2002). In regards to the expansion of market relations and the developed and developing world and the environment, a basic set of premises from the mainstream position can be briefly summarized in the following:

1. A deepening of market relations between the developed and developing world promotes economic growth and technological development. This is amenable to the ecological modernization, since technology and economic systems are dynamic and adaptive to environmental needs. It is also amenable to socio-political institutions that support sustainability and occur with rising incomes.

2. Without such factors, developing countries will most likely remain mired in poverty and resource-intensive economic activities, and will lack the means-

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3See Giljum and Eisenmenger (2004) for a review of the mainstream position on trade and the environment.
economic, technological, and institutional- to adequately address their environmental problems.

3. Environmental losses that may be associated with economic integration and increased exchanges between the developed and developing world are relatively minor or reparable, and can be compensated for with the gains discussed above.

4. Differences in environmental standards, and unequal distributions of environmental burdens, are a reflection of discrete stages of development. All nations, regardless of history or position within the world economy, have the potential to pass through such stages, and global market relations do not pose a fundamental obstruction.

5. Production, consumption patterns, and overall lifestyles in advanced industrial economies are increasingly sustainable and can be generalized at a global level. (And if they are not currently sustainable, they will be so in the future when technological advances and further dematerialization occurs).

The critical perspectives: issues of sustainability and environmental distribution

Ecological modernization and mainstream approaches to environmental crises have been criticized on a number of grounds, including their prescriptive undertones, feasibility and desirability, as well as on empirical grounds. From a theoretical perspective, and in terms of relevance to this dissertation, two primary issues are of particular importance, namely criticisms concerning the problem of scale and

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4For example, Foster has written on the ‘myth of dematerialization.’ The problem with the ‘myth of dematerialization,’ according to Foster, is that increased efficiency in use of physical inputs is nothing new. Increased efficiency has occurred throughout the history of industrial capitalism, but it has also been accompanied by expansion in the scale of the economy, more intensive industrialization, and widening of environmental degradation (Foster, 2002).
sustainability, and the unequal distribution of environmental goods and services between different social groups.

The first criticism- that of scale and sustainability- arises from what ecological economists insist is a fundamental theoretical fallacy in neoclassical environmental and resource economics. In general, the assumption by mainstream economists is that with economic expansion societies can utilize new technologies to conserve scarce resources, as well as to offset any adverse effects that increased economic activity might have on the environment. Growth is a solution rather than cause of environmental problems. Further, environmental problems arise from problems of resource misallocation and the failure of markets to generate appropriate prices for natural resources. The scarcity of natural resources is not an inherently binding constraint, as scarcity of resources should lead to the increase in price and substitution away from scarce resources into other relatively less expensive factor inputs. The idea is that natural capital (renewable and non-renewable) and manmade or reproducible capital are substitutes, so depletion of natural capital should affect their supply price and induce substitution away from natural capital into reproducible capital (Daly and Farley, 2004).

Ecological economists criticize this approach because it treats the economy as if it is a self-contained system, with the planet, resources, animals and people existing as components of the economic system. Neoclassical economics considers the environment, along with the planet’s resources, as a sub-part of the economic system, and ignores that in reality the economy is part of a larger ecosystem, which is the source of natural resources used in the economy and also the sink for wastes produced in it. Inputs such as energy and material resources from broader natural systems, and outputs such as
produced wastes and pollution are known as the ‘material throughput’ of an economy.\textsuperscript{5} Ecological economists maintain that viewing the economy as a sub-part of the larger ecosystem of the Earth, rather than the other way around, is significant. The issue is not solely an issue of allocation, but also the overall scale of the economy. At the global level, as the economy grows bigger and bigger, it reduces the capacity of the Earth’s ecosystem to perform its source and sink functions more and more. There are global limits to economic growth, and once the global economy passes a certain size, the benefits of consuming produced goods and services are outweighed by the costs of environmental degradation and decreasing planetary resources (Daly and Farley, 2004).

Also of importance, ecological economists are skeptical about the notion of substitutability between natural capital and man-made capital, and argue that ecosystem goods and services and manmade goods and services are only complementary, and in many cases, not seamlessly substitutable. Sustainability requires society maintaining intact its natural capital to ensure that future generations have the same production and

\textsuperscript{5} In ecological economics, the economic process is viewed as an entropic process. Applying the First and Second Laws of Thermodynamics, Georgescu-Roegen (1971) argued that the economic process was essentially an entropic process. Through his intellectual heirs, notably Herman Daly, this concept of entropy as underlying economic processes forms a fundamental theoretical pillar of ecological economics. As expressed in a rather metaphorical and general way by Daly and Farley (2004), the First Law of Thermodynamics tells us that we cannot make something from nothing, and hence all human production is based on resources provided by nature. The Second Law, the entropy law, tells us that whatever resources we transform into something useful must disintegrate into something useless, returning in the form of waste to the sustaining system that generated the resource. And, referring to the First Law again, any waste generated by the economy cannot simply disappear but must be accounted for as an integral part of the production process. Thus, EE views the economy as an ordered system for transforming low-entropy raw materials and energy into high-entropy waste and unavailable energy, providing humans with a ‘psychic flux’ of satisfaction in the process. (Daly and Farley, 2004) Importantly, this ‘order’ in our economic system must be maintained by a steady stream of low-entropy matter-energy, and this high quality, useful matter-energy is only a finite fraction of the gross mass of matter-energy of which the Earth is composed. All societies, then, must reproduce themselves through the continuous input of matter and energy and expulsion of waste. Recognition of this process has led scholars to metaphorically apply the term ‘metabolism,’ taken from biology, to describe these societal processes.
consumption possibilities that are available to current generations⁶ (Daly and Farley, 2004).

The second major criticism germane to this dissertation (and often coupled with the first criticism over scale and sustainability), derives from the observation that environmental distributions are highly disproportionate among different social groups-both within nations and between global regions. That is, in a world-system marked by inequities in wealth and power, certain social groups and countries also seem to benefit disproportionately from the use of ecosystem goods and services, while others suffer disproportionately from their depletion and associated waste. Political ecology and Marxist ecology are growing hybrid fields that combine insights from ecological economics with social science approaches to address such issues of inequality and power imbalance. Political ecology is essentially the study of the relationships between political, economic and social factors with environmental issues. It differs from apolitical ecological studies by politicizing environmental issues, seeking to understand the relations of power that generate and maintain unevenly distributed environmental impacts in the global society and between classes.

Like political ecology, Marxist ecologists are fundamentally concerned with unequal relations of power and inequalities in environmental distribution. However, Marxist ecologists situate their arguments within a distinctly Marxian discourse and maintain that there is a fundamental conflict between capitalism and ecology, whereas

⁶ Daly has identified four basic principles that economies could follow to ensure that natural capital is maintained at a sustainable level. These include 1.) The health of ecosystems and their life support services should be maintained, 2.) Renewable resources should be extracted at a rate not more than their rate of regeneration, 3.) Non-renewable resources should be consumed at a rate not more than the rate at which they can be replaced through renewable substitutes, 4.) Waste disposal should be done at a rate not higher than the rate of absorption by the environment (Daly, as quoted in UNCTAD, 2012).
not all political ecologists would self-identify as Marxists. Capitalist economies, Marxist ecologists argue, are geared first and foremost to the growth of profits, and hence to economic growth at virtually any cost. This unending expansion, and the short-time horizon in determining investment, generally means rapid absorption of energy and materials and the dumping of wastes into environment. Inherent to these dynamics are issues of inequality between social classes and globally between the North and the South (Foster, 2002).

**Global environmental distributional issues and ecologically unequal exchange**

Pulling from ecological economics, political ecology, and to some extent Marxist ecology, ecologically unequal exchange (EUE) has emerged as an important approach to conceptualizing the causes and consequences of environmental inequalities at the global level. Ecologically unequal exchange is an explicitly trans-disciplinary research agenda, drawing from a variety of disciplines such as anthropology, sociology, economics, other social sciences and the physical sciences. Situated within a dependency theory/world-systems theory framework, ecologically unequal exchange perceives the expansion of the industrial capitalist system, beginning with the European colonial conquest, as the origin of an international division of labor that has led to the current uneven global distribution of wealth, power, and associated ecological burdens. While EUE pulls from ecological economics in terms of conceptualizing the interaction between the economy and the environment, like in dependency and world-system theories, the global economy is seen as world-system in which economic tasks are geographically distributed across a core and periphery. Core countries are characterized by high development of forces of production,
including high-paid labor, capital-intensive production, and technological advancement. In contrast, peripheral countries are characterized by low level forces of production, including low-paid labor and labor-intensive production such as the export of raw materials. Geographically, the core is constituted by the advanced industrial countries, including Europe, North America, and Japan. Peripheral countries include regional areas such as Africa and Latin America, though specific countries within those regions, such as South Africa, could be considered semi-peripheral. The semi-periphery, according to world-systems theory, exhibits both core and peripheral characteristics, and includes, for example, the newly emerging economies such as the East Asian countries.\(^7\) As of yet, however, EUE has yet to fully develop a theoretical position on the semi-periphery.

\(^7\) I use the terms dependency theory and world-systems theory throughout the dissertation, though they are not the same. While both attribute the lack of development in the Global South to the legacies of colonialism as well as hierarchical international power relations, in world-systems theory there is the theoretical addition of the semi-periphery, which provides a more complex model than the basic core-periphery dichotomy of dependency theory. In WST, the semiperiphery includes countries that have organizational characteristics of both core countries and peripheral regions. The addition of the semiperiphery includes societies that remain dependent, and to some extent underdeveloped, but have achieved notable levels of industrialization, like China, India, or Mexico. Such countries cannot readily be included in the dependency categorization of ‘periphery.’ Further, the addition of the semiperiphery theoretically helps to explain an important mechanism through which the world-system is stabilized. Importantly, WST perceives the semiperiphery as political buffer zone in that while they are exploited, they are also exploiters. Some scholars such as Mittelman (2000) have argued that globalization has rendered the simple categories of core, semiperiphery, and periphery inadequate. This may be particularly true for emerging economies in Asia. Even in terms of Africa, there may indeed be ways in which globalization seems to have blurred the category of ‘periphery.’ Mittelman (2000) argues that “…varied regional divisions of labor are emerging, tethered in different ways to global structures; within each region, subglobal hierarchies have formed, with poles of economic growth, managerial and technological centers and security systems.” (p. 41) Such an insight could apply to Africa, for example, in the growing economic dominance of South Africa. It is no longer the case that solely core or semiperipheral regions exploit solely peripheral regions.

But in other ways the concept of periphery or core still remain important, particularly in regards to Sub-Saharan Africa, much of which could be still classified as ‘peripheral.’ As will be discussed at length in this dissertation, the global power imbalances that leave peripheral regions in a state of economic, technological, political, and even ideological dependency are still very much real, even if globalization is blurring the capacity for us to generalize entire regions as ‘peripheral.’ In sum, globalization may be blurring the strict ‘categories’ of core, semiperiphery, and periphery, as varied regional divisions of labor may be developing, but central concepts from dependency theory can continue to help us conceptualize the inequalities of power that peripheral economies still face.
leading to some analytical confusion in regards to certain empirical study results (to be discussed in further detail below).

Both dependency and world systems theory are extensive research schools in their own right, with a substantial number of scholars having contributed to their research agendas, of which some of the most prominent include Immanuel Wallerstein, Andre Gunder Frank, Samir Amin and Galtung. Further, these schools subsume a number of variants, including Marxist and non-Marxist variations, and have undergone revisions throughout the years. Relevant to EUE, however, are the basic assumptions that due to their historically enforced positions as raw material exporters, peripheral economies continue to face a global economic system characterized by hierarchy and structural disadvantages of dependency and domination. For EUE, such structural disadvantages are implicated in the unequal distribution of global ecological burdens witnessed today. EUE reformulates its own conception of the world-system as characterized by core economies which draw upon peripheral economies as source (of low-entropy resources) and sink (of high-entropy wastes).

Aside from the broad adoption of world systems theory’s concept of core and periphery, however, EUE draws more specifically from (and critically departs from, in the case of some theorists), the original concept of unequal exchange as originally conceived by Arghiri Emmanuel, who argued that wage disparities between different countries generate an “imperialism of trade” in the sense of an unequal exchange of hours of labor. Emmanuel pointed out that low-wage countries have to export more products in exchange for a given volume of imports from high-wage countries than they would need to if wage levels were uniform between all countries, a characteristic of the global
economy which allows for the asymmetrical drain of surplus value from peripheral to core economies. In a somewhat similar sense, ecologically unequal exchange posits an asymmetrical transfer of resources between core and peripheral economies which leads to a systematic deterioration in the ecological situation of peripheral economies (with the associated social and economic losses) to the benefit of core economies (with the associated gains in high standards of consumption, capital accumulation, and technological advance).  

The perpetuation of these uneven ecological burdens is predicated on the capacity of core industrial nations to engage in trade, or other forms of exchange, with peripheral nations that is fundamentally ‘ecologically unequal.’ In the literature, ecologically unequal exchange has been defined by Rice (2009) as 

….the environmentally damaging withdrawal of energy and other natural resource assets from the periphery and the addition or externalization of environmentally damaging production and disposal activities within the periphery of the world system. It constitutes both the obtainment of natural capital or the stocks of natural resources that yield important goods and services and the usurpation of sink-capacity or waste assimilation properties of ecological systems in a manner enlarging the domestic carrying capacity of industrialized countries to the detriment of peripheral societies (p. 221).

Ecologically unequal exchange, then, can be interpreted as an overall asymmetrical transfer of natural resources and sink-capacity (the capacity of the Earth’s ecosystems to absorb waste and pollution) from peripheral to core countries underlying 

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8EUE as interpreted by Hornborg departs from earlier theories of unequal exchange in a number of ways. First, Hornborg argues that that forms of unequal exchange can be identified in metrics not limited to labor, but should include more generally biophysical material flows, time, energy, and so on. Also, Hornborg argues that the concept of unequal exchange must be divorced from theories of value. That is, theories of value which seek to correlate the ‘value’ of labor or energy embodied in a commodity with the actual price of the commodity are analytically untenable, as prices also reflect the normative standpoint of consumers, such as culture and preferences. Thus, while an unequal exchange of labor, time, energy, or resources may underlie an exchange, and if sustained results in the systematic deterioration of the position of one trading partner, the concept of unequal exchange should be kept distinct from normative theories of value which seek to calculate the ‘correct’ price of the commodity exchanged (Hornborg, 2011).
nominally equitable monetary exchanges (Hornborg, 2011). More broadly, Hornborg interprets ecologically unequal exchange as the asymmetrical, net transfer of productive potential by which the productive capacity of one social group is augmented at the expense of another. Productive potential in this sense refers to the ‘productive forces’ of any production process, such as labor or energy, and in the case of EUE specifically, refers to the exergy (available energy) embodied in natural resources. Ecologically unequal exchange is argued to be quantifiable and measurable (Hornborg 2011), though in practice measuring EUE can be problematic for a number of reasons, as will be discussed below.

EUE theory, like ecological economics, also takes issue with the concept that global economic growth, and economic growth of developing countries, can continue indefinitely without substantial redistributions of wealth. In contrast to ecological modernization theory, development and accumulation within a capitalist world system is what Hornborg terms a ‘zero-sum game’ in regards to low-entropy matter and energy (Hornborg, 2001). That is, Earth’s ecosystems good and services, as complementary but non-substitutable with man-made goods, can only provide so much, and over-utilization and consumption by particular social groups deprives other social groups, in the present or in the future. And at this point, there exists considerable evidence that core industrial countries are using more than their share of Earth’s resources. From the vantage point of EUE, the contention that modern industrial capitalism is sustainable, and even more significantly, generalizable to a global level, is impossible.
The dynamics of accumulation, underdevelopment and ecologically unequal exchange

One immediate criticism of EUE has been that there is nothing inherently and normatively unjust with a globally unequal environmental distribution. If, through international trade or other form of exchange such as FDI, developing countries are able to import technology and manufactured goods which they would not be able to develop on their own in exchange for their resources and/or sink capacity, as well as the foreign exchange needed to develop, how would EUE indict the prescriptions of comparative advantage?

Ecological economists have criticized the theory of comparative advantage on sustainability grounds (Daly and Farley, 2004). To begin, this logic presupposes that manmade goods and ecosystem goods and services are fully substitutable. From the angle of production, technological spill-overs associated with exchange can be positive externalities, but assumptions that natural resources can be exchanged un-problematically for the benefits of technological spill-overs or manufactured goods is problematic. Ecological economists criticize the theory of comparative advantage for failing to account for ecological losses and conflating ‘substitutability’ with ‘complementarity’ (Daly and Farley, 2004). Such reasoning becomes increasingly difficult to sustain in a world of increasingly depleted resources and environmental strain. As we move from an empty world to a full world, resources grow scarcer and become a limiting factor of

9 In contrast to the neoclassical model which treats all inputs into the production process—labor, capital, and resources—as the same, ecological economists insist on a qualitative difference. According to ecological economics, labor and capital are ‘transforming agents,’ funds that transform the flow of resources into a flow of product, but which are not embodied physically in the product. Labor and capital are agents of transformation (efficient causes), while resources are that which is being transformed (material causes). Ecological economists argue that while one material resource can be substituted for another, and efficient causes can be substituted for another (capital for labor, and vice versa), the relation of efficient cause to material cause is mainly one of complementarity, not substitutability (Daly and Farley, 2004).
production. For example fish catches, Daly and Farley explain, are no longer limited by the manmade capital of fishing boats, but by remaining natural capital of stocks of fish in the sea and the natural funds that support their existence (Daly and Farley, 2004).

If ecological resources were infinite or fully substitutable, ecologically unequal exchange in itself (abstracted from the global power inequalities in which it is embedded) would not pose a problem for peripheral economies per se. But as ecological economists have argued, the world has already reached levels of overexploitation in regards to a number of important ecosystem goods and services, including rapid depletion of fossil fuels, degradation of agricultural land, increasing scarcity of mineral resources, imminent shortages of freshwater, loss of biodiversity, and excessive accumulation of waste. Increasingly strained global ecosystems undermine neoliberal prescriptions of economic growth as a panacea for the environmental problems of developing countries. Not all countries can be net importers of resources, and not all countries can usurp global sink capacity beyond what would be sustainable within their own national borders.

In addition to the above criticisms made on sustainability grounds, EUE theorists have pointed out that ecologically unequal exchange is structurally linked to the underdevelopment of peripheral economies. In this, certain EUE work echoes the core contentions of dependency theory, attempting to ground EUE in a politico-economic context and demonstrate how EUE- in a capitalist world-economy- is inextricably linked to issues of underdevelopment. A number of points raised by Stephen Bunker are worth consideration. Bunker, in a pioneering work that laid important theoretical foundations for EUE theory, *Underdeveloping the Amazon: Extraction, Unequal Exchange, and the Failure of the Modern State*, discusses how the socio-economic structural differences
between core ‘productive’ economies versus peripheral ‘extractive’ economies, combined
with more or less intractable ecological factors, systematically lead to the increased
development of one and the impoverishment and underdevelopment of the other. The
central assertion of Bunker’s argument is that the flow of matter and energy from
extractive economies (peripheral) to productive economies (core) reduces complexity and
power in the former but increases complexity and power in the latter in the long-term.
This is due to a complicated interaction of socio-economic, political and ecological
factors arising from characteristics inherent in extractive versus productive modes of
production (Bunker, 1985).

According to Bunker, extractive exports are associated with the loss of ‘ecological
values.’ Bunker argues that when natural resources are extracted and exported, the
resource-exporting region loses values that occur in its physical environment. Such
losses can affect various aspects of society, from destroying the environments on which
local populations depend for their own reproduction to depleting the extraction of
commodities for export itself. Important to the dynamic of underdevelopment, while
extractive economies may receive some compensation in the form of foreign exchange or
technological spill-over, the general characteristics of extractive economies tend to set in
motion internal dynamics that obstruct these economies from fully capturing the benefits
and utilizing them for development purposes. Bunker (1985) lists these characteristics as
the following:

10 Now, loss of ecosystem goods and services is becoming recognized as a serious issue even among
orthodox studies. While considerable debate remains over how to place a dollar value on ecosystem
services, or even the desirability of doing so, the World Bank has published reports on the need to account
for losses of natural capital as a loss of national capital (World Bank, 2011).
1. An extremely low ratio of both labor and capital to value, which may allow rapid initial rises in regional incomes, but rapid collapses with depletion of easily accessible resources. This trend may lead to a series of demographic and infrastructural dislocations, and consequently economic disruptions.

2. Little contribution from extractive economies to the labor and infrastructural requirements of subsequent economies. What changes they do bring about in the distribution of the population and within the physical environment serve little purpose when specific resources are depleted or no longer in demand.\(^\text{11}\)

3. Low level of linkages to other economic activities and social organization in the same region.\(^\text{12}\)

4. Tendency to export extractive resources raw or unfinished so that the creation and realization of additional values from processing and industrialization occur in and benefit other economies.

5. Even the limited contribution of extractive exports to regional economies tends to be unstable due to reliance upon fluctuating world demand.

In contrast, the internal dynamics of productive economies are conducive to the technological advancement, economic growth and sophistication of social organization.

\(^\text{11}\) For example, most of the infrastructure developed for extractive export economies is specific to the requirements of resource removal and transport. Obviously, this infrastructure only adds to the eventual depletion of resources, and adds little to the integration of the wider economy (Bunker, 1985).

\(^\text{12}\) For example, extractive enterprises must be located in close proximity to the natural resources they exploit, which may be far removed from existing demographic and economic centers, hindering linkages with the broader society and economy. This trend is not a coincidence either. Bunker has written extensively on ‘diseconomies of space’ that are created from economies of scale. As economies of scale deplete easily accessible resources first, ‘diseconomies of space’ are created in which more distant and less accessible resources must be tapped into (Bunker, 1985 and 2005).
For example, unlike extractive economies, productive economies create linkages between industries and the broader economy and society, which stimulates the accumulation of physical infrastructure, as well new research and technical and social organizational development. Further, productive enterprises typically are located in close proximity to each other. These contrasting internal socio-economic dynamics, inextricably linked to ecological factors, contribute to the conditions that allow for the core’s economic and political dominance within the world system. Overall, what is important about Bunker’s work is his attempt to integrate the politico-economic dynamics of underdevelopment more explicitly with the ecological dimension.

Hornborg, one of the foremost theorists of EUE, conceptualizes accumulation within the world-system as essentially zero-sum, from a perspective which he terms ‘thermodynamic.’ Hornborg (2001 and subsequent work) argues that the industrial metabolism of core economies necessitates the appropriation of peripheral hinterlands’ resources and the usurpation of peripheral sink-capacity. Drawing from Prigogene’s concept of ‘dissipative structures,’ within Hornborg’s conceptualization, societies maintain their internal structure by drawing order (in the form of exergy, or available work) from their environments and expelling disorder (Hornborg, 2001).

For industrialized cities or world systems centers the maintenance of structure and ‘order’ relies on ecologically unequal exchange with peripheral hinterlands, for example post-colonized extractive economies in Africa or Latin America, which are more directly involved in the extraction of exergy from nature. In contrast to the societal metabolism of previous human societies, industrialized societies rely upon limited stocks of low-entropy fuels and metals, which, when used up, remain in the biosphere as pollution and waste
and are not readily absorbed into the natural environment. Because the quantity of limited resources necessary for industrial metabolism, and the sink capacity necessary to absorb the pollution, exceeds the ecological capacity of industrial centers, they must draw upon their peripheral hinterlands. It is this biophysical process that Hornborg refers to as ‘the thermodynamics of imperialism’ (Hornborg, 2001).

That ecologically unequal exchange is a necessary outcome of the industrial mode of production creates a situation which is, to Hornborg, essentially zero-sum, in terms of accumulation and modern industrial technology. In The Power of the Machine: Global Inequalities of Economy, Technology and Environment, and in subsequent work, Hornborg argues for an understanding of modern industrial technology that is at once both counter-intuitive and critical. In contrast to our modern ‘fetishism’ of technology which views machines as generative and growth producing in-and-of themselves, technology is actually a displacement of time, labor, energy, space, and resources from one social group to another more privileged social group. On a global scale, the metabolic processes of industrial technology are predicated on asymmetrical transfers of both labor and natural resources from peripheral hinterlands to industrial centers. These asymmetrical transfers are dependent upon specific social relations of exchange in which the rates paid for those productive factors allow for resources, capital, and ultimately industrial technology to continuously accumulate in core industrial centers to the detriment of the peripheral hinterlands. In the global economy, Hornborg (2011) posits

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13 Hornborg gives the example of the railways, which have historically saved time (and accessed space) primarily for those who can afford them, but at the expense of labor time and natural space lost for other social groups with less purchasing power. He argues that the productive potential of the fuels and other raw materials is at work in machines, not machines in themselves (Hornborg, 2001).

14 Broadly, this is achieved according to Hornborg through the current structure of production. Value-added accrues at the higher stages of production, and natural resources are paid relatively less than the manufactured goods they are transformed into. This allows capital to accrue in core industrial centers and
low market prices for primary commodities in relation to manufactured goods as the mechanisms by which world centers extract exergy from, and export entropy to, their peripheries.\(^{15}\)

Hence, Hornborg argues that while localized accumulation or the discovery of new resources may give the illusion of endless growth, at a global level we must understand asymmetrical transfers of resources/productive potential as occurring within an essentially zero-sum world of finite resources. The really crucial argument Hornborg makes is against the supposed ‘cornucopia’ of technology by positing that industrial technology itself is the outcome of unequal exchanges of resources, labor-time, and space made possible by hierarchical levels of purchasing power found in the global economy.

Ecological Marxists, such as Clark and Foster, have contributed some to the discussion on ecologically unequal exchange, though they more explicitly attempt to connect EUE with processes of capital accumulation and capitalist social relations of production (Clark and Foster, 2009). While other modes of production have resulted in environmental degradation and even ecological collapse, the patterns, global extent, and intensity of environmental degradation witnessed today are resultant of the capitalist mode of production. Specific to the capitalist mode of production is the ceaseless drive for profit, which results in a capitalist system that is expansion-oriented and accumulation

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\(^{15}\) Much of EUE literature, including Hornborg’s work, has utilized the words ‘underpayment’ or ‘undercompensation’ to describe the rates at which raw materials are accessed from the periphery. In email correspondence with Hornborg, there is acknowledgement that these particular words are confusing, as they seem to indicate that there would be in fact a ‘fair’ payment for resources, which is problematic on several grounds. For one, fair pricing of ecosystem services is highly debatable as it implies some form of reductionism of the environment to a dollar price, and in fact this issue is one of the primary debates of ecological economics. For another, in Hornborg’s view at least, EUE must be disentangled from normative theories of value which seek to posit the ‘correct’ pricing of commodities.
driven. This drive for capital accumulation pushes the system to impose a ‘totalizing’ framework of control, overcoming political, social, and natural boundaries, whereby everything must prove its productive viability and profitability. In this process, nature, formerly both a use-value and a public wealth, is privatized, transformed into an exchange value, and used to expand private riches, while the negative externalities of pollution are generally absorbed by society at large (Foster, 2002). At the global level, as EUE theorists point out, asymmetrical power dynamics initiated during colonization continue to allow the privatization and usurpation of the periphery’s natural resources and sink capacity by the core. This usurpation, in which the environment of the periphery is transformed into profit ultimately appropriated by the core nations, is facilitated by ecologically unequal exchange (Clark and Foster, 2009).

**Empirical research and ecologically unequal exchange**

Ecologically unequal exchange is supposedly measurable as biophysical flows of resources. As such, a substantial part of the research agenda is devoted to empirical studies. Included in this dissertation is a case-study of Tanzania utilizing an economy-wide material flows account (EW-MFA) presented in Chapter 5. However, operationalizing EUE has proved complicated and challenging for a number of reasons. One chief issue is that EUE is conceptualized rather broadly as the unequal transfer of ecological resources and sink capacity- a categorization that spans a great range of ecosystem goods and services. Yet obtaining an ‘overall’ picture of whether or not EUE exists often necessitates the use of an aggregate indicator of some sort, which can hide or obscure the nuances of EUE, or may not even pick up on certain forms of EUE in specific...
contexts. Further, while there may be an overall asymmetrical transfer of resources from peripheral regions to core regions, the sociometabolic profiles of individual peripheral countries are greatly varied. That is, an individual peripheral country may export a net amount of certain types of resources, for example, metals, but it may also be a net importer of, say, biomass. How to determine if such a peripheral economy is therefore subjected to ecologically unequal exchange, and by what criteria, is not at all clear.

Chapter 5 discusses these issues in more detail, as they are salient to the Tanzania case study and highlights the difficulties of empirically testing for ecologically unequal exchange.

Ultimately, however, whether or not ecologically unequal exchange exists is an empirical question. Core regions (and semiperipheral regions) either shift their environmental burdens onto peripheral regions in a manner that threatens the sustainability of peripheral environments, or they don’t. As such, despite practical challenges and limitations, through various methodologies a number of scholars have exposed ecologically unequal exchange theory to empirical testing, and a positivist approach makes sense. But it appears that the study of EUE necessitates numerous individual studies to contribute to a larger, composite picture, from which a more complete understanding of EUE at the global level can be derived.

I roughly classify works-to-date as the following: a.) studies concerning the overall patterns of asymmetrical transfers underlying exchanges between core and peripheral economies concerning both withdrawals and additions, b.) studies of specific politico-economic factors and their connections to EUE, and c.) studies of the implications of EUE.
Asymmetrical transfers of resources

At the Institute of Social Ecology in Vienna scholars working on the concept of ‘societal metabolism’ have noted that globally certain regions tend to be net importers of resources while certain regions tend to be net exporters. Some have contended that the study of societal metabolism can be utilized for the study of EUE, and synthesized with world-systems theory (Singh, 2010; Eisenmber and Giljum, 2007). The basic intent behind the study of societal metabolism is to understand the links between the material and energy flows a society uses for its reproduction and maintenance, and its social organization. Material and Energy Flows accounting (MEFA) are accounting frameworks that quantify the concept of societal metabolism. In terms of EUE, material flows accounting in particular has been one primary methodology used for assessing asymmetrical flows of energy and materials from periphery to core. From MFAs Physical Trade Balances (PTB) can be derived, which express whether resource imports from abroad exceed resource exports of a country or world region, and to what extent domestic material consumption is based on domestic resource extraction or on imports from abroad. The case study on Tanzania in Chapter 5 uses a time-series, economy-wide material flows account (EW-MFA) to operationalize ecologically unequal exchange (EW-MFAs are MFAs conducted at the national level), and discusses the strengths and weaknesses of this approach.

Empirical work using national MFAs at both the regional and national level have generally corroborated the central tenet of EUE theory that peripheral countries act as ‘source’ for the metabolic needs of core industrialized countries (Roberts and Parks,
2007). For example, a comprehensive study employing MFA in an examination of the EU-15 region concluded that the EU runs a substantial trade deficit in physical terms (PTB) with all other major world regions, while maintaining balanced external trade relations in monetary terms. Primarily owing to the import of fossil fuels, semi-manufactured products, and abiotic materials, the EU imports, in physical terms, more than four time what it exports. Yet, the EU-15 exports have a money value of 4 times that of imports. Even more striking is with regard to trade relations with Southern regions such as Africa and Latin America. One ton of EU exports embody a money value 10 times higher than one ton of EU imports (Giljum and Eisenmenger, 2004).

Overall, researchers employing an MFA methodology have consistently illustrated that bulk natural resource exports predominantly move from the periphery to industrialized countries,\(^\text{16}\) which some argue provides empirical evidence that the periphery generally serves as a resource-tap for more dominant industrialized countries (Hornborg, 2011). Also utilizing indicators from MFA, a recent UNEP report on decoupling (UNEP, 2011) reiterated the significance of international trade in redistributing resources across the globe in a manner that allows some countries to export resources and other countries to be supplied with primary products for manufacture and consumption (both domestic and abroad). The report looked at a wide variety of countries globally, and found that industrialized countries tend to be net material

importers, while developing countries serve as net exporters. European countries, the US and Japan are the most important net importers of resources in the world economy.

In recent years, however, a new pattern is also becoming apparent- several emerging economies, particularly Asia (such as China, India, and South Korea) have now also become net importers, augmenting domestic resource use with resources imported from abroad. This seems to corroborate the theory that as countries transition to industrialization, resources from within national boundaries become insufficient for production and consumption demands. In contrast, important net exporters of material resources in 2005 were Russia, Kazakhstan, Indonesia, Saudi Arabia, Iran, Brazil, Argentina, and Venezuela. In some countries that specialized in natural resource exports, such as Peru and Chile, domestic material extraction grew faster than GDP, resulting in a rising material intensity of these economies. However, some industrial countries are among the group of net exporting countries, in particular Australia and Canada. Further, it is important to note that other researchers (Singh and Eisenmenger, 2010) have found that other important intervening variables, such as population size in large countries such as China, can the mitigate the standard core/periphery trend, suggesting a need for a more nuanced model of EUE.17

Concerning asymmetrical additions of waste and pollution to the periphery, Frey (1995) has documented the transnational movement of hazardous products, waste, and manufacturing production processes from industrialized countries to the periphery. Frey

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17 Their work also suggests problems which can arise with using nations as the primary unit of analysis. Certain large population countries in the global South, due to population size alone, are forced to be net importers of raw materials. However, the per capita resource usage remains significantly lower than in the per capita usage in core industrial countries, underscoring inequalities in resource consumption across core, semi-periphery, and periphery as the original EUE model suggests. From a theoretical perspective, however, this important issue has not yet been resolved.
also argues that TNCs appropriate the ecological carrying capacity for and displace the risks from the industrialized countries through such transfers to the periphery. In addition, Muradian and others (2002) illustrate that embodied air pollution emissions in trade between Japan and Western Europe and their developing country trade partners are increasingly unbalanced to the detriment of the latter over the period 1976-94. That is, Japan and Western Europe illustrate improving ‘environmental terms of trade’ with peripheral countries as embodied air pollution in imports exceeds that incorporated into exports.

The potential trend that core industrial states may be offshoring the production of their energy-intensive products to developing countries is not the only issue. There are the stark inequalities in responsibility for greenhouse gas emissions which equates to the pollution of a global environmental commons (or usurpation of sink capacity). The US is responsible for over 20 percent of all global emissions, which can be compared to 136 developing countries that together are only responsible for 24 percent of global emissions- the term climate justice is increasingly used to characterize the disparities of responsibility and impact (Roberts and Parks, 2009).

*Politico-economic factors and EUE*

A number of studies have examined specific politico-economic issues within the context of the theory of ecologically unequal exchange, such as deteriorating terms of trade for primary commodities and the impact of foreign debt on the environment. Concerning deteriorating terms of trade for primary commodities, Muradian and Martinez-Alier (2001) find that falling prices correlate with large export drives for
primary products, and of the eighteen natural resource exports from developing countries they examine, all but two had their prices fall between the 1970s and 1990s, yet fourteen of the exports increased dramatically in volume over the same period in physical terms. From a monetary perspective, the movement of natural resources from the periphery to the industrialized countries frequently appears to be decreasing but in physical terms there is often evidence of an increasing volume of trade.

Case studies have also found that the Physical Trade Balance (imports minus exports) deficit of individual countries has increased as terms of trade for primary commodities has deteriorated. Vallego (2010) finds that in the Ecuadorian economy there is a structural trend towards decreasing terms of trade, which is verified by the increasing gap observed between import and export price between 1970 and 2007, and this has been accompanied by an increasing PTB deficit. Such trends, Vallego finds, pushes countries like Ecuador towards irreversible exhaustion of their environment, as even renewable resources are exploited at excessive rates. Ecuador’s deforestation rate, for example, is one of the highest in Latin America (Vallejo, 2010).

A study on the Colombian economy by Perez-Rincon found, again, a growing deficit in Colombia’s PTB accompanied by a deterioration of terms of trade. Like other Latin American countries, this trend has been accompanied with large scale environmental loss precipitated through mining activities, oil extraction, and cash crops agricultural production. Tellingly, eighty-five percent of the total tonnage exported by Colombia is directed at satisfying the material and energy of high-income Northern countries (Perez-Rincon, 2006). More recently, a study by conducted on the Argentinean economy using a MFA, conducted for the period 1970-2009, showed that Argentina
follows a resource-intensive and export-oriented development model with a persistent physical trade deficit. Also, Argentina’s terms of trade (the average weight in tons of imports that can be purchased through the sale of 1 ton of exports) show a declining trend in the period of study. The authors argue that comparisons between Argentina’s metabolic profile and the metabolic profile of other countries in Latin America and of Australia and Spain show that the Argentinean economy presents the same pattern as other Latin American exporting economies, and its terms of trade are opposite to those of industrialized economies (Manrique, Brun, Martínez, Walter, and Martínez-Alier, 2013). This trend, also corroborated by Vallejo, is not necessarily surprising, as terms of trade decreases, more has to be exported physically since the demand curve for export is normally downward sloping. With the price of imports relatively increasing, less can be imported for a certain amount of export.

Aside from the factor of falling prices of primary commodities, the impact of foreign debt has also been examined. Using a cross-national model for sixty-two poor nations, from 1990 to 2005, Shandra and others (2008) finds that foreign debt and structural adjustment increase deforestation. Both factors seem to push peripheral nations to increase export earnings in order to finance interest and principal payments (Shandra, Shor, Maynard, and London, 2008). The above are some examples of empirical research concerning EUE, or ecological distributional issues.

While far from an exhaustive empirical literature review, such studies underscore disparities in resource use across global regions, transfers of resources from periphery to core in terms of weight, as well as the ecological losses associated with economic
policies that are unaccounted for when exchange is measured solely in monetary terms. However, there is a major theoretical issue that I argue needs to be resolved in order to sharpen and continue the empirical research agenda of EUE. I would argue the increasing trend for emerging economies to become net importers points to the need for EUE to incorporate, at minimum, the semi-periphery conceptually within its theoretical model. This is really quite important, as semi-peripheral countries do not occupy the same position as either core or periphery within the international division of labor. An even more accurate model of EUE would necessitate the addition of nuances beyond the core, semiperiphery, and periphery categorizations; it would start first by building upon the newest studies of how the current international division of labor actually manifests under globalization, and then seek to understand how environmental inequities are distributed as they are associated with the specific economic activities of each country/region. As it stands, EUE is building upon an a priori categorization of core/periphery or developed/developing, a simplistic dichotomy that has been consistently challenged by studies of globalization (Mittelmen, 2000). This can easily lead to confusion in the interpretation of empirical results. A more complex model of the international division of labor does not mean that inequalities or power differentials do not exist any longer under globalization, obviously, but it means that even within peripheral regions hierarchies and differentiation of economic activities are beginning to emerge, and a finer grained analysis is necessary. Unfortunately, this large task is beyond the scope of this dissertation but remains perhaps the largest unresolved theoretical issue in EUE.
Concerning the topic of this dissertation, EUE in Africa and foreign investment, overall as a region Africa is a net exporter of resources to the rest of the world, particularly in terms of fossil fuels, metals and minerals (UNCTAD, 2012). However, counter-intuitively according to the results of the EW-MFA in Chapter 5, the results of this dissertation indicate Tanzania is a net importer of resources across all material categories, and this trend appears to be increasing, and not decreasing, with increased economic integration. Tanzania, from the standpoint of political economy, is a typical extractive and peripheral economy, with foreign control over the major extractive industries and a highly liberalized foreign investment regime, a situation some in Tanzania have criticized as neo-colonial. The results from the EW-MFA for Tanzania, in terms of apparent lack of EUE but an arguably neo-colonial situation in regards to its political economy and exploitation of resources, point towards the need for conceptual clarity on a number of issues that are at the heart of this dissertation.

Towards a theory of ecological imperialism

Ecologically unequal exchange offers a novel and vital theoretical framework for conceptualizing the ecological dimension to accumulation, global inequality, and structural biases in the world-system, even as ecological economics give us analytical tools to understand why these issues matter. This dissertation builds upon these critical perspectives, but it seeks to ground them in concrete historical, political-economic conditions, in particular the subject matter of foreign investment in African resources. This is necessary for a further understanding of the relations and processes through which ecologically unequal exchange occurs.
To the extent that the world-system is characterized by ecologically unequal exchange, it occurs within a global economy shaped by the demands of industrial capitalism, within the specifically capitalist mode of production, with definite social relations of production, and a historically distinct class that derives both its wealth and power from the accumulation of capital. Obviously, forms of resource transfer and usurpation most likely occurred under different modes of production. But in a global economy where the capitalist mode of production is dominant, the primary mechanisms through which EUE can occur - international trade and foreign investment - are ultimately the primary mechanisms of capitalist global economic integration and are conditioned by the demands of capital accumulation.

For example in terms of foreign investment, the focus of this dissertation, it is capital (generally from ‘core’ industrial centers but also increasingly from ‘semi-peripheral’ or emerging economies) that directly appropriates peripheral resources, conditioned by the drive for capital accumulation. Further, as this dissertation goes to some length to explicate, the appropriation of peripheral resources by first or emerging world capital demands an amenable political economic context, both in terms of global economic policy and within the peripheral country. One might therefore conceptualize ecological imperialism as, broadly, the subjugation of the economic, political, and/or social institutions of a (generally peripheral) country for the biophysical, metabolic needs of the (generally core or semi-periphery), and inextricable from the purpose of making such resources accessible and amenable (in the right quantities and for the right price) to the needs of capital accumulation.18

18 Previous theorists of imperialism do discuss the need to secure raw materials for capitalist production as an imperial drive. In particular, the works of Magdoff, who has written considerably on imperialism
Clark and Foster (2009) appear to be the first to coin the term ecological imperialism in their work on the guano trade during the colonial era and ecologically unequal exchange, but do not specifically define it. The following briefly summarizes some of the essential characteristics of ecological imperialism as conceived in this dissertation, though the chapters go into the necessary depth and explanation. The characteristics pointed out here are but a preliminary step towards a fuller theory of ecological imperialism, and much works remains to be done on this complex topic that is outside the scope of this dissertation. However, the following should help to conceptually clarify ecological imperialism, and distinguish it from other forms of imperialism, as well as closely related topics such as ecologically unequal exchange.

1.) Ecological imperialism defined, broadly, as the subjugation of the economic, political, and/or social institutions of a (generally peripheral) country for the biophysical, metabolic needs of the (generally core or semi-periphery), and inextricable from the purpose of making such resources accessible and amenable (in the right quantities and for the right price) to the needs of capital accumulation.

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related to resources, ties the imperial search for resources to the mechanization of industry and rise of industrial and financial firms. Essentially, Magdoff argues that shifts in technology during the final 30 years of the 19th century required large amounts of capital and large production units, pushing the imperial powers to secure overseas resources (Magdoff, 2003). Yet as Foster and Clark (2009) note, previous theories of imperialism tend to analyze imperialism in terms of its effects on the flows of economic surplus, rather than in terms of ecological damage wrought by the robbing of Third World countries of their resources and the destruction of their environments.

19 I use ‘generally’ here because outside the realm of theory numerous exceptions and variations always exist. It is possible that ecological imperialism may occur between two peripheral countries, for example, and increasingly it is occurring between semi-peripheral and peripheral countries. Again, even finer distinctions could be made within regional hierarchies; for example, South Africa has been accused by certain scholars as being a ‘subimperial’ force within Sub-Saharan Africa. However fine the distinctions we make power differentials remain in the global economy. It would be rare, for example, for a peripheral country in the current world system to have the economic or political power to subjugate the economic or political institutions of a core country in order to attain its metabolic needs.
2.) Concerning the inner logic of ecological imperialism in the world-system, ecological imperialism as rooted in the expansionary tendency of capital, driven fundamentally by the endless drive for capital accumulation. Chapter 2 discusses the varied dynamics, contradictions, and specificities of the capital/nature relations that push capital to continuously subsume peripheral resources for the processes of capital accumulation.

3.) Ecological imperialism as occurring under capitalist relations of production, with classes broadly separable into the owners of the means of production and direct producers within core countries, and elites and non-elites within peripheral countries. Though consumers within core countries may benefit in terms of consumption from EUE, as pointed out, it is core or semi-peripheral capital that is directly involved in the extraction of peripheral resources, the accruing profits, and direct negotiations with peripheral elites. Chapter 4 discusses this issue in the Tanzanian case study.

4.) Ecological imperialism as necessitating amenable political-economic contexts within the periphery. Within the periphery, this entails an ongoing process of ‘continuing primitive accumulation,’ whereby peripheral resources are privatized,

20 The work of Frank and Baran discusses a “comprador class,” that is, the elites in a peripheral country whose interests and profits are closely intertwined with their capitalist class counterparts in the developed or metropolitan countries. For both Baran and Frank, the peripheral bourgeoisie was parasitic in nature. Likewise, Galtung (1971) identified a peripheral elite whose interests overlap with the interests of the capitalist class from core economies. For all three theorists, the interests of the peripheral bourgeoisie conflicted with the interests of workers and peasants of the periphery. The basic idea of such dependency theorists/theorists of imperialism is that peripheral elites are an important mechanism through which the exploitation of the periphery is perpetuated, and it is in this sense that I use the term ‘elite’ in this dissertation, and not as used in ‘elite theory.’ ‘Elite theory’, especially by Mosca and Pareto, is quite different than Marxist class analysis. Mosca and Pareto believed that in every country there is a small group of elites that hold power through some sort of individual superiority - intellectual, psychological, or some other quality. Nor did Pareto see any normative problem with social inequality. Further, while Marxism acknowledges potential conflict among multiple classes, Mosca and Pareto and their followers posit opposition between elites and the masses.
made accessible in the right quantity and at the right price for capital accumulation. Chapter 2 discusses the concept of ‘continuing primitive accumulation’ in regards to ecological imperialism, as well as neoliberal economic policies regarding FDI. Chapters 3 and 4 discuss continuing primitive accumulation in regards to Africa at large and Tanzania specifically.

5.) Ecological imperialism as hinging upon dynamics of unequal power and dependency within a hierarchical international division of labor in the world-system, as a historical result of colonialism and uneven development. Unequal power can mean economic, political, military, ideological, and so on, and can manifest in large variety of ways, for example direct policies (such as FDI regimes in Africa as will be discussed), structural economic characteristics (example, VA tends to congregate in core, not periphery), or even through more indirect channels of dependency, such as peripheral dependence on technology and conceptions of development. Chapters 3 and 4 deal with dynamics of unequal power in terms of FDI in Africa and as a case study, Tanzania.

6.) In terms of resource transfer, ecological imperialism as occurring through two primary mechanisms- international trade and foreign investment (though illegal activities such as smuggling can occur, and under colonialism, transfer occurred through direct occupation of land/resources). It cannot really be called imperialism if hypothetical country A decides to give hypothetical country B resources in solidarity, for example, even if such a transfer results in EUE.21

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21 In terms of ecological imperialism and sink capacity, usurpation of peripheral sink capacity can occur through international trade and foreign investment. For example, environmental regulations concerning mining can be re-written under foreign investment regimes. However, ecological imperialism can also
7.) Ecological imperialism as resulting in some sort of negative socio-ecological impacts for the peripheral country. Ecologically, for example, this could be in terms of the draining of resources and/or the degradation of sink capacity, socially, for example, this could include dispossession of land or resources, or health issues related to pollution. For the draining of resources, this includes the draining of non-renewables, or the use of renewables in an unsustainable manner. On the sink side, ecological imperialism can result in degradation of sink capacity, pollution, waste, and so on. Overall, ecological imperialism allows for displacement of environmental burdens outside of core/semi-peripheral national borders.

8.) Ecological imperialism as historically contingent, mutable, and unfolding dialectically according to a number of factors, including: a.) resistances within the periphery, such as internal, domestic class conflict or anti-imperial struggles; Chapters 3 and 4 discuss this in depth, b.) changes in the metabolic needs of imperialist nations- whether due to technological changes, geopolitical considerations (example competitive capital in Africa), ecological considerations, and so on. Chapter 2 discusses this dynamic in more detail.

In addition, as Bunker had initiated in his work on unequal exchange and the Amazon, there exists a structural tendency for extractive economies to be plagued with underdevelopment. Similarly, one could generalize that ecological imperialism has a tendency to produce certain internal socio-political characteristics within the peripheral
country, as certain socio-political characteristics are conducive to the operation of ecological imperialism. Such characteristics can be thought of as ‘internal supportive structures’ to ecological imperialism, and often result in a mal-developed state plagued by high levels of inequality and social conflict over resources. Chapter 4 discusses such characteristics in regards to Tanzania. Such features include:

1. Lack of democratic control over resources, instead resources tend to be controlled by a peripheral elite, either a bureaucratic elite associated with political power, domestic elites associated with capital, or some combination thereof.

2. Elite/foreign investment collusions and overlap of interests.

3. Conflict of interests with the non-elite peripheral citizenry.

4. Social conflict arising from conflict of interests between elites and non-elites.

Though ecological imperialism has a tendency to produce these characteristics, hypothetically speaking, it could still exist even for a state where democratic control of resources and equal distribution of gains from resources existed. This would be the case if the peripheral country remained operating in a global economic system where global economic policies placed the peripheral economy at a structural disadvantage.

In terms of internal economic characteristics that ecological imperialism has tendency to produce, Bunker’s concept of discontinuous economies, with the issues identified by Bunker as listed above, remain an important road map, and will not be repeated here. In the case of FDI more specifically, ecological imperialism has a tendency to produce skewed economic policies that disproportionately favor investors. Again, Chapters 2, 3 and 4 go into the necessary depth for further explanation of these core features of ecological imperialism.
Ecological imperialism and its relation to ecologically unequal exchange

Constructing a theory of ecological imperialism sheds light on the political economy that ecologically unequal exchange is embedded in, and can potentially clarify the relationship of EUE to the issue of imperialism. In terms of the relationship of ecologically unequal exchange to ecological imperialism the issue is not always clear in the literature, and a counter-intuitive finding of this dissertation is that while ecological imperialism and ecologically unequal exchange may be related and mutually reinforcing in many cases, they should be kept analytically distinct as they are not actually synonymous.

The above empirical studies suggest that the world-system is characterized by overall asymmetrical transfer of resources from periphery to core or semi-periphery, with unequal environmental distributions globally. This has been linked to the overall structure of international trade, and international trade is, in the EUE literature, most often mentioned as the central mechanism through which EUE occurs. Given that the current structure of international trade has its origins in the subjugation of peripheral countries during the colonial period, EUE can be conceptualized as an overall historical consequence of ecological imperialism. As such, the study of ecological imperialism is essential to understanding the political economy of ecologically unequal exchange.

However, not every typically peripheral, extractive economy always exhibit EUE, though it may be subject to ecological imperialism. As will be discussed in some detail in Chapter 5, this was the case for Tanzania, which proved to be something of an anomaly in contrast to the general biophysical trend of the African continent in terms of EUE. Likewise, a country may be experiencing EUE, but not experiencing the same
socio-economic-political aspects of ecological imperialism. Hypothetically speaking, a country could export fossil fuels, but under nationalized conditions, whereby profits are used for development purposes. This country would be qualitatively different from another country where fossil fuel profits are all controlled by MNCs with highly liberalized FDI regimes. However, both countries would share the concerns raised by EUE and ecological economics, that is, the draining of non-renewable resources in a world-system where production and consumption standards in core countries appear to necessitate EUE.

In any case, nuanced analysis on a case-to-case basis that does not conflate EUE and ecological imperialism while also seeking to investigate the relation between them is important. This is especially important for empirical studies of EUE where indicators are used to quantitatively measure environmental distributional inequalities, and track resource flows, ecological footprints, embodied pollution, and so on in order to investigate the trend of core regions shifting environmental burdens onto peripheral regions. Tracking biophysical flows does not capture unequal dynamics of power per se, though it can demonstrate the environmental effects of such unequal power. For example, Africa has become a net importer of food and agricultural products. Studies have argued that this is a result of population growth, low and stagnating agricultural productivity, policy distortions, weak institutions and poor infrastructure. For poor African countries, this has meant difficulties in paying for their food imports (Rakotoarisoa and Iafrate, 2011). The import of foodstuffs in Africa does not indicate a position of power in this case; it indicates a position of vulnerability given issues of poverty and malnutrition. Though both EUE and ecological imperialism are
fundamentally concerned with issues of inequality and power imbalance in hierarchical
world-system, unequal power imbalances are often only apparent through the analysis of
economic policy, history, political configurations, directional flow of profits, among
many other factors.

The chapters and methodology

Pulling from Marxist ecology, critical political ecology, and an environmental
interpretation of Polanyi, Chapter 2 provides the theoretical foundation for this
dissertation. It discusses the fundamental contradiction and tensions between the endless
drive for capital accumulation and nature, and the dynamics of crises and expansion that
underlie ecological imperialism and the subsumption of peripheral resources. It also
contextualizes neoliberal policies that affect the periphery as a historically distinct
moment of ecological imperialism. Chapter 3 provides a critical political ecological
perspective on the era of economic nationalism in the Third World, and the subsequent
era of neoliberalism. It historically traces the ideological basis and economic policies
behind Third World attempts to achieve economic independence and sovereignty over
their own resources, and how these attempts were met with a neoliberal ‘counter-
countermovement’ following the debt crisis of the developing world.

Chapters 4 and 5 focus on a case study of Tanzania, and are based upon a six-
month field research period. Chapter 4 examines the political economy of the mining and
land sectors of Tanzania in regards to FDI, addressing the concerns of ecological
imperialism as conceptualized and explored in earlier chapters. Chapter 5 returns to the
issue of ecologically unequal exchange, and provides the results and analysis of an
economy-wide material flows account (EW-MFA) for Tanzania. In Chapter 5, I pose a rather straight-forward research question: how has increased economic integration throughout the neoliberal years affected Tanzania’s metabolic profile? Specifically, has increased economic integration, especially foreign investment, resulted in ecologically unequal exchange, and if so, what are the effects over time from 1970-2010? The results of the EW-MFA are counter-intuitive, and invoke a discussion on the limitations of the use of EW-MFAs in measuring EUE in Chapter 5, particularly for countries like Tanzania whose main export is in preciousities.

The primary (and official) goal of the in-country research was to gather national level data for the EW-MFA. This entailed gathering data from the Tanzanian National Bureau of Statistics, the Ministry of Energy and Minerals, the Tanzanian Petroleum Development Corporation, and numerous conversations with statistics officials to clarify issues of data. All data gathering occurred in the main city of Dar es Salaam, and was eventually combined with international sources as indicated in Appendix III. Chapter 5 provides an overview of the structure, methodology and theory behind the EW-MFA, along with results and discussion.

Though my primary research in Tanzania was limited to data gathering for the EW-MFA, I also had the opportunity to gather a number of secondary resources on foreign investment in Tanzania’s mining sector and land. These included newspaper

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22 National data can often diverge considerably from data available from international sources, and during my several month visit to the Institute of Social Ecology Vienna for the purposes of learning the EW-MFA, I was encouraged to examine possible discrepancies between different sources. In Tanzania’s case, however, the discrepancies were surprisingly not very large.

23 Living in the main city of Dar was revealing in a number of ways, as the effects of environmental degradation in the rapidly growing city saturated every aspect of daily living in terms of constant pollution, lack of basic infrastructure for sanitation, and urban slums. This reality contrasted sharply with the obvious wealth of elites and expats, who could afford to live in closely guarded compounds on the nicer part of the Dar peninsula.
articles, reports from various NGOs, and academic books, from which I was able to construct Chapter 4. I was also able to engage in a number of informal conversations and ask questions germane to the topic of my research, including perceptions on foreign investment (in particular concerning the conflict surrounding the mining sector and land), the government, rising inequality in Tanzania, environmental problems, and foreign political and economic influence.\textsuperscript{24} Though formal interviews were not possible given the political sensitivity of my research matter and the limitations to my stated research purpose,\textsuperscript{25} it was from such informal interviews that I perceived a general feeling of discontent among Tanzanians; more than once the term ‘neocolonial’ arose to describe the situation with foreign investment, and much anger was expressed at the level of corruption of the political elite who were seen as responsible for making dubious contracts with investors. Though such interviews and discussions were only informal, they gave depth and concrete reality to my research. Observations derived from such discussions are peppered throughout this dissertation.

\textsuperscript{24} Informal interviews included an interviews with an economist at Tanzania’s Policy Research for Development (REPOA), a member of Tanzania Natural Resource Forum (TNRF), a local agricultural development officer from the district of Lushoto, a community development officer in Morogoro, and another community development officer in Iringa, plus a number of ordinary Tanzanians, including secondary school teachers, villagers, taxi drivers, hotel managers, and business owners from the Asian diaspora. Having lived in Tanzania as a Peace Corps volunteer from 2002-2004, many of the contacts with ordinary Tanzanians were former students, old friends and acquaintances, so there already existed a level of trust and openness.

\textsuperscript{25} The grant was a Fulbright-Hays doctoral research dissertation grant. As a US government agency, Fulbright must obviously strive not to offend host countries, and grant proposals are screened for political sensitivity. Further, obtaining research permission from the Tanzanian government is difficult. The process takes many months, and when research is approved, the researcher agrees to only research in restricted areas according to their research proposal. Research that deviates from the stated purpose is illegal. With a stated research purpose of gathering national level data for the EW-MFA, I had to be quite careful in gathering information on conflict surrounding foreign investment, as it is perhaps one of the most political sensitive topics right now.
Chapter 2: Ecological Marxism, Ecological Imperialism, and a Critical Re-Interpretation of Neoliberalism in the Periphery

Introduction

In Chapter 1, I had discussed the major approaches in the extant literature of an issue of increasing salience; global environmental distributional inequalities in a context of global environmental crises. In conjunction with this topic, I had offered my own preliminary sketch of ecological imperialism. This chapter seeks to explore the concept of ecological imperialism in more theoretical depth, as well as its relation to neoliberal policies, pulling from ecological Marxism, Polanyi’s concept of double-movement, and critical political ecology.

During the mid-20th century, a form of developmental state emerged throughout many post-independence countries that adopted various state-centered, interventionist development plans and programs. (Haque, 2008; Leftwitch, 1995; Meyns and Musamba, 2010). But by late the 1970s, state interventionist policies were being increasingly replaced throughout both the developed and developing world by market-oriented principles under the rubric of stabilization, efficiency, productivity, and competitiveness. While neoliberalism has been criticized on a wide variety of grounds, including its impact on the welfare of the working class, relatively little has been written on its relation to the environment (Heynen, 2007). Building on the work of Marxist ecologists, critical
political ecologists, and an environmental reading of Polanyi, this chapter makes a case that this neoliberal\textsuperscript{26} trend is a historically distinct moment in the expansionary tendencies of capital to subsume peripheral resources— that is, as a historically distinct moment of ecological imperialism and part of the most current strategy of accumulation. On the one hand, the neoliberal turn can be interpreted as a ‘counter-countermovement’ against the protective measures post-independence countries constructed, in regards to their natural resources, against the vicissitudes of the international market and in their quest for national sovereignty. On the other hand, the neoliberal turn can be conceptualized as enabling the political-economic context for opening up new environmental vistas of previously uncapitalized nature for integration and regulation by the market.

The first section of the chapter examines the following: first, the fundamental tensions and contradictions arising in the capitalist mode of production between the endless accumulation of capital and the sustainability of nature, second, how these tensions and contradictions generate ecological crises and crises of capital accumulation, third, the role of spatial geographical expansion in attenuating capitalistically produced ecological crises and restoring the conditions for accumulation. Overall, it seeks to probe more deeply into the logic and dynamics of this historical tendency for capital to subsume peripheral resources, or the logic underlying ecological imperialism. The second section of this chapter examines the ‘neoliberalization of nature’ and addresses, first, nature as an

\textsuperscript{26} Neoliberalism in regards to nature, and in regards to specific economic policies, are discussed and defined throughout this chapter and proceeding chapters. However, in certain places neoliberal economic policies are broadly referred to. Khan offers a succinct list for neoliberal (Washington Consensus) policies in the African context, including: privatization (of state-owned enterprises), deregulation (in terms of abolishment of government regulations for firms entering the market, or restrict competition), property rights secured by law, financial liberalization, trade liberalization, removal of restrictions on foreign direct investment, fiscal discipline, and government expenditure priorities whereby economic criteria rather than political criteria determine allocation of expenditures (Khan, 2005).
inherently politicized sphere, second, drawing from an ecological reading of Polanyi, the neoliberalization of nature as a counter-countermovement, third, the neoliberalization of nature as accumulation by dispossesion and as restoring the conditions necessary for capital accumulation. The last section looks more closely at specific neoliberal policies and effects from these central concepts of counter-countermovement and accumulation by dispossesion.

The capital/nature dialectic: contradictions and tensions

In Marxist ecology, characteristics inherent to the capitalist mode of production are argued to conflict with, dominate, contradict, or undermine nature, with deleterious consequences to both the greater environment and human beings. Perceived as fundamentally antagonistic, the capital/nature relation is, alongside the antagonistic labor/capital relation, a principal contradiction. It arises from and is ultimately unresolvable within the capitalist mode of production. This principal contradiction has several primary aspects. First, capitalism as a social relation is defined by the complete social separation of the direct producers from the necessary material conditions of production, starting with the appropriation of land through the process denoted as primitive accumulation. Second, forced to sell their labor-power for wages, these ‘freed’ material conditions and ‘freed’ labor, are recombined in the wage-labor production of commodities in pursuit of the endless accumulation of capital. Hence, in contrast to other

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27 A contradiction, Bertell Ollman wrote in a book on Marxist dialectical thinking, is the incompatible development of different elements within the same relation, which is to say between elements that are also dependent on one another. Whereas non-dialectical thinkers in every discipline are involved in a non-stop search for the outside agitator, Ollman states, dialectical thinkers attribute the main responsibility for all change to the inner contradictions of the system or systems in which it occurs (Ollman, 2003).

28 Excepting labor power, which for Marx was also among the material conditions of production.
modes of production, in the capitalist mode of production the drive for capital, that is the advancement of value in money form in order to produce more value (M-C-M’), dominates production. From the standpoint of capital, as Marx wrote, the natural conditions of production become ‘free gifts’ of nature, to be freely appropriated by capital, providing use-values that capital needs to produce and realize surplus-value. This conversion of nature’s gifts into conditions of surplus value production was and continues to be enabled by the freeing of labor power from the land and other necessary conditions of production, in a mutually bound process (Burkett, 2006).

Thus in the capitalist mode of production labor and nature, freed from previous social constraints, are regulated to being inputs in the production process in the endless drive for capital accumulation. Nature becomes, as neoclassical economists categorize it, natural capital. Marxists have long well-noted the consequences for human development that the deepening of alienation and exploitation of labor has; concerning nature, Marxists ecologists argue that the consequences are no less. From the standpoint of human development, Marx himself had pointed out that the system’s treatment of labor power and natural conditions as separate capital assets appears as a ‘loss of control over our own lives, which necessarily includes our relationship with nature’ (Burkett, 2006). As Polanyi later elaborated, in making land and labor available for sale as commodities, the price of which is to be determined by the self-regulating market for the first time in history, market society had ruptured the articulate whole, which labor, life, land and nature had formed, tied up with the organizations of kinship, neighborhood, craft, and creed, with tribe and temple, village, guild, and church (Polanyi, 1957).
Building on these initial insights, Marxist ecologists have tried to grapple, in one manner or another, with exactly why the conversion of labor and nature into separate capital assets for the purpose of creation of profit is so fundamentally destructive to nature and human development. Marxist ecologists such as Burkett, O’Connor, Foster, and others such as Vandana Shiva point towards the antagonistic relation between capitalism’s reproduction requirements and the sustainable reproduction requirements of labor and natural conditions, considered as ecologically co-evolving entities. Capitalism’s reproduction requirements are autonomous from the sustainable reproduction of labor-power and natural conditions; in other words, for capitalist production, all that matters is that labor-power and material conditions be separately, reliably and widely available in forms that can be combined as commodity production by wage-labor. As such capitalist reproduction does not recognize any limit to the entropy level in its matter-energy environment, and given its drive of endless accumulation has an inherent tendency to overextend the limits of its natural conditions (Burkett, 2006).

In capitalist economies, individual capitals use profits to make more profits, which become self-expanding capital. Quantitatively, capitalist self-expansion has no strict limits per se. Nature, however, does, as it organizes itself on very different principles. Biological and physical systems, hydraulic cycles, heat/energy systems, soil cycles, ecosystem diversity, and so on, are organized without regard to the needs of capitalist reproduction, and the reproduction of such cycles may span millennia. (O’Connor, 1998)

Aside from the antagonistic relation between the requirements of capitalist reproduction and the sustainable reproduction of labor-power and natural conditions,
Foster et al. argue that capitalist social relations of production, that is, the separation of the workers from their means of production, are both cause and condition of a historically distinct and environmentally destructive capitalist geography. Re-formulating Marx’s original concept of metabolic rift, Foster and others argue that capitalism necessitates an epochal shift in the town-country division of labor. Marx had noted that capitalism concentrates population and manufacturing industry in urban centers in a way that prevents the return to the soil of its constituent elements consumed by man in the form of food and clothing; therefore it hinders the operation of the natural condition for the lasting fertility of the soil. The separation of the direct producers from the means of production implied a new geography of wealth and power, whereby all manner of biophysical wealth, including laboring bodies and the cheap food to nourish them, were directed towards urban spaces (Moore 2001, 2003, 2011).

In the transition to capitalism, a metabolic rift appeared as these original sources of wealth were largely produced in agrarian spaces, but increasingly consumed in urban spaces. Without a systemic mechanism to recycle urban-industrial wastes to the countryside, historical capitalism tends to produce nutrient depletion in the countryside, and pollution in the cities, a central dynamic in escalating biophysical exhaustion and pollution. That is, internal to and constitutive of capitalist geography is a metabolic rift - a disruption accentuated by industrial capitalist agriculture that intensifies the robbing of soil of its nutrients and fertility. Burkett, Foster, Clark, and York have generalized the concept of metabolic rift to include a growing list of metabolic rift mechanisms, such as the disposal of non-biodegradable items, biospheric disruptions such as in the ozone, and the problems of climate change (Burkett, 2006; Foster, Clark and York dates here).
Capital, ecology and crisis

O’Connor (1998) was one of the first to link the potential relation between ecological crises and crises in accumulation. O’Connor’s second contradiction of capital theory has been criticized by ecological Marxists (Foster 2002, Burkett 2006) on a number of grounds, as will be discussed. But it remains important nonetheless, not least because its subsequent criticisms can contribute to the theoretical framework of ecological imperialism. I suggest that through incorporating elements of O’Connor’s theory as well as elements of the criticisms against it, together with the work of Marxist ecologist Jason Moore, aspects of the expansionary tendency of capital under ecological imperialism can be construed.

Incorporating the work of Marx and Polanyi, O’Connor (1998) argues that capitalism necessarily undermines the "conditions of production" - which he defines as all services not directly produced by capital, but which capital needs in order to accumulate, including nature, labor, and various forms of infrastructure produced by the state. In Marxist theory, capitalism has a tendency to generate economic crises, and such crises are rooted in antagonistic labor/capital relations. However, O’Connor also argued that capital creates its own limits because of its self-destructive capitalization of external nature. That is, capitalism has a tendency to degrade the external or natural conditions of production. The gist of O’Connor’s argument is that degradation of natural conditions of production generates rising costs for capitalism, leading to a profit squeeze, and

29 In Marxist theory an economic crisis implies the rupture in the money, productive, or commodity circuit of capital, or more generally, a disjuncture or break in the reproduction and accumulation of capital as a whole (O’Connor, 1998). In the endless drive for extraction of surplus value, in the capitalist mode of production the working class must produce more value than they are paid. With the rising rate of surplus value, crises can result from barriers to the realization of surplus value through the sale of goods and services, due to the low purchasing power of the non-capitalist class. This first contradiction represents an economic crisis that manifests itself on the demand side, that is, on the realization of profits.
consequently the ‘second contradiction of capital.’ Like other eco-Marxists argue, O’Connor recognized that under capitalism profits are both the means and ends to economic activity, and as such capitalist self-expansion has no strictly economic limits, though Nature does. O’Connor argued that because capitalism necessitates a constantly expanding economy, the demand for raw materials will grow (everything else being the same). In this case, increases in the demand for resources and expanded resource exploitation raise average costs, tending to depress the rates of profits and accumulation, and potentially generating a crisis.\(^{30}\) Alternatively, cheap raw materials pose the danger of rapid depletion and exhaustion of resources, as when they are comparatively inexpensive, profit rates are relatively high and hence the demand for resources and accumulation will be relatively rapid (O’Connor, 1998).

Overall, the tendency for capital to undermine its natural conditions of production underscores an inner contradiction in the capitalist mode of production that, in turn, potentially creates economic problems. For example, the destruction wrought by climate change, the depletion of easily accessible raw materials for the production process, and so on, may be conceived as capitalistically produced ecological crises as well as capitalistically produced barriers to capital accumulation. In addition, just as a disciplined labor force may act as a barrier to capital accumulation, environmental and other social movements defending natural conditions may also raise costs and make capital less flexible. Hence capital through undermining its conditions of production might raise the

\(^{30}\) To his credit, O’Connor did recognize that individual capitals (alone or combined with other capitals) attempt to overcome bottlenecks by investing in equipment, technology and infrastructure to open up new mineral and fuel deposits, arable land, and so on. Relatively expensive raw materials and energy also create incentives for individual capitals to recycle, to use substitutes or to produce or use a given quantity of materials more efficiently. He also recognized that the latter is arguably the most important way that capital has prevented a general crisis arising from a profits crisis caused by high-cost materials (O’Connor, 1998).
costs of the elements of capital, which, in turn, might bring about an economic crisis of a particular type, an ‘underproduction of capital.’ This form of crises has been central to the work of Marxist ecologists such as O’Connor and Moore in conceptualizing the links between ecological crises and crises of accumulation.

As stated, O’Connor’s model has been criticized on a number of grounds, but in keeping both parts of O’Connor’s argument as well as points brought up by his critics, one can move forward toward an understanding of the ecological dynamics that push capital to expand spatially. First, O’Connor’s contribution recognizes that 1.) capitalism has a tendency to undermine its objective or natural conditions of production, and this is a primary contradiction, 2.) at a certain point, this may threaten capital accumulation through crisis of underproduction, thus we must conceive of certain forms of crises as capitalistically produced, e.g. capitalism has inherent contradictions that act as limitations to its own growth.

But O’Connor’s critics have also raised important points. Foster (2002) criticizes O’Connor, acknowledging that though rising costs from ecological degradation may have some effect on regional developments, in itself the theory of the second contradiction

31 Marx argued that shortages of natural resources can arise from natural conditions external to the production process (e.g. bad harvests arising from forces outside the control of humans). But he also argued that the dynamism of capitalist production itself leads the portion of constant capital that consists of fixed capital to run significantly ahead of the portion consisting of organic raw materials, so that the demand for these raw materials grows more rapidly than their supply, i.e., the overproduction of machinery on the one hand, and the underproduction of raw materials on the other. It was O’Connor, however, who went a step further and argued that capitalistically produced ecological crises can create crises of accumulation.

32 In Marxist ecology, therefore, capitalist crises of accumulation can bear two forms: one arising from the capital-labor antagonism (a first contradiction of overproduction) and the second from a capital-nature contradiction (a second contradiction of underproduction). For O’Connor, these two forms of crises were not mutually exclusive, but could interact and reinforce each other. O’Connor proposed that rising costs issuing from the degradation of the conditions of production has, since the 1970s, set in motion a dynamic that will fetter accumulation from the supply side, reinforcing difficulties the system already faces in the realization of surplus value through the sale of commodities.
cannot account for the stagnation of the world economy since the 1970s. The global ecological crisis threatens humanity but is not, Foster argues, implicated in the ripening of accumulation crisis (Foster, 2002). Burkett (2006) states a similar critique, arguing that Marxists must distinguish clearly between two types of crisis. In the first kind of crisis, capital accumulation itself is threatened by environmental constraints on supplies of its requisite material use-values, for which he gives an example of the 19th century cotton crises, and the more recent oil and other materials-price shocks. The second kind of environmental crisis involves capitalism’s degradation of the conditions of human development though not necessarily the obstruction to the accumulation of capital. Burkett criticizes O’Connor’s second contradiction in that O’Connor emphasizes the rising costs to capitalists stemming from various defensive expenditures against environmental degradation. Burkett argues that O’Connor treats these defensive activities instigated by environmental degradation as ‘pure costs’ for capitalism. But, O’Connor’s analyses neglect the possibility that such activities may represent profit-making opportunities for capitalist enterprise insofar as they can be converted into commodities produced by wage labor. All that capitalism requires from the environment, Burkett insists, are conditions consistent with the reproduction of exploitable labor power and the objectification of abstract labor in commodities. It does not require any reproduction of natural resources in their extant state, unless such a reproduction is a requirement for conditions above. Indeed, the creation of substitutes, as well as the tapping of previously unexploited resources, provides many opportunities for profitable investment and production (Burkett, 2006).
Thus, Foster and Burkett’s criticism is important as it draws attention to the important insight that ecological crisis may be used as a new source of investment and profit. This is a point crucial to understanding some of the primary expansionary tendencies of capital in regards to the subsumption of peripheral resources.

**Contradiction, crisis, and the expansionary tendencies of capital accumulation**

Foster and Burkett raised a critical point for understanding the capital-nature dialectic: while environmentally produced crises may act as a fetter to capital accumulation, this exists as potential only and crisis of accumulation does not necessarily follow ecological crisis. Rather, both orthodox Marxists and ecological Marxism posit that one of the most significant characteristics of capitalism is its dynamic capacity to re-create itself through crises and restore, renew, and re-establish the necessary conditions of accumulation. Capitalism may be crisis-ridden but it is also crisis-dependent, and economic crises can act as disciplinary mechanisms, forcing individual capitals or the economy as a whole to increase flexibility, restructure and readjust (O’Connor, 1998). More to the central point of this chapter, crises have been key to explaining the logic underlying the dynamics of imperialism. Theorists such as Luxemburg (1964) linked together the inner contradictions of capitalism, crises of accumulation, and the necessity of global expansion in the restoration of the conditions for accumulation. Similarly, crises can arise from the inherent contradiction between the drive for endless capital accumulation and the sustainable reproduction of natural conditions, for which the expansion of capital into previously uncapitalized nature becomes central to restoring the
conditions of accumulation. Capitalism is not a closed system, but requires the wide casting of a global net to stabilize the system.

While the whole of world-systems theory and dependency theory deals with the appropriation of peripheral resources by the core capitalist economies, the Marxist ecologist who has gone the furthest in specifying the connections between ecology, accumulation, crises and expansion is probably Jason Moore. Moore, similar to some EUE theorists, argues that the emergence of a capitalist world-economy in the early modern era also marked the creation of a historically distinct world-ecology. Through his research on the sugar and silver frontiers, Moore’s remarkable work traces a repeating pattern in the history of capitalism: ecological crises of capital accumulation have historically led to new spatial expansions of capitalism and new capitalist appropriation of natural wealth, which, in turn, create new ecological crises and crises of human development while setting the stage for future accumulation crises.

Though stated differently, similar to O’Connor, Moore argues that capitalism has a tendency to undermine its conditions of production. Specifically, increasing the extraction of surplus value hinges on increasing labor productivity, which does involve technical and social innovation, but most importantly from an ecological perspective, it is the abundance of ‘free gifts’ which has fueled capitalism’s technological dynamism. Essentially, new technology allows a geometrically rising volume of extra-human nature to attach to an average hour of work performed. Capitalism, Moore asserts, has sustained itself on the basis of cheap inputs and through revolutionizing the ecological relations of
production on a system-wide level, and through mobilizing a succession of great leaps forward in the relative ecological surplus\textsuperscript{33} (Moore, 2001, 2003, 2011, 2012).

But these dynamics necessarily pushes expansionary tendencies on a global scale, as they typically reward the rapid exhaustion of nature (and human nature), and instigate ecological crises, which can act as fetters on the accumulation of capital. Thus what Moore discusses can be seen as a fundamental dynamic of ecological imperialism: when the exhaustion of human and biophysical natures becomes significant to fetter labor productivity in a serious way, capitalists and empires begin to look for new frontiers. Expansion across space and usurpation of previously uncaptialized nature represents one fix, which drives down the costs of raw materials; innovation through time represents a second fix, allowing for the production of more commodities with fewer workers in less time, driving down costs of variable capital (labor power). This dialectic of plunder and productivity, Moore insists, is at the heart of capitalism’s recurrent waves of geographical expansion, and he cites the examples of sugar, silver, forest products, fish, iron, and copper, all having moved with the same rhythm: occupying, producing, and exhausting the ecological formations of the North Atlantic\textsuperscript{34} (Moore, 2003).

\textsuperscript{33} Moore defines ecological surplus as the share of world surplus value produced through two forms of accumulation by appropriation, one pivoting on processes of biophysical reproduction (labor power, forestry, agriculture), the other, on geological extractions (energy and minerals). He proposes that both forms are implicated in raising labor productivity and reducing the costs of reproducing labor power.

\textsuperscript{34} Moore argues that the long history of capitalism, from 1450s to early 19\textsuperscript{th} century was actually one of recurrent ‘underproduction crises,’ e.g. the insufficient flow of food, energy, and materials relative to the demands of value production. Moore argues that if a sufficient mass of cheap energy and raw materials can be mobilized, rising organic composition can be attenuated and the tendency towards a falling rate of profit checked and reversed, for a time. Also, he suggests, the same logic applies for variable capital. If a sufficient volume of cheap food can be supplied to workers the rate of surplus value may be augmented in a manner roughly similar to wage freezes and technical innovations.
Moore of course is not the only one to realize the link between ecological goods, labor productivity, and the increase in economic growth and wealth. Though encapsulated in a different framework, this is a more fundamental assertion of ecological and environmental economics. Ayers and Warr, in *The Economic Growth Engine*, for example, have carried out empirical investigations, and found that access to energy and its efficient use can explain the bulk of post-1900 income changes in Japan, Britain, and the USA. Further, they see rising real prices for fossil fuel and stagnating efficiencies of converting raw energy into useful work as a threat to continued income growth. Such accounts are necessarily partial, however, and generally unable to illuminate 1.) the inner logic as to why labor productivity is so vital in the first place, which necessitates an understanding of the capitalist social relations of production and the concept of surplus value, 2.) the necessity of global relations of exchange which allow for the continued spatial expansion and usurpation of peripheral resources, as theorists such as Moore and Hornborg have painstakingly pointed out.

Additionally, Foster and Moore have utilized the above discussed concept of metabolic rift in explaining the geographical patterns underlying the expansionary tendencies of capital. Drawing from Foster, Moore (2011) posits that the metabolic rift created during the transition to capitalism, with its origins in the new division of labor between town and country, expanded to become a global geographical pattern both on a world scale and within regions. It was with this metabolic rift that nutrients were pumped out of one ecosystem in the periphery and transferred to another in the core. The result was a progressive widening and deepening of the metabolic rift not only between town and country but also between country and country, greater regional specialization, and
intensified metabolic rifts through the introduction of such specializations as monocultures. And importantly, Moore has theorized that through the dialectical process of the endless drive for capital accumulation and the endless conquest of nature, capital and nature mutually shape and constitute each other. In capital’s attempt to subsume nature into its drive for profits, it literally changes local and global ecologies, depleting forests, simplifying landscapes into monoculture plantations, driving climate change. In turn, nature as well constitutes the forms, possibilities, and strategies of capital accumulation. Nature can resist capital’s control, superweeds can affect crop yields in the face of increasing fertilizer use, global warming can potentially cause untold economic damage, or forests, fisheries, etc. can simply become depleted (Moore, 2009). Capital must then find new strategies and forms of accumulation—largely, as Moore notes, through a combination of technical innovation and expansionary plunder into peripheral areas.

From their work, and those of scholars such as Magdoff, some of the essential dynamics underlying the issue of expansion and ecological imperialism can be postulated. 1.) Capital, in its drive for endless accumulation, undergoes technological changes that require specific and strategic resources, many of which are largely found overseas. Competition between capitalist powers intensifies the expansionary dynamic (Magdoff, 2003) 2.) Additionally, the primary capital/nature contradiction being the antagonistic relation of capital to nature causes capital to degrade its natural conditions of production, and this in turn raises the potentiality for crises of capital accumulation (O’Connor, 1998). 3.) Ecologically produced crises of capital accumulation (e.g. crises of underproduction) can be, and have historically been, attenuated through spatial
expansion (Moore, 2001 and subsequent works). 4.) On the level of individual capitals, attempts to overcome ecologically produced crises of capital accumulation can become a new source of profit and investment (Foster, 2002; Burkett, 2006). This can result in expansion, for example, in the search for new sources of resources overseas. Building on these insights, I would also add an additional source of expansions, 5.) Creation of scarcity through ecological degradation can be a source of profit for individual capitals, through the regime of private property, and this can lead to expansion and subsumption of peripheral resources. Foster and Clark noted in their reformulation of the Lauderdale Paradox\footnote{Lauderdale argued that there is an inverse correlation between public wealth and private riches such that an increase in the latter often served to diminish the former. Public wealth consists of all that man desires, as useful or delightful to him. In Marxian terms, public wealth has use-value and constitutes wealth. But private riches, as opposed to wealth, is all that man desires as useful but exists in a degree of scarcity. Scarcity is a necessary requirement for something to have value in exchange, and to augment private riches, but this is not the case for public wealth, which encompasses all value in use, not only what is scarce but also what is abundant. The paradox led Lauderdale to argue that increases in scarcity in such formerly abundant but necessary elements of life as air, water, and food, would, if exchange values were then attached to them, enhance individual private riches, and indeed the riches of the country - conceived of as the sum total of individual riches - but only at the expense of the common wealth (Foster and Clark, 2006).}, that capitalism feeds off of scarcity. Scarcity is a necessary requirement for something to have value in exchange. In contrast to public wealth, scarcity augments individual wealth. Thus, perversely increases in scarcity in such formerly abundant but necessary elements of life such as air, water, and food, potentially enhance individual private riches, if exchange value is attached to them, though at the expense of the common wealth (Foster and Clark, 2006). The global drive to privatize scarce water resources, speculation on fuel and food, among other examples, are attempts within the system to directly expand private riches by exploiting scarcity. Such direct attempts to profit off of scarcity are today an important dynamic behind certain expansionary appropriations of peripheral resources. Thus not all expansionary tendencies to subsume peripheral resources can be understood solely as attenuations of ecologically produced
crises of accumulation, but may involve in complex ways both dynamics of crisis attenuation and new forms of profiting off scarcity. Foreign firms can attempt to privatize water sources, as in the case of the Cochabamba water wars, and this can be interpreted as a direct subsumption of peripheral resources with the intent of transforming public wealth into private riches. Or the rising costs of food, fuel, or arable land itself, due to increased demand and shrinking supply, can encourage foreign firms in a new scramble for African resources, as has happened since 2003. In this example, both the tendencies of crises attenuation and capitalizing off of scarcity can be perceived. Importantly, it is likely that with increasing global ecological degradation this particular dynamic will become increasingly visible, as the problems of global large scale land investments (discussed in Chapter 4) demonstrate.

Finally, it is worth noting that none of the above approaches have fully integrated finance capital into discussion. Taking a Marxist/Leninist approach, Haider Khan\textsuperscript{36} makes a preliminary but promising attempt to ground the concept of ecological imperialism in Marx’s circuits approach from Volume 2 of Capital. Khan’s approach relates to the specifically imperialist or export phase of monopoly capitalism, in which the export of finance capital from the advanced capitalist countries to the less advanced countries of a world-capitalist system plays a crucial role in their relations. Khan argues that ecological imperialism and ecologically unequal exchange are both aspects of monopoly capitalism and finance capital, operating in a world-capitalist system of uneven development that can be roughly divided into core, semi-periphery and periphery. The export of capital globally leads to the formation of global commodity chains in major areas of production in the periphery, but the control of finance capital gives the core

countries enormous leverage over the periphery. With the enormous scale of production and global marketing, Khan states, the ecological damage to the periphery is colossal by historical standards. On this issue, however, much empirical work of real world cases needs to be done to integrate finance capital into a theory of ecological imperialism.

The neoliberalization of nature

Contradictions inherent to the capitalist mode of production in its relation to nature may drive expansion, but the process of accumulation itself is never static. Rather, accumulation is a dynamic process, unfolding through space and time, and constantly changing in its forms and strategies. At any given point in space and time the political-economic and policy context that allows for accumulation, and the ideologies supporting it, are in a manner distinct, and respond to a capital-society dialectic of resistance and counter-resistance. In Chapter 1, I had defined ecological imperialism broadly as the subjugation of the economic, political, and/or social institutions of a (generally peripheral) country for the biophysical, metabolic needs of the (generally core or semi-periphery), and inextricable from the purpose of making such resources accessible and amenable (in the right quantities and for the right price) to the needs of capital accumulation. A primary characteristic of ecological imperialism, I had argued, is that the particular form it takes is historically contingent, mutable, and at any given moment the result of a dialectical unfolding. In this section I apply this concept for a critical re-interpretation of the neoliberal reforms that swept through the developing world beginning in the 1970s. Neoliberal policies arguably embody a counter-response to what can be conceived of as a Polanyian ‘double-movement’ that arose post-independence in
many peripheral countries. This neoliberal ‘counter-countermovement’ has re-established
the political-social and economic policies and institutions necessary for the restoration of
the natural conditions of production and subsumption of peripheral resources.

Nature as a politicized sphere

It is only through a conceptualization of nature as a politicized sphere that neoliberal reforms can be comprehended as a counter-countermovement. Unlike orthodox approaches to the environment, whereby nature is regarded as a mere input to the production process, Marxist ecologists, political ecologists, and critical environmental studies insist that nature is an inherently politically contested sphere. Building on the insights of Polanyi and Marx, O’Connor (1998) for example recognized that neither human labor power, nor infrastructure, nor external nature are produced ‘capitalistically,’ although capital treats these conditions of production as if they are commodities or commodity capital. Because neither labor power nor external nature are produced and reproduced in ways governed by the law of value, their price cannot be explained strictly in terms of exchange value. There is no guarantee, for example, that either labor power or nature will be available in the form of what O’Connor, following Polanyi, termed ‘fictitious’ commodities- commodities not produced capitalistically but still sold on the market as commodities. Much less is it guaranteed that labor power and nature will be reproduced under conditions that permit or favor capitalist production and accumulation (O’Connor, 1998). As Marxists have long recognized, wages not only depend on the state of the economy, supply and demand, profit rates, and so on, but also on class struggle, feminist struggles, nationalist struggles, and so on. Similarly, O’Connor argues, natural
conditions, all forms of natural wealth, have no exchange value strictly defined, as there is no law of value at work in making land, soil, water, and other natural elements. Rather, nature like labor must be made available to capital in requisite quantities, and qualities, at the right place and time (O’Connor, 1998).

However much neoclassical economics and concomitantly environmental economics attempt through various methods of valuation to attach prices to clean air, attractive views, and other ecosystem services, the exchange value of such ecological goods remains an inherently politically contested issue. Nationalization of natural resource firms, attempts by peripheral countries to form cartels to raise the price of primary commodities, localized indigenous struggles over the destruction of forest homelands, among many other examples all contest the view that ecological goods have an inherent price independent of political struggles, and issues of structural inequality and power. Hence, the ‘value’ of external nature depends not only on market demand and ground rent but also on the class struggle, anti-imperialist struggles, and environmental struggles pertaining to the ways that nature may or may not be used and by whom.37 Like labor-power, nature is an inherently politicized sphere, where the conditions under which nature is made available to capital— the price of ecological goods, the requisite quantities, and the availability of access— reflects the outcome of contest and resistance and power configurations.

37 The possibility of even locating a ‘correct’ price on nature has developed into a full-fledged debate in the field of ecological economics (see Daly and Farley, 2004 for review of debate), and theorists such as Martinez-Alier among others have argued that any such ‘correct’ pricing— viewed as the primary solution to solving the current environmental crises by orthodox approaches— will inevitably reflect income and power inequality (Martinez-Alier, 1995). From a world systems perspective, Hornborg has argued that the capacity of core industrial centers to obtain the necessary biophysical inflows hinges on world market prices, which are low enough to allow for continuous accumulation and ecologically unequal exchange, but he does not advocate the attempt to calculate any ‘correct’ price for resources (Hornborg, 2011).
And it is because of these reasons, as Marxist ecologists such as O'Connor (1998) point out, that the conditions of supply must be regulated by the state or capitals. In general, capitalist production requires the politically guaranteed existence of labor-power, urban infrastructure and space, and environmental conditions. This also means that whether or not these conditions of production are available to capital depends on the political power of a host of actors; the political power of capital (and the relative power of factions of capital), the power of social movements challenging capitalist forms of production conditions (with their various ideological differences and divisions), and state structures, ideologies, and institutions (O’Connor, 1998). OPEC and the example of the 1970s oil price hike, which effectively sent the global economy into recession, is but one example of the politicized nature of natural resources, and how power struggles over such resources can act as potential barriers to capital accumulation.

**Neoliberalism as a counter-countermovement**

Polanyi (2001) argued that the dynamics of 19th and early 20th society was governed by a double movement: the self-regulating market economy expanded continuously but this movement was met a by a countermovement checking the expansion in definite directions. Such a countermovement was vital for the protection of society, though ultimately incompatible with the self-regulation of the market, and thus with the market system itself. This countermovement manifested through a great variety of forms, which he argued was due to the broad range of the vital social interests affected by the expanding market mechanism. In particular, the countermovement consisted in
checking the action of the market in respect to specific factors of production; labor, land, and money.

What is significant about Polanyi’s insight is that it captures an ongoing dialectic of movement and countermovement. It demonstrates how accumulation as a dynamic, unfolding process through time and space is shaped by and responds to social resistance. Already implicit in Polanyi’s own work, we can more explicitly broaden this concept of countermovement to include not only countermovements against the expanding market at the national level, but also countermovements against an expanding global market. This would include various resistances against the current era of globalization, as other theorists utilizing Polanyi have pointed out (Mittelman, 1998). It could also include many of the developmental policies enacted in the mid-20th century by developing countries in their quest for protection from the vicissitudes of the international market and national sovereignty.

During the post-independence period, there emerged a form of developmental state in many developing countries that adopted various state-centered, interventionist development plans and programs to reduce foreign ownership, enhance economic self-reliance, redistribute income, develop infrastructure, and promote the overall living standards of the people (Haque, 2003). While the developmental state was far from a uniform phenomenon - ranging from varieties of import substitution, state capitalism, Marxist-Leninist states, among others, all with varying ideologies and motivations, political systems and social institutions - the major point is that many of the states did not leave important sectors of the economy to the regulation of the market, and the whole of
the neoliberal project was oriented towards the removal of these obstructions. In Polanyi’s brief mention of colonialism, he states:

But if the organized states of Europe could protect themselves against the backwash of international free trade, the politically unorganized colonial peoples could not. The revolt against imperialism was mainly an attempt on the part of the exotic peoples to achieve the political status necessary to shelter themselves from the social dislocations causes by European trade policies. The protection that the white man could easily secure for himself through the sovereign status of his communities was out of reach of the colored man as long as he lack the prerequisite political government (Polanyi, 1957, p. 192).

But by late 1970s, in the name of such goals as stabilization, efficiency, productivity and competitiveness, the developmental state was replaced by market-oriented principles. This restored once again the unfettered expansionary tendencies of the market, which today is encapsulated in the more ambiguous term ‘globalization.’ The accessibility of the conditions of production for accumulation of capital—labor and nature—were restored in varying degrees through such principles as free trade, comparative advantage, openness to foreign direct investment, labor and tax reform, financial liberalization, and downsizing of the interventionist and redistributive functions of the state. It is in this sense, then, that I argue that the neoliberal reforms beginning in the 1970s for developing economies were a counter-response to the second part of Polanyi’s double movement. They attempted to repeal the policies that had been put in place by formerly colonized states. In regards to the ecological dimension, the adoption of neoliberal reforms had

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[38] Yet this is not to be confused, as some theorists have, with the obsolescence of the state. Rather it should be seen as a redefining of the role of the state, from (at least ideologically) redistributive and interventionist, to the liberal conception of the state as protector of private property, and more recently as documents from the World Bank and IMF demonstrate, as the enforcer of rule of law. As Polanyi contended, laissez-faire itself was enforced by the state, despite the myth of liberal writers that laissez-faire was a natural development. And nowhere is the liberal story more off-base than in regards to former colonies, whose integration into the world economy, with specialization in their ‘comparative advantage’ and opening up of resources to foreign investment, were made through the forced and often brutal
clear repercussions for the restoration of the accessibility of natural conditions of production, in this case peripheral resources, to the accumulation process, through a general thrust to remove obstructions to the accessibility and regulation of peripheral resources to foreign capital and the international market.

In sum, we can conceptualize the environment as an inherently contested political sphere, where the expansionary tendencies of capital accumulation (or a self-expanding market in Polanyian terms) push towards the subsumption of nature as a crucial factor of production, and against which various counter-movements, with variegated motivations and ideologies, resist. Indeed, a number of scholars such as Mittelman (1998), Bernard (1997), Bridge (2007) have extended the Polanyian framework in conceptualizing environmental resistance politics as a countermovement against the market. However, I would caution against regarding only consciously environmental movements as the only countermovement with ecological consequences. More broadly, any movements, political, economic, local or national, motivated by any number of reasons, which contest the market subsumption of nature as an input in the production process should be interpreted as a countermovement. Polanyi himself had argued for a broad-based conception of counter-movement in regards to labor. Nationalizations, restrictions on foreign investment/control/ownership, impediments on free trade, primary commodity cartels, and so on, all may have different motives but can obstruct the expansionary tendency on the part of capital to subsume peripheral resources.

integration, as world system theorists have documented amply. Similarly, while the fall of the developmental state is a complex story, it would be far too reductionist to view the neoliberal turn as anything natural and inevitable, as it involved structural adjustment programs under the threat of debt crises, state enforcement, often times brutal, against unions and other social resistances, etc. Neoliberalism has required, as numerous theorists have pointed out, including Harvey, a ‘neoliberal’ state.
Neoliberalism and accumulation by dispossession: restoring the ecological conditions of accumulation

While aspects of neoliberal reforms, such as the cracking open of peripheral economies to foreign investment, suggest a counter-countermovement against peripheral policies of the post-independence era, they are also arguably part of a broader global agenda towards the environment. Heynen and others denote this broader agenda as the ‘neoliberalization’ of nature, consisting of a number of cohesive ideological and policy attributes, even as this ‘neoliberalization’ often manifests differently according to localized context and reality. (Heynen, 2007) It is worthwhile looking more closely at the central characteristics of the neoliberalization of nature. Ecological crises are often dealt with in a piecemeal and disconnected manner, but should be integrated into the broader issues of ecologically unequal exchange and ecological imperialism. From the literature on neoliberalism and nature, what seems to characterize the general thrust behind neoliberal policies is, on the one hand, a push towards the enclosure of previously uncapitalized resources and land. That is, the neoliberalization of nature appears to be an intensification of the commodification of resources that were unregulated or even untouched by humans in general. On the other hand, there is the counter-countermovement aspect as described above, the repealing of policies put forth most often by the state, to regulate or protect ecologies from their total subsumption and regulation by private capital, in particular foreign capital in the case of the periphery.

Both phenomena have been described with a variety of terms—enclosures, continuous primitive accumulation, dispossession, among others. As already discussed,

39 To be sure, ecological crises in the periphery are not solely due to neoliberal policies. Issues such as overpopulation, lack of clean technology, etc., are important as well.
underlying all these concepts is the contention that neoliberalism has resulted in a restructuring of the social and property relations governing access to and control of nature allowing for the enclosure of land/nature and its subsumption to capital. A collection of case studies both within the developing and developed world (Heynen, 2007), for example, found that neoliberal reforms such as the re-structuring involved in increasing individuation, exclusivity, private control, and marketization. Such reforms are typically legitimated and represented in terms of enhancing individual freedoms, economic efficiency, and environmental quality. (Heynen, 2007)

Closely related to this neoliberal process of restructuring of property relations and enclosing of land/resources is Marx’s concept of primitive accumulation. The core idea of Marx’s primitive accumulation is that the establishment of capitalist relations, and the subsequent potential for capital accumulation, necessitates an initial and “…complete separation of laborers from all property and the means by which they could realize their labor,” e.g. a separation of the workers from the means of production. In this process of separation, the social means of subsistence and of production transforms into capital, and the immediate producers into wage-laborers (Marx Volume I). Modern interpretations not only contend that primitive accumulation is on-going, but that it is an elementary, extra-economic prerequisite to capitalist production. De Angelis, for example, argues that primitive accumulation is an essential and continuous element of modern societies and its range of action extends to the entire world. That is, the dynamics of capital accumulation hinge on a continuing process of primitive accumulation, whereby (extended) accumulation in one place corresponds to primitive accumulation in another.
place, and neoliberalism, he argues, is the current manifestation of continuing primitive accumulation (DeAngelis, 2001).

Similarly David Harvey (2005) encapsulates the concept of continuous primitive accumulation in his concept of ‘accumulation by dispossession.’ Like Luxemburg, Harvey insists that capitalism must perpetually have something outside of itself in order to stabilize itself. ‘Primitive’ or original accumulation constitutes an important and continuing force in the historical geography of capital accumulation through imperialism. Further, accumulation based upon predation, fraud, and violence very much persists; the predatory practices of ‘primitive’ or ‘original’ accumulation within the ‘long’ historical geography of capital accumulation remains, and constitutes an important feature of neoliberalism since 1973. Harvey’s view includes the ecological dimension (the enclosure of environmental commons or resources) but also essentially all transformations from state (or other forms of commons) regulation into the hands of private capital.

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40 Harvey links neoliberalism to an over-accumulation crisis that began in the early 1970s (over-accumulation being the surplus of capital, and potentially also labor, lying idle and having no profitable outlets). He argues that accumulation by dispossession helped solve the over-accumulation problem through releasing a set of assets, including labor power, at a very low and in some cases zero cost. In Harvey’s formulation, over-accumulated capital can seize hold of such assets and immediately turn them to profitable use. Privatization, he argues, has opened up vast fields for over-accumulated capital to seize upon. As such, if capitalism has been experiencing a chronic difficulty of over-accumulation since 1973, then neo-liberal project of privatization was one way to solve the problem. Another solution to over-accumulation, Harvey argues, would be the release cheap raw materials, such as oil, into the system, whereby input costs would be reduced and profits thereby enhanced. Hence, it seems possible that not only crises of under-production, but also crises of over-accumulation, may have implications for the expansionary tendency of capital under ecological imperialism. In era of neoliberalism, and up unto today, it is quite possible that both tendencies have been intertwined and present. If we agree with Harvey that there has been a crisis of over-accumulation, and that this is linked to the global push for privatization, including of natural resources, it is still clear that resource depletion and problems of underproduction are involved when we witness land grabs, military imperialism and fossil fuels, etc. Determining which tendency is the dominant or key tendency, how they interact, and what specific expansions they underlie is an important and interesting question- though beyond the scope of this dissertation as it would need considerable historical study of concrete conditions. Such an analysis might also shed more light on the specificities of the links between finance capital and ecological imperialism.
This link between neoliberalism and primitive accumulation (De Angelis, 2001; Harvey, 2005; Perelman, 2000; Heynen et. al, 2007) is an important insight to understanding the relationship between neoliberalism and the environment for several reasons. First, as scholars in Neoliberal Environments: False Promises and Unnatural Consequences have demonstrated in their case studies, similar to the original processes of enclosures, neoliberalization of nature has been predicated upon state involvement, enforcement, and legitimization, at the behest of some social class. This brings us back to the recognition of nature as a politicized sphere and the importance of movement and countermovement in understanding historical change in regards to institutions and social relations governing resources, especially peripheral resources. This also challenges one of the central myths of the neoliberal model, that privatization means getting the state off the back of the economy and rolling back the regulatory red tape (Heynen, 2007). Rather, although state power may have changed in form, scale, type of practice, or effectiveness, it remains constitutive of neoliberal schemes and regimes. It also echoes Polanyi, who had argued years ago that laissez-faire had never come about naturally, but necessitated the enforcement of the state, often at the behest of a specific social group.

Accumulation by dispossession in the neoliberal era, policies and effects

This section looks at a set of core, interlinked and interdependent neoliberal policies from the angle of accumulation by dispossession and the restoration of the ecological conditions of production, including privatization, the downscaling of state environmental functions, trade liberalization, and foreign direct investment. Foreign
investment in the African context will be discussed further in Chapter 3 and for Tanzania in Chapter 4.

Central to the neoliberal project, as noted, is privatization. This process can refer to enclosures of land/resources previously ‘uncapitalized,’ or can manifest as privatization or counter-countermovement by private capital to subsume commons previously regulated by the state. Harvey denotes privatization as ‘the cutting edge of accumulation by dispossession,’ citing how assets held by the state or in common were released into the market where over-accumulated capital could invest, upgrade, and speculate on them. Privatization is also pivotal in rendering other neoliberal policies possible. In foreign direct investment, for example local governments have allowed MNCs to take over resources, water, forests, land for mining operations, and even ownership of food by privatizing its genetic codes, all of which hinge on the reformulation of property relations. A number of case studies have been conducted describing this process of intensified enclosures and privatization throughout both the developed and developing world (Robbins and Luginbuhl, 2007).

In addition to the re-formulation of property relations in the favor of private capital, a number of scholars have documented the scaling back of environmental protections by the state. True to the idea of the double movement, McCarthy (2007) argues, early predecessors of environmentalism had some success in resisting liberalism, most notably expanding the power of state to administer nature. Increasing environmental protection under the Keynesian state in advanced capitalist countries came to represent constraint on capitalist accumulation strategies. Assaults on Keynesian era environmental regulation, McCarthy contends, is as central to neoliberalism as are assaults on labor and
social entitlement programs. In the developing world, the American Lands Alliance conducted a case study of 15 countries in Asia, Africa and Latin America and found that due to austerity requirements under neoliberal structural adjustment programs, countries where pressured to reduce government spending on environmental programs. The study concludes that this has resulted in the hampering of enforcement capabilities, the weakening of protections for forests, the thwarting of efforts to prevent illegal logging of protected areas, the instigating of poaching of endangered species, the breeding of corruption, and the curtailing of demarcation of indigenous lands (Tockman, 2001).

Concerning international trade, theorists of EUE have examined the role of the structural position of a country in the world system in terms of ecologically unequal exchange as discussed in Chapter 1. EUE theorists such as Giljum and Eisenmenger have argued that neoliberal policies have reinforced the role of peripheral economies as source and sink for the metabolic needs of core economies (Giljum and Eisenmenger, 2004). The ideological stress on comparative advantage that encourages specialization in primary commodities, the push for trade liberalization through the reduction of tariffs used to promote protection of nascent industries, and the promotion of export-oriented growth form the basis of the neoliberal framework in regards to international trade. Chief among the sectors that are targeted for export promotion are mining, agriculture and forest products. But the promotion of exports in absence of real improvements in countries’ environmental safeguards has been a recipe for environmental destruction, including increased deforestation rate (Tockman, 2001). Other scholars have linked trade liberalization with monocroping and its harmful effects on ecosystems (Haque, 1999).
Further, multilateral trade agreements have also contained sweeping new protections for investors. Looking at multilateral trade agreements, McCarthy (in Heynen, 2007) notes that NAFTA, and other recent trade agreements, all share the primary goals of increasing FDI and homogenizing regulatory environments across and within national territories, and shifting important state functions to the private sector or NGOs. Especially important has been the inclusion of substantial investor protections in NAFTA and FTAA, and similar ones in WTO. As a result, major sectors such as mining and manufacturing have come under direct control of foreign investors, especially due to acquisition of privatized SOEs (Haque, 1999; Bridge, 2007). In the ten year period from 1985 to 1995, for example, over ninety countries globally adopted new mining laws or revised existing legal codes in an effort to promote foreign investment in their mining sector. Overall, some insist that attracting foreign investors aimed at stimulating growth and providing hard currency to developing countries is prioritized (Tockman, 2001; UNCTAD 2005), above other important social and environmental objectives. Unsurprisingly, one of the most consistent outcomes from the IMF imposed increases in foreign investment has been the intensification of natural resource extraction for export markets (Tockman, 2001). Thus an argument could be made that foreign direct investment constitutes an important mechanism of ecologically unequal exchange at an overall global level, is a crucial pillar in the neoliberal counter-countermovement against former state protections concerning peripheral resources, and opens new natural vistas and terrains for profit. Again, Chapter 3 will provide more details in terms of the African context, and Chapter 4 in terms of Tanzania.
Conclusion

Moore theorized that through the dialectical process of the endless drive for capital accumulation and the endless conquest of nature, capital and nature mutually shape and constitute each other. In capital’s attempt to subsume nature into its drive for profits, it literally changes local and global ecologies, depleting forests, simplifying landscapes into monoculture plantations, driving climate change, and so on. In turn, nature as well constitutes the forms, possibilities, and strategies of capital accumulation. Nature resists capital’s ongoing efforts for control and subsumption, even if such resistance manifests as depletion or ecosystem collapse. Capital must then find new strategies and forms of accumulation- largely, as Moore notes, through a combination of technical innovation and expansionary plunder into peripheral areas.

In the above I have argued that neoliberal policies reflect this manifestation of the broader, historical tendency of capital accumulation towards expansion. Ecological imperialism is an outcome, therefore, of a nature-capital dialectic as well as the dialectical unfolding of movements and countermovements that hinge upon the social resistances and institutions at any given time. Neoliberalism is, arguably, a temporally distinct moment in ecological imperialism.

However, what is new is that both these dialectical unfoldings are occurring in a global ecology characterized by resource depletion, soil exhaustion, ecosystem collapse and loss of biodiversity in vital spaces that are difficult or impossible to repair, such as the destruction of rainforests, depletion of global fish stocks, mass extinction of mammals, and overloading of global sinks. In short, as Moore puts it, the era of neoliberalism is marked by the end of truly substantial resource frontiers.
In this context neoliberalism as a set of policies, often described as cannibalistic rather than productive by Harvey and others, has managed to repeal important protections put into place in both the developed and developing world. And, as a number of Marxists have noted, as a regime of accumulation it is marked by the hegemony of finance, which, with its short-term profit priorities, pushes cannibalistic rather than productive tendencies. Further, the industrializing rise of the emerging economies has pitted both core and semi-peripheral nations in competition for resources. Perhaps nowhere are all these dynamics more manifest than in the ‘new scramble for Africa’ of the 2000s.
Chapter 3: From Post-Independence Economic Nationalism to the 21st Century

Scramble for Africa: a Critical Political Ecological Perspective

Roughly half a century has passed since the wave of decolonization across Africa, and excepting perhaps a brief period of economic nationalism during the post-independence era, foreign powers continue to occupy a dominate role over African resources. Today, foreign affiliates account for virtually all non-artisanal production in metals and minerals in countries such as Mali, Tanzania, Zambia, Botswana, Gabon, Ghana, and Namibia among others. In oil and gas, foreign affiliates account for over half of the production on average in Sub-Saharan Arica (UNCTAD, 2007).

The first decade of the 21st century has witnessed a virtual scramble for the totality of African resources, including its water supplies, timber, fisheries, minerals and fossil fuels, with tens of millions of hectares of land already leased to foreign investors. The proximate cause for this ‘new scramble for Africa,’ as some scholars have dubbed it, is high commodity prices. The deeper causes includes the tension between a growing global capitalist economy and a world of finite natural resources- and, importantly, the outcome of a historical struggle that has made African ecologies both cheap and accessible.

As argued in Chapter 2, nature is a politicized, contested sphere, a point often overlooked in apolitical discussions on sustainability and development. Who holds control over, access to, and gains profit from peripheral resources reflects the outcomes
of historical contestations of power. The neoliberal policies that currently govern the integration of African ecologies into the global economy are an outcome of such contestation, policies I had suggested can be conceptualized as a form of continuing primitive accumulation.

This chapter is a historical analysis of the post-independent period in Africa (1960s to the mid-1970s), until the neoliberal period and the ‘new scramble for Africa’ of the 2000s from a critical political ecological perspective. During the post-independence era, Africa, and much of the Third World, had engaged in concerted efforts to increase their sovereignty over and rents from their resources. This era of economic nationalism is scarcely mentioned in mainstreams discussions on African development and environment, or often dismissed as a period of inefficient and failed alternative economic models. But from the perspective of political ecology, this era and the subsequent transition to neoliberalism is critical to understanding the dynamics of continuing primitive accumulation.

The first section examines the economic nationalism of the 1960s and 1970s. Drawing from Polanyi, I had in Chapter 2 termed this era a ‘countermovement’ posed by the Third World against the subsumption of their resources by the international capitalist system. The second section examines the transition to the neoliberal era and the political economic/political ecological context that engendered a ‘counter-countermovement.’ The third section looks more in-depth at particular neoliberal policies that governed the shift, once again, to foreign control and contrasts these policies with the policies of the era of economic nationalism. The final section provides a broad overview of what a number of scholars have dubbed the ‘current scramble for Africa.’
The Third World countermovement: The demands for a New International Economic Order and resource sovereignty

Like much of the Third World, after decolonization post-independent African countries found themselves politically liberated but in a state of economic dependency and underdevelopment, a situation former leader of Ghana Kwame Nkrumah characterized as ‘neo-colonial’ (Nkrumah, 1965). Despite having obtained the status of sovereign and equal states, African countries perceived the economic order since WWII as continuing an international division of labor that put Africa at a disadvantage while largely benefiting the West (Adeniran, 1986). In pursuit of greater economic sovereignty, African leaders undertook the restructuring of their economies along developmentalist lines. Laissez-faire capitalism, being the ideology of the former colonial powers, was questioned or rejected by most African states, and various forms of socialism or state capitalism were implemented (Thompson, 2000). State intervention was seen as integral to overcoming the structural weaknesses of Africa’s economic position. Although African economies mainly continued their traditional roles as exporters of primary commodities, surpluses from the primary sector were channeled to meet the requirements of import-substitution driven industrialization through the developmental state (Saul and Leys, 1999). As with much of the Third World, some form of economic nationalism characterized the development paradigm for post-independent African nations, which for African economies lasted roughly from the 1960s to the mid-1970s.

As argued in Chapter 2, the meaning of Third World economic nationalism can be understood within the context of the contradictions generated by the expansion of the
capitalist world system- broadly, as a type of countermovement to the economic
dependency created under colonial expansion. More specifically, though, it can be
understood as a countermovement against the transnational capitalism characterizing the
post-WWII era. Colonialism had looted Africa in terms of both labor and resources. It
also involved a radical re-structuring of state borders and political, social, and economic
systems to meet the metabolic demands of the colonizing countries. Under colonization,
the means of production, whether in natural resource industries or the tertiary sector,
were controlled entirely by the colonists. Yet even with independence, foreign control
continued to dominate African economies (Rodney, 1981). In the post-WWII era, as
theorists of imperialism (Girvan, 1976 and 1975; Magdoff, 2003) have pointed out,
transnational corporations (TNCs) became dominant actors in the system of production
and accumulation. Features of transnational capitalism, according to Girvan (1976),
included diversified internationalized production under centralized control; the massive
size and huge financial resources of the basic institutional unit; technological dynamism
and vanguardism; and high and continuously growing concentration of economic power.
This new system came to dominate the world economy, whether developed,
underdeveloped or socialist (Girvan, 1976). In the early 1960s, power remained heavily
in favor of multinational corporations.

But the advance of capitalism, whether within the boundaries of the nation-state
or at the level of the world system, has historically been characterized by tensions,
conflict, and crisis. Concerning the relation of the Third World to the international
capitalist system, the major conflict or contradiction after independence arose regarding
the issue of economic sovereignty- in general the threat to economic sovereignty posed
by foreign control and decision-making in major sectors of the domestic economy (Girvan, 1975 and 1976). The political status of the newly independent states, formally sovereign and equal to all other states with admittance into the United Nations, contrasted with their state of economic dependency, and economic sovereignty became inseparable from the objective of greater equality in international economic power-relations\(^4\) (Lozoya, 1980).

In the 1960s Third World countries, with African countries amongst the most vocal, began to challenge the power of transnational capital and their neo-colonial situation under the aegis of economic sovereignty.\(^4\) Central to this issue of economic sovereignty was sovereignty over their own natural resources, manifest in a series of events from the 1960s to the mid-1970s. Such events included numerous state expropriations of foreign-owned natural resource industries (and industries in the tertiary sector), the formation of primary commodity cartels such as OPEC, and sets of proposals that voiced Third World grievances put forth through the United Nations platform.

Despite their economic dependency, during this time period Third World states discovered that they also had powerful new sources of leverage in international economic relations. The changing international political climate with the rise of the Non-Aligned

\(^4\)At the level of class analysis, Girvan argues that economic nationalism was actually a conflict wrought by the contradiction between international capitalism and particular social classes in the Third World. Imperialism, he argues, led to the continuous impoverishment of the mass of the population in the periphery. But it also created a dependent comprador bourgeoisie, dependent upon international capital and regulated to such parasitic activities as commerce, real estate, light manufacturing, and so on. Normally, he states, this class allies itself with foreign capital. But if the nation-state possesses sources of leverage over international capital and core countries, such as supply of vital products, and a viable set of domestic class alliances, the comprador class can assert its independence. The result, Girvan argues, is economic nationalism. Hence, radical scholars such as Girvan and Amin sometimes critically refer to the economic nationalist movement as ‘bourgeois nationalism’ (Girvan, 1976; Amin, 1990).

\(^4\)Again, radical scholars such as Girvan and Amin criticize that these efforts only sought modifications in the relative power structures of the international capitalist order, rather than fundamental changes in the power of transnational capital (Girvan, 1976; 1990).
Movement, the growth of the socialist bloc, the influence of the UN, the rise within the capitalist bloc of Western Europe and Japan, and the emergence of the Soviet Union and China as major economic powers, meant increased competition among major industrial nations for the natural resources of the Third World (Lozoya, 1980).

Significantly, from the perspective of political ecology, during this time period access to energy and raw materials became crucial to the developed world’s economic machinery. The Third World began to realize that this dependency constituted a potential source of economic power and sovereignty for exporters of primary commodities (Lozoya, 1980). In fact, the years 1972-1974 witnessed a shortage of many primary commodities, especially those of strategic importance in high-growth industries, such as petroleum, bauxite and phosphates (Girvan, 1976). As the Third World controlled the supply of a number of important fuels and raw materials and also absorbed some 25% of exports, their demands for a more equitable international economic system became increasingly potent (Lozoya, 1980).

Advanced industrial dependency on strategic resources combined with Third World recognition of their own economic power, and these circumstances catalyzed in the OPEC oil embargo of 1972-1973. Even while Third World importers of oil suffered

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43 Magdoff had noted the significance of First World reliance on Third World resources in the dynamics of imperialism resources throughout his writings (Magdoff, 1969, 1978, 2003). According to Magdoff, by the end of the 19th century, within each of the industrialized nations, economic power had shifted to a relatively small number of large, integrated industrial and financial firms. With the development of new technology came concomitant drives for new energy sources. During this time period, industry became mechanized, and technology required investment of large amounts of capital, large production units, and large amounts of strategic metals and fossil fuels. Technological advancement in steel, electricity, industrial chemistry and oil also allowed for large scale production through large scale transportation, electricity, and advances in industrial chemistry. These advances consequently allowed for large concentrations of economic power in the industry and finance, and accelerated monopolistic trends and the rise of big business, which in turn further spurred the drive for raw materials. Hence, the new industries, the new technology and the rise of competition among industrialized nations gave a new importance to the role of raw materials. All these features, according to Magdoff, featured centrally in the expansive drives of imperialism.
from increased oil prices, in general the Third World’s reaction was largely supportive. OPEC represented, as Bhagwati points out, a set of primary producers from the Third World who successfully demanded their fair share of the world incomes by their own actions. From the OPEC experience, developing countries inferred that their primary commodity exports, which had traditionally been viewed as a sign of weakness, could be turned instead into weapons of collective action (Bhagwati, 1977). The concept behind primary commodity cartels was to allow countries in the Third World to actively control their terms of trade with industrialized world and the returns they got from the powerful MNCs in contrast to their historical subjugation. The OPEC action inspired similar attempts from dozens of other Third World exporters of primary commodities. For example, seven leading bauxite exports formed the International Bauxite Association and six leading phosphate produces tripled their prices (Girvan, 1976).

Third World states also actively contested the power of transnational capital and neocolonialism through the expropriation of foreign natural resource industries. Conflicts between Third World states and MNCs involved in their natural resource industries took place as early as 1937/38 in Bolivia and Mexico with expropriations of foreign oil companies. However, expropriations reached their zenith by the mid-1970s. Kennedy (1992) divides the relations between TNCs and governments of host countries since 1945 into three eras: TNC domination, confrontation between governments of host countries and TNCs, and negotiation between TNCs and governments of host countries. The first era lasted into the early 1960s and the second era was at its height during the 1970s. By the 1980s, the third era had begun. In the mid-1960s, the number of expropriations had
begun to rise, but expropriations reached a zenith in the 1970-1979 period. By the 1980-1985 period, the number of expropriation acts dropped dramatically (Kennedy, 1992).

However, during this period Third World leaders also realized that despite ambitious programs of national development poverty was not diminishing and rates of economic growth were slowing down; yet service charges on past loans began to put enormous pressures on developing countries’ balance of payments. With the breakdown of the Bretton Woods system and the erosion of the value of the US dollar, difficulties were created for many Third World countries that held their reserves in dollars. Further, a mid-term review of the achievement of the second development decade’s goals showed mixed results, especially in the area of agricultural production and official development aid (Lozoya, 1980). The Third World realized that without major structural changes in the international economic system, economic independence and development would be difficult. This realization, together with OPEC success, spurred the Third World to adopt a series of coherent demands, despite major ideological differences among individual nations. Known as the New International Economic Order, these demands were presented on a platform to the UN.

By the 1970s demands for a New International Economic Order were vocalized when Presidents Boumediene of Algeria and Echeverria of Mexico, among others, called for structural reforms in the international economic system. Their initiatives resulted in the adoption of UN resolutions such as the Sixth and Seventh Special Session, and the Charter of Economic Rights and Duties of States. These were followed by a long series of declarations, resolutions, position papers, and studies on various NIEO issues by the UN and the international community at large (Lozoya, 1992). African states, in
conjunction with other states of the South, were among the most vocal supporters of the NIEO. During this time period, the ideological position they adopted was that the international economic system should be made more equitable, making it possible for African states to industrialize and be relieved of debt to the Western capitalist countries. The goal, ultimately, was to achieve economic independence and development (Adeniran, 1986).

The New International Economic Order—however overly optimistic or naïve according to some critics—was in many ways the apex of Third World collective demands for sovereignty over their resources and increased returns for their resource exports. Because neoliberal policies would come to dominate the economic policy space of many developing countries, especially in Africa, it is worthwhile to look more closely at the demands of the NIEO and to recognize the extent to which these demands were discarded and replaced by nearly diametrically opposed economic policies. The neoliberal counter-countermovement against the NIEO-type demands—more broadly against the economic nationalism of the Third World—was to have profound impacts in regards to African sovereignty over their own resources and their attempts to regulate the activities of TNCs. This counter-countermovement in turn continues to critically shape the dynamics of ecologically unequal exchange and ecological imperialism in the 21st century.

44 Some scholars accuse the proponents of the NIEO as having been overly optimistic, and even naïve, in hoping that Western countries would concede to the demands of the NIEO. The NIEO proposed a transformation in the international order under the auspices that it would be mutually advantageous to all. Amin, for example, criticizes that this view was based on a naïve illusion as to the laws governing existing world capitalism (Amin, 1990; Onwuka and Aluko, 1986).
Essentially, the NIEO demanded the sovereign equality of states and self-determination of all peoples; the non-interference in the internal affairs of States; the right of every country to adopt the economic and social system that it deems the most appropriate for its own development and not be subjected to discrimination of any kind as a result; and full and permanent sovereignty of every State over its natural resources and all economic activities. In order to safeguard these resources, the NIEO demanded that each State is entitled to exercise effective control over them and their exploitation with means suitable to its own situation, including the right to nationalization or transfer of ownership to nationals. This right was seen as being an expression of the full permanent sovereignty of the State. The NIEO demanded that no state may be subjected to economic, political, or any other type of coercion to prevent the free and full exercise of this inalienable right. Further, all States, territories, and peoples under foreign occupation, alien and colonial domination or apartheid were to be entitled to the restitution and full compensation for the exploitation and depletion of, and damages to, the natural resources and all other resources of those State, territories and peoples (NIEO Charter).

The NIEO demanded the right for developing countries to regulate and supervise TNCs operating within their territories, and the right to implement measures regulating TNCs in accordance with plans of national development. Concerning greater returns

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45 The ‘Action Programme,’ contained in the section on regulation and control over the activities of TNCs, demanded the formulation of an international code of conduct for TNCs and the enforcement of it by international agreement. The Charter of Economic Rights and Duties of States refers in Chapter 1 (“Foundations of International Economic Relations”) to the general requisites of control over TNCs such as the principles of national sovereignty, territorial integrity, political independence of state. Article 2, another example, is quite clear about the right of states to regulate the control over foreign investments in the area under its sovereignty in keeping with its legal and other provisions and in accordance with its national objectives; these include the right to nationalize, expropriate or transfer the ownership rights over
from the exporting of their natural resources, the NIEO sought to establish a more just and equitable relationship between the prices of raw materials, primary commodities, capital goods, and equipment imported by them with the aim of bringing about sustained improvement in their unsatisfactory terms of trade and the expansion of the world economy. Importantly, it advocated the right for the developing world to utilize producers association (primary commodity cartels) within the framework of international co-operation (NIEO Charter).

At the heart of these stipulations lay the recognition of the inextricable relations between political and economic sovereignty and the capacity for the formerly colonized states to have full and permanent sovereignty over their resources. The rhetoric of the NIEO gives strong recognition of the injustice engendered by colonialism, and the necessity of the formerly colonized states to be free from any form of neocolonialism, including the structural inequalities of the international economic order which remained deeply unequal.

Not surprisingly, economic nationalism as signified by the expropriations, the growing number of primary commodity cartels, and sets of proposals such as the NIEO, was not received well by the developed countries. Even before the NIEO, Northern hostility to the increasing economic nationalism and perceived threat from the Third World was manifest (Girvan, 1976; Bergstein, 1973). The main issue was simple to understand; at a time when the developed countries became crucially dependent on

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46 The NIEO also demanded securing favorable conditions for the transfer of financial resources to developing countries; giving developing countries access to achievements of modern science and technology, promoting transfer of technology and creation of indigenous technology, and fair solutions to the mounting debt crisis of the Third World (NIEO Charter).
various resources from the periphery, the push for greater returns for their exports and full sovereignty over their own resources ran directly counter to the concerns of consuming countries to retain assured access to foreign supplies at reasonable prices (Bergstein, 1973).

Thus the reaction of the West to the Third World’s demands for adjustment of the international economic order was a resounding rejection, heralding what Samir Amin regards as a new phase of aggressive anti-Third Worldism (Amin, 1990). For one, the demands were deeply at odds with the rising currents of neoliberalism and neoconservatism, and threatened a free market based international economic system. From these ideological standpoints, the USA argued that the principal cause of developing countries poverty was not external but internal, in particular its incapacity to internally mobilize resources for economic development due to Third World socialism (Bhagwati, 1977). Whatever the ideological standpoint or reasoning, the NIEO and Third World economic nationalism threatened developed world interests in continuing the secure and cheap access to resources that had been established under colonialism.

As such, due to developed world rejection, the demands from the NIEO were dead in the water before any real implementation of the adjustments they called for. Despite the push of the United Nations for a NIEO, the actions of the IMF, World Bank and GATT, and Western governments (especially the US), demonstrated that restructuring the international economic system to the advantage of the Third World was not an option. Rather, these actors pushed for ‘stabilization programs’ and ‘rational

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47 The academic Bergstein’s writings in the 1970s encapsulate the wariness of the developed countries over the actions of the Third World and the recognition of the potential economic repercussions from such actions. Bergstein argued that producers associations (primary commodity cartels like OPEC were a form of ‘oligopolic market power,’ especially given the fact that a number of key strategic materials were concentrated in a small number of states, some of which had already begun to organize. (Bergstein, 1974).
planning’ enhanced by policy reforms, which ultimately presented no threat to interests of the developed countries (Onwuka and Aluko, 1986).

Aside from the NIEO, for Africa other plans for development that emphasized some form of self-reliance were also rejected, one after another. For example, in the attempt to address African underdevelopment, African leaders through the OAU drafted the economic blueprints known as the Lagos Plan of Action (LPA) for the Economic Development of Africa (1980-2000) and the Final Act of Lagos of 1980. The LPA sought to encourage an inward-oriented development strategy rather than the externally-oriented pattern inherited from colonialism. It emphasized the development of the domestic market in Africa rather than reliance on external markets and the role and importance of domestic factor inputs in development, the imperative of self-sufficiency in food production, the development of human capital and provision of social infrastructure for the African people (Adejumobi, 2003). Even while the Lagos plan of Action represented a step backwards from the NIEO- it did not, importantly, emphasize control over natural resources and took a more benign stance towards MNCs - like the NIEO the LPA was essentially rejected (Amin, 1990).

Adejumobi (2003) argues that, similar to the NIEO, the LPA fell victim to international economic politics and the hostility of western nations and its agencies, especially the World Bank. Barely a year after the LPA was adopted, the World Bank launched its counter to the LPA, known as the Berg Report. The Berg Report presented a

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48 Amin (1990) argues that the Lagos plan, despite its declared principle of self-reliance, remained a classic plan for development by way of greater integration into the world economy. For one, the Lagos plan still relied upon the exploitation of natural resources, and the traditional colonial and neo-colonial view of Africa as a source of supply for the development of others. Further, the concept of control over natural resources was overlooked, and in this manner the Lagos plan was a step backwards in comparison with the concepts of the NIEO. Additionally, Amin criticizes that the Lagos document naively declares its confidence in the MNCs to develop these resources.
scathing criticism of the LPA, emphasizing instead the central role of the market and external trade in economic development, with an attack on the role of the state in Africa. Essentially, the Berg Report, which would become the foundational blueprint for the neoliberal policies enacted throughout the 1980s and beyond, argued that for Africa to develop economically, it must liberalize its economy, cut back on role of state, and privatize public enterprises. Again, with rejection of the LPA, other development strategies were proposed, all of which were met with either opposition or a cold reception (Adejumobi, 2003).

The neoliberal ‘counter-counter’ movement and the collapse of economic nationalism

By the 1980s, economic nationalism in Africa and in much of the Third World had essentially collapsed, and their societies were to undergo an extended series of radical structural adjustments realigning their economies according to the principles of laissez faire capitalism, comparative advantage, and increased external integration. Under economic nationalism sovereignty over natural resources and the capacity to regulate TNCs were perceived as central to economic independence and the end of neocolonialism. Under the neoliberal reforms, Third World ecological resources were once again made accessible to the demands of capital accumulation, as lingering obstructions enacted during the developmentalist era were removed, one after the other. The Third World countermovement, born from the contradictions engendered by the expansion of the world capitalist system, was replaced by the neoliberal counter-countermovement, in a context of economic and political crisis.
The Berg Report was criticized for thrusting African economies into fundamentally the same traditional colonial role as supplier of cheap raw materials and importer of expensive manufactured goods and food from West\(^49\) (Cheru, 1989; Adejumobi, 2003). African governments rejected the Berg Report, arguing that such a development plan would leave their countries in a permanent state of dependency and poverty, making them dependent upon the developed world for their food supplies as well as capital goods, and many manufactured consumer goods (DeLancey, 1992). Further, the Organization of African Unity rejected the Bank’s analysis of the economic situation, arguing that the Bank failed to recognize external causes to the continent’s economic problems (Cheru, 1989). But by the late 1970s, African countries were caught in various stages of economic crises, plagued by debt burdens, serious trade deficits, rising unemployment, industrial collapse, and social upheavals. Fatefully, these economic crises occurred just as the ideology underpinning the concept of development in the North was changing, as manifest in the Berg Report. The western Keynesian consensus, and the foreign aid undergirding it that had sanctioned the pursuit of industrialization, agricultural levies, provision of social services and interventionism by an developmental state was replaced by neoliberalism \((Satgar, 2009)\).

\(^{49}\) More specifically, the report focused on four major factors as causes of African economic and agricultural crisis: overvalued national currencies; neglect of peasant agriculture; heavily protected manufacturing sectors; and excessive state intervention in economy. The Bank criticized ISI policies, which were dependent on protection established through application of tariffs and quotas, and maintaining unrealistic exchange rates. Likewise, the Bank criticized African industries as inefficient and draining of scarce foreign exchange. Critics maintain that the Berg Report ignored the need for African governments to support small scale industry and use local resources to meet domestic demand. Further, critics maintain that the pro-peasant rhetoric hid the more essential commitment to intensive application of export-led agriculture. African countries were encouraged to expand cash crop production in which they had a comparative advantage, and to increase privatization of agriculture. The foreign exchange from cash crops could then be used to purchase development inputs. Increased food production was not considered essential where cash crop earnings could be used to purchase imported foods. Consequently, the Bank had used financial muscle to pressure governments to give up food self-sufficiency and promote export oriented agriculture (Cheru, 1989).
The proximate causes of the economic crises have been attributed to a convergence of external factors beyond the control of African states, as well as internal mistakes. Much literature has already been written on the reasons underlying the African debt crisis and will not be repeated here. In short, the economic nationalism of the post-independence years had included the adoption of varying policies of import substitution. Yet despite the objective of increased self-reliance, this form of developmentalism required capital that was ultimately borrowed from the developed world that, in the end, African countries were unable to repay for various reasons, both in internal and external. The debt crisis was to have devastating effects on African economies. In particular, the capacity to pay for crucial imports for important capital stock had been severely compromised, and as a result the development project itself was interrupted (Cheru, 1989). Overall, the debt overhang undermined domestic capital formation, frustrating public investment in physical and social infrastructure and deterring private investment. A vicious downward spiral followed in many countries, and by the 1990s Africa was crippled by its debts, with debilitating effect on its economies (Thompson, 2000).

* External reasons included declining international price paid for these commodities in the late 70s, (Thompson, 2000; Helleiner, 1983; Cheru, 1989); the 1973 OPEC oil price hikes (Cheru, 1989; Thompson, 2000; DeLancey 1992); declining official sources of development aid (Thomson, 2000); increased cost of borrowed capital (Helleiner, 1983); the rising interest rates in the US in early 1980s (Satgar, 2009).

Scholars across a wide spectrum of political ideology have also criticized a number of internal factors. Orthodox scholars often blame governmental inefficiency, pervasive mismanagement, and corruption. However, other issues included the failure to diversify sufficiently in the period of faster growth in the 1960s and 1970s (UNCTAD, 2005). DeLancey (1992) argues, the use of the loans failed to generate the foreign exchange required to service the debts, whether through waste in nonproductive purposes such as import of nonessential consumer goods or because investment in projects, especially in the public sector, resulted low rates of return. Other scholars criticize the actions of the corrupt African elite. Onwuka and Aluko for example, argued that African countries are plagued by a scramble for national resources by privileged elites, who dominate and exploit the resources in favor of personal and class interest. The collaboration of such elites with MNCs, the looting of the national treasuries, and the general national economic disorder due to such corruption, had a direct psychological and moral effect on South’s negotiations for NIEO (Onwuka and Aluko, 1986).
Consequently, since the 1980s African governments began turning to the IMF for balance of payment support, and the World Bank for structural adjustment loans (Campbell and Loxley, 1989). In some cases, governments such as in Uganda, Tanzania, Ghana, Mozambique, turned to the IFIs in hopes of promoting short-term recovery with an eventual return to the ideals of economic nationalism or some form of socialism. In other countries, sections of the dominant ruling groups favored the longer-term strategies of Fund/Bank. Nonetheless the principal reason why African governments accepted the policies of the IMF or the Bank was the opportunity to borrow loans necessary for reducing the import constraint (Campbell and Loxley, 1989).

At this point IFIs introduced structural adjustment loans, requiring African countries to liberalize their economies and open them to international and domestic private capital while reducing the role of the state in economic governance. Kenya, Malawi, and Mauritius were the first states to introduce SAP reforms at start of 1980s, but by mid-1990s almost all other African countries had followed suit. Campbell and Loxley criticize that Western financial institutions were, as Western powers had under colonialism, dictating the continent’s economic policy- and integral to SAPs was the dismantling of the development states and the various protections developed during the era of economic nationalism to gain greater sovereignty and economic autonomy. Despite the variation of African economies and governments, the policies of structural adjustment were broadly the same regardless of

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51 Sometimes, banks, bilateral donors and other sources of funding insist that African governments borrow from international institutions in order to attain their assistance. This is largely because Fund/Bank assistance carries with it the requirement that borrowers pursue economic policies acceptable to the international institutions. It was through such policy conditionality that most structural adjustment programs in Africa were implemented (Campbell and Loxley, 1989).
the country. Essentially, structural adjustment sought to restore growth and stability by recasting relative prices, domestic expenditures, the type and degree of state intervention in the economy, and to introduce the discipline of the free market to African economies (Campbell and Loxley, 1989).

The IFIs argued that the continent’s development policies prior to 1980s had resulted in urban bias, largely benefiting the urban districts and stifling productivity in the country-side (World Bank, 1981). The IFIs argued that African countries should concentrate their efforts on exporting agricultural goods in accordance with their comparative advantage, and abandon their development strategies based on inefficient state enterprises, which were portrayed as parasitic. State restrictions on imports and exports, considered a hindrance to the economic growth that would follow free market policies, were to be lifted. Ultimately, like proposals from the Berg Report, the overall ideological approach promoted export-oriented growth strategies, with reliance upon market mechanisms and the promotion of the private sector (Campbell and Loxley, 1989). For Africa this meant the rejection of any vestiges of the developmental state. The state was required to withdraw from economic intervention, which included the removal of all barriers, including exchange controls, protection tariffs, and public ownership. Massive cutbacks in social services were also advocated. Instead, export-based agriculture became central to the neoliberal agenda (Campbell and Loxley, 1989). SAPs also required major institutional reforms, including changes in fiscal policy such as budgetary and debt management, export incentives and subsidies to importers, and public investment priorities. Importantly, as well be discussed in detail in the following
sections, SAPs promoted the creation of more ‘favorable investment climates’ for foreign investment through a number of reforms (Cheru, 1989).

**Continuing primitive accumulation: neoliberal policies and reasserting the power of foreign capital over peripheral resources**

The dismal failure of the structural adjustments to promote economic growth and alleviate poverty has been well-documented, and a number of critics argue such neoliberal policies have in fact only worsened these issues (Mkandawire, 2005; Cheru, 1989). From the perspective of political ecology, however, what is significant is that neoliberal policies have reinforced Africa’s traditional colonial role as exporter of raw materials within the international division of labor through the emphasis on export-led growth in accordance with the principle of comparative advantage- a structural position EUE theorists have criticized reinforces peripheral countries’ position as source and sink for the ecological needs of the core countries in regards to international trade (Giljum and Eisenmenger, 2004). Further, neoliberal policies have deliberately increased foreign access to, ownership of, and control over African ecological resources, achieved largely through the repealing of the developmentalist state and the defeat of economic nationalism. This section looks more closely at the policies enacted, in particular the policies regarding foreign investment.

Cheru argues that while appearing progressive and pro-peasant in style in its promotion of agriculture, the basic assumptions and prescriptions of the IFIs promote an overall export-led development strategy (Cheru, 1989). The essential argument is that expanded opportunities for trade and gains from trade would increase traditional exports
of individual countries, and also enable them to diversify their exports to include the
limited manufactured goods assigned to them by the law of comparative advantage. For
economies with limited domestic markets, trade would offer outlets for their exports and
increase the foreign exchange needed for the importation of important goods such as
investment goods like plants and equipment (Mkandawire, 2005).

However, Campbell and Loxley (1989) argue, the emphasis on export-led
development through comparative advantage merely reproduced the disadvantages of
unequal exchange experienced during colonialism. The IFIs had encouraged a large
number of developing countries worldwide to expand primary production, devalue their
currencies, and increase production. Yet the net outcome was that international markets
reacted to the increased availability of primary goods by lowering commodity prices.
Critics argue that Africa therefore gained little relative advantage. For example,
commodities such as cocoa, coffee and cotton- of which make up the bulk of export
earnings for several countries- led to an expansion of world supply and a corresponding
decline in world prices. By end of 1990s, and after reaching reforms in trade policy, little
had changed. No major expansion occurred in the diversity of products exported by most
of the Sub-Saharan African countries, although there are one or two exceptions like
Madagascar and Kenya (Campbell and Loxley, 1989). Indeed, the product composition of
some of the African countries’ exports may have become more concentrated.

Further, no general increase has occurred in a number of industries in which most
African countries have a ‘revealed’ comparative advantage. After decades of reform, the
most striking trend is the decline in the African share of global non-oil exports which are
now less than one half of what they were in the early 1990s (Mkandawire, 2005).
According to a 2005 report by UNCTAD, following the neoliberal policies, the share of manufacturing output in GDP dropped sharply in SSA between 1980 and 1990 before stalling at a level in 1990s below what it reached in 1960 (UNCTAD, 2005). Various cross-country studies have traced this trend to the sharp slowdown of output growth under adjustment programs, signifying a growth of the informal economy and a general ‘deindustrialization trend’ across much of region. Further, the report states, for many countries, this is coupled with a dependence on commodity exports that has remained very high, and in some cases risen higher, although paradoxically Africa’s share of world commodity exports has actually declined. Reproducing the problems that African countries sought to overcome with the policies of the post-independence era, at least until the mid-2000s, countries remained exposed to high price volatility, mainly from supply shocks, even as real prices continued their secular decline, exacting heavy costs in terms of incomes, indebtedness, investment, development and diversification. The report concludes that overall adjustment programs have done little to alter region’s pattern of integration into global economy, and worse, in case of manufacturing, have had a regressive effect (UNCTAD, 2005).

The other pillar of the neoliberal SAPs, and directly salient to the issues of this dissertation, was to create favorable conditions to open up the country for foreign capital through privatization and various incentives to attract multinational corporations. To attract a larger share of global FDI, many African countries introduced changes in policy. Even now, attracting FDI continues to be promoted as integral to development and economic growth. The IMF, World Bank, and OECD argue that FDI is central to increasing the foreign exchange of low income countries and avoiding further build-up of
debt. Underlying these arguments are the assumptions that FDI will bring stable capital inflows, greater technological know-how, higher paying jobs, entrepreneurial and workplace skills, and new export opportunities (OECD, 2002).

However, despite the compliance of African countries to implement structural adjustments, opening their economies to FDI has done little to alleviate poverty or encourage development. As the UNCTAD 2005 report criticizes, the orthodox response of IFIs, policy makers, and scholars has generally been a.) African governments had not carried out reforms far enough, but instead persisted in state interventionism, b.) not enough time had elapsed to reap the gains of adjustment and therefore of globalization, c.) government corruption and lack of rule of law (such as appropriate enforcement of property rights) has been impeding potential gains (IMF, 1999; OECD, 2002; World Bank, 2001; Collier and Patillo, 2000).

The problem with such assessments, in particular the contention that African governments had not carried reforms far enough, is that by second half of the 1990s, African countries had undergone more far reaching adjustments than any other region. In actuality, Africa is very heavily involved in globalization as more devaluations, lowering of tariffs and privatizations, and so on, were imposed in Africa than anywhere else (UNCTAD, 2005). It is in this area of the world where the greatest number of programs were introduced. During 1980s and 1990s, 35 countries of Sub-Saharan Africa implemented 162 SAPs with the World Bank or the IMF in comparison to the 126 SAPs introduced throughout rest of the world. Further, critics charge that the extensive, ongoing adjustment process does not even seem to have a terminal point (Campbell and Loxley, 1989). To fully grasp the contrast between the orthodox policies regarding the
opening of African economies to foreign investment and the demands made during the era of economic nationalism it is necessary to look more closely at the policies themselves.

Multilateral and Bilateral Investment Treaties

This sections looks at multilateral/bilateral treaties, which have been at least partially responsible for shifting the balance of power to foreign capital, particularly through tying the hands of African states and preventing them from regulating FDI for development purposes. By the early 2000s most African countries had concluded bilateral treaties and signed multilateral agreements with international organizations in the effort to create more ‘favorable investment climates.’ In a 2001 report, the World Bank hailed the participation of African countries in international, regional and bilateral agreements dealing with FDI as important steps in signaling to investors that a favorable policy environment is being created (World Bank, 2001).

Several scholars have argued that the proliferation of regulations formulated in such treaties place serious constraints on the national development strategies of developing countries (Wade, 2003; Adejumobi, 2003; Kragelund, 2003; Gallagher, 2010; Shadlen, 1999). Ultimately, these regulations limit the capacity of developing country governments to constrain TNCs, as they are designed to allow developed country firms to enter and exit markets more easily, and once within national boundaries, to operate with fewer restrictions and obligations (Wade, 2003). Such a level of intrusion, through the mechanism of international agreements, represents what Wade characterizes as a ‘shrinking of autonomous development space,’ whereby the development space for
diversification and upgrading policies in developing countries is being shrunk behind a rhetoric of universal liberalization, privatization and economic growth\(^\text{52}\) (Wade, 2003).

Concerning multilateral organizations, the major institutions in the post-WWII era that have governed international trade- GATT and later the World Trade Organization- also promulgated important provisions concerning the governance of foreign investment. The Uruguay rounds from 1986-1993, in which the US was the major actor in the negotiation process, contained several controversial propositions in the area of foreign investment in the form of trade-related investment measures (TRIMs) (Adejumobi, 2003).

TRIMs covers a broad variety of developing country economic activity, and countries that are members of the WTO must satisfy the performance requirements of TRIMs (Wade, 2003). The central aim of TRIMs is to provide a safe haven for Western investments with favorable domestic conditions. TRIMs moves trade rules beyond the principle of ‘avoid discrimination between countries,’ that is, the ‘most favored nation principles of old GATT,’ to ‘avoid trade and investment distortions.’ It allows for an interpretation of most performance requirements on foreign firms as distortions, and bans or aspires to ban them. The TRIMs agreement bans performance requirements related to local content (which require that locally produced goods be purchased or used), trade balancing, export requirements (which require the export of a specified percentage of production volume), and it also bans requirements on public agencies to procure goods from local suppliers. A country that tries to impose such requirements can be taken to

\(^{52}\) Wade argues that the rules being written into multilateral and bilateral agreements actively prevent developing countries from pursuing kinds of industrial and technology policies adopted by newly industrializing economies and by older developing countries when they were developing. Further, developed country tariffs limit developing export growth and their rise up the value chain (Wade, 2003).
Dispute Settlement Mechanism, and will usually lose (Wade, 2003). Moreover, the US and EU want to modify current TRIMS agreement so as to ban all performance requirements, including for joint venturing, technology transfer, and R&D. Moreover, Wade argues that the language in the relevant parts of TRIMS is not legally clear, and many developing countries fear that if they do use such non-banned performance requirements they will face punitive punishment. States currently negotiating to join the WTO are finding the rules they are being asked to sign on to are even more restrictive than those for existing members (Wade, 2003; Adejumobi, 2003). In terms of developing country capacity to regulate the behavior of foreign firms for the purpose of development objectives, Wade argues that TRIMS restricts the right of a government to carry through policies that favor growth and technological upgrading of domestic industries and firms. A country that implemented such policies can now be legally handicapped in its access to developed country markets. As such, scholars have argued that the WTO outlaws key investment regulations that were once crucial to many countries’ development strategies (Shadlen, 1999; Change and Green 2003; Correa and Kuman, 2003). Shadlen contends, “The bottom line is that the TRIMs agreement takes away developing countries’ ability to use important policy instruments to increase local value-added, employment, and industrial upgrading” (Shadlen, 1999, p. 759).

Even more stringent are bilateral investment treaties (BITs) that have been proliferating throughout the developing world since the early 1990s. Compared to BITs, the obligations from TRIMs are rudimentary, and not nearly as comprehensive as the provisions contained in BITs. Bilateral investment treaties require host government to lift even more restrictions on foreign firms, to give even more concessions, in return for
better access to US or other powerful party markets. They establish firm-state arbitration boards, which allow private firms to take governments to arbitration by a body dominated by private-sector adjudicators. Such boards, Wade argues, are naturally sympathetic to needs of firms and use private contract law rather than public law (Wade, 2003). Further, concerning dispute, under the WTO, only countries can bring cases against other countries. However, regional-bilateral treaties with the US allow firms to bring cases to arbitration (Shadlen, 1999).

BITs clearly focus on foreign investment protection, and developing countries sign bilateral investment treaties BITs in order to ‘signal’ to investors and attract more FDI. In recent decades, BITs have become the most important international legal mechanism for the encouragement and governance of FDI. Prior to advent of BITs, the protection afforded to foreign investors was minimal, under the customary international legal rule of minimum standard of treatment and the so-called Hull Rule. The Hull Rule dealt exclusively with cases of expropriation and offered no general protection against discriminatory treatment (Neumayer and Spess, 2005). During the era of economic nationalism, developing countries had challenged the Hull Rule’s validity as part of their demands for the NIEO: the Resolution 1803 of UN General Assembly merely requires ‘appropriate compensation’ for expropriation. Furthermore, it is likely that the Hull Rule never had much sway anyways, considering the large number of expropriations in the 1960s and 1970s that took place without what most investors would have regarded as adequate compensation (Neumayer and Spess, 2005).

The basic provisions of most bilateral investment treaties guarantee certain standards of treatment for foreign investors that contrast strongly with the demands of the
NIEO. By entering into a BIT, signatories agree to grant certain relative standards of
treatment such as national treatment (foreign investors may not be treated worse than
domestic investors) and most favored nation treatment (privileges granted to one foreign
investor must be granted to all foreign investors). They also agree to guarantee certain
absolute standards of treatment such as fair and equitable treatment for foreign investors
in accordance with international standards after the investment has taken place. BITs
typically ban discriminatory treatment against foreign investors and include guarantees of
appropriate compensation for expropriated property or funds, and free transfer and
repatriation of capital and profits, all areas which the varying policies under economic
nationalism sought to regulate. Further, the BIT parties agree to submit to binding dispute
settlement should a dispute concerning these provisions arise (Neumayer and Spess,
2005). The extent of interference with domestic regulatory sovereignty when developing
countries sign BITs is therefore enormous. Virtually any public policy regulation can be
challenged through the dispute settlement mechanism as long as it affects foreign
investors. Often, foreign investors request for international arbitration straight away,
which contrasts with the use of domestic courts, where investors have no say on
composition of judges and where domestic rule might trump BIT provisions. Hence, the
signing of BITs is specifically meant to signal to potential investors that the developing
country is serious about the protection of foreign investment (Neumayer and Spess,
2005).

Overall, scholars such as Shadlen (1999) argue that regional-bilateral agreements
move far beyond the WTO in a way that “…may have serious implications for
developing countries’ capacities for achieving upward mobility in the international
economy,” and particularly bilateral agreements with the US. Regional-bilateral accords, he contends, “….encourage specialization and pursuit of competitiveness via exploitation of existing comparative advantages” (Shadlen, 1999, p. 752).

Domestic reforms: An example of the mining sector

A large proportion of FDI in Africa goes into the mining sector, and mineral export economies are among the highest recipients of inflows. For much of 1980s and 1990s, the investment climate in mining remained poor, at least partially due to uncertainty generated by the backlash against foreign-owned operations in the 1970s (UNCTAD, 2005). In recent years, however, with major changes in mining codes that have helped orchestrate a state withdrawal from the sector, expand opportunities for the private sector and increase incentives to attract FDI, African economies have witnessed an influx of FDI into the mining sector (UNCTAD, 2005). The IFIs argued that the incapacity of inefficient SOEs to generate sufficient revenues hindered the wider development process, and it was proposed that such measures would alleviate the underperformance of the mining sector in Africa (UNCTAD, 2005).

Since the 1980s the World Bank has promoted a process of liberalization, deregulation, and privatization under the auspices of economic growth, which has

53 UNCTAD (2005) states the need for a more nuanced analysis of SOEs in mining sector. Such an analysis would take into account that most of Sub-Saharan Africa was experiencing a prolonged economic downturn that started in late 1970s. This resulted in a major source of rent depletion, and any revenues generated by sector were appropriated for BOP support, including debt service payments, thus depriving sector of re-investable surplus.
resulted in the creation of new regulatory frameworks for mining in Africa. The reforms have certainly created a more favorable environment for foreign investors, but critical scholars and activists charge these reforms have potentially undermined norms and standards in areas of crucial importance for social and economic development, as well as the protection of the environment in the countries concerned (Campbell, 2003; Lissu and Curtis, 2008; Akabzaa, 2001). Overall, reforms emphasized creating a stable legal and fiscal framework, including mining codes, contractual stability, a guaranteed stable fiscal regime, and channels for profit repatriation. In return governments are expected to receive increased rents generated in the mining sector (UNCTAD, 2005).

From the perspective of political ecology, however, African mining codes illustrate, similar to the multilateral and bilateral treaties, a significant shift to foreign capital control over African resources. Further, critics argue that this has occurred at the expense of development objectives, with attendant social and environmental costs (Campbell, 2003). An example of this shift is the mining sector in Ghana, which received priority attention under the country’s Economic Recovery Program (ERP). The ERP initiated a generous provision of tax incentives to foreign investors. Corporate income tax, which stood at 50-55% in 1975, was reduced to 45% in 1986 and further scaled down to 35% in 1994. The initial capital allowance to enable investors to recoup their capital expenditure was increased from 20% in the first year of production and 15% for subsequent annual allowances in 1975, to 75% in the first year of operation and 50% for subsequent annual allowances in 1986. Royalty rates, which stood at 6% of total value of mineral won in 1975, were reduced to 3.7% in 1987. Other duties such as the Mineral duty (5%), import duty (5-35%) and Foreign Exchange Tax (33-75%) that had
contributed significantly to government revenue were abolished. In addition, the following incentives were introduced; exemption from the payment of customs import duties in respect of plants and equipment and accessories imported for use in mining. The personal remittance quota for expatriate personnel was freed from any tax imposed for the transfer of external currency out of the country (Campbell, 2003).

Campbell (2003) argues that ultimately the role of the African state was redefined to create a favorable environment for investment and the free play of market forces. Developmental objectives that hampered these goals, such as re-distributive measures that sought to retain greater earnings within the host country, or regulatory measures to monitor the use of non-renewables and protect the environment, were at best placed in secondary position compared to policies to attract foreign investment and promote exports. For example, Campbell noted that the World Bank’s 1992 Strategy for African Mining- the first systematic presentation of reforms considered necessary by the Bank- was based upon a survey that was sent to 80 mining companies. Based upon the needs of the investors, rather than the goals of sustainable, integrated development, the report recommended a stable legal and fiscal framework, which included the need for mining codes, contractual stability, a guaranteed fiscal regime, profit repatriation, rule of law, etc. The report, however, did not articulate how the mining sector would contribute to broader developmental objectives of great import, such as the building of backward and forward linkages or the possibility of value-added processing of minerals. Rather, the primary focus was how to attract investment and reduce investment risk for private mining companies.
Overall, Campbell (2003) argues that African states face a decreased ability to ensure a sustainable flow of net returns from mining activities and political sovereignty in terms of achieving developmental objectives. For example, economic reform that liberalized the general investment regime in areas of taxation, currency exchange, banking, trade and labor, and opened all sectors to foreign investors previously reserved to the state, obviously involves major changes in the concept of sovereignty for many developing countries for all the reasons stated in the NIEO. Reductions in levels of ad valorem royalties required by state and reduction in corporate income tax rates as well as customs duties on imported capital goods reduce the capacity for African states to retain earnings. For example, the Tanzanian mineral code introduced in 1998 as a result of a five-year World Bank financed sector reform project allows 100 per cent foreign ownership, provides guarantees against nationalization and expropriation, offers unrestricted repatriation of profits and capital, pegs the royalty rate at maximum of 3 per cent, provides waivers in respect of import duties, tax exemptions on imported machinery, equipment and other inputs, and waives requirement for local procurement of goods and services. This is indeed a significant policy reversal from a country that once sought to build development based on African socialism and institute indigenous control over their means of production. Chapter 4 discusses these issues in terms of Tanzania’s gold mining sector in more detail.

Now, with the current scramble for African resources and a concurrent commodity boom that has resulted in robust world market prices for African metals, scholars and policy makers are especially criticizing the tax regimes of resource-rich countries. A number have also begun to make rough empirical calculations for the
associated losses in revenue. For example, the Africa Progress Report 2013, written by the Africa Progress Panel and chaired by Kofi Annan, states quite plainly that ‘aggressive tax planning drains the public purse.’ The report acknowledges that in the 1990s many governments may have mistakenly provided excessive tax concessions to attract foreign investors. What the report finds especially problematic is that many such policies have continued, even despite the commodity boom of the 2000s and the increased profit margins of mining and petroleum companies. For example, the report finds that in Sierra Leone, generous concessions were made to foreign investors that included royalty rates as low as 0.5 percent on mining exports. Also, in Sierra Leone, in 2011 only one of five major mining companies operating in the country paid corporation tax. Zambia as well entered the copper boom with one of lowest royalty rates in the mining sector in Africa. It was not until 2013 that tax concessions for the copper industry increased somewhat in light of the increase in world market prices. The report writes that until 2010, the average royalty payment on gold exports in Sub-Saharan Africa was only 3 per cent, one of lowest in world. However, world prices of gold increased from $300 to $1,600 per ounce between 2000 and 2011, while investor profits increased at four times rate of government revenues (Africa Progress Panel, 2013).

Further, the report states that revenues secured by many resource rich countries appear to be very low in relation to the value of exports and especially when compared with international standards. For example, cited in the report, the IMF estimates that, globally, the effective tax rate in mining is typically 45-65 per cent (and it is higher in petroleum). But in 2011, while Zambia’s copper exports generated $US 10 billion, government revenues from copper were only $240 million, or 2.4 per cent of export
value. In the same year, exports of mining products from Guinea reached $1.4 billion, representing 12 per cent of GDP, but government mining revenues were just $US 48 million, or 0.4 per cent GDP. Further, the report asserts, tax reform has proven difficult in many resource rich countries due to opposition from major companies. In some cases mining companies have completely opposed reform, in response threatening to invoke stabilization clauses written into agreements negotiated in 1990s. For example, the report points out, when Zambia sought to renegotiate its royalty rate on copper exports, major investors opposed the measure despite a fourfold increase in the price of copper between 2000 and 2011. Likewise in Nigeria, royalty rates were negotiated during the 1990s when oil prices were one-fifth of post-2000 prices, but major companies still strongly opposed reforms. Only now in 2013 has the government raised taxes from nominal level of 63% to 71% (still at lower end of tax range identified by IMF) (Africa Progress Panel, 2013).

Chapter 4 provides more detailed empirical estimations for Tanzania concerning losses associated with low revenue collection.

Another report, written by the German Development Institute, similarly finds that Sub-Saharan Africa generally failed to benefit from the high prices of mineral and energy commodities from 2003 to 2008. While the extractive sector experienced strong sales revenues and high inflows of direct investments, the three case study countries of Zambia, Namibia, and Ghana indicate that they only profited ‘more than moderately’ from tax revenues during the commodity boom. For example, in Zambia, the report finds that the copper and cobalt industry sold minerals to the value of over US$ 13 billion and benefited from nearly US $4 billion of FDI in the period from 2003 to 2008. However,
the average implicit tax rate\textsuperscript{54} for the extractive sector in Zambia from 2003-2008 was below 2 percent, and consequently the government only raised tax revenues of about US$ 393 million in that same period. In Namibia, sales of minerals were worth US$ 9.4 billion, and FDI totaled US$ 2.6 billion in the period 2003-2008. In contrast, tax revenues only totaled about US$ 893 million. Likewise, Ghana exported minerals and fuels worth US$ 7.7 billion and attracted over US$ 4 billion of FDI inflows from 2003-2008. In contrast, tax revenues totaled only US$ 426 million from 2003 to 2008 when the average implicit tax rate in that period was 5 per cent.

Further, the report engages in a hypothetical experiment through applying Australia’s implicit tax rate to the case studies. It finds that Ghana, if it had the same implicit tax rate of Australia, could have collected tax revenues of US$ 735 million in period 2003-2008 rather than US$ 426 million. Namibia could have raised government revenues an additional US$ 870 million, and Zambia nearly US$ 1.4 billion from 2003 to 2008 (Sturmer, 2010).

It is important to note that while the reforms adopted in the 1980s and 1990s may have initiated foreign investment regimes that were highly in favor of investors, much literature suggests that this trend has been, and continues to be, abetted by the corruption and collusion of local elites. This is an issue of much importance, one that suggests a class structure typically criticized by dependency theory; a comprador elite whose interests coincide with foreign interests, and often conflict with the interests of their own citizens. This is a complex issue, and most likely varies country to country in the

\textsuperscript{54} The author defines implicit tax rates as ratios that measure aggregate revenue from one or more taxes (meaning corporate income taxes paid by the extractive sector and royalties) as a percentage of some aggregate tax base (meaning in the report sales revenues from minerals and fuels.) Implicit tax rates are sometimes referred to as an average or effective tax rate.
particular relations between elites and investors. Chapter 4 goes into greater detail elucidating this relation in terms of Tanzania. But for example, the report from the German Development Institute argues that corruption and patronage in the granting of concessions and in tax administration were central to the low implicit tax rates.

The Africa Progress Report 2013 engages in a case-study analysis of the Democratic Republic of the Congo, and argues that privatization of the DRC’s minerals sector has been plagued by a culture of secrecy, informal deals and allegations of corruption, despite calls (and promises of) change towards transparency. Further, with some of the world’s richest mineral resources, DRC state companies are granting concessions to foreign investors, most registered offshore, that systematically undervalue natural resources. An analysis restricted to the years 2010-2012, and focusing on only five deals, finds that between 2010 and 2012, the DRC lost at least US$ 1.36 billion in revenues from underpricing mining assets that were sold to offshore companies. These total losses from just the five deals reviewed were equivalent to almost double the combined annual budget for health and education in 2012. Across the five deals, assets were sold on average at only one-sixth of their estimated commercial market value. Hence, assets valued in total at US$ 1.63 billion were sold to offshore companies for a mere US$275 million. The report also cites a pervasive problem of tax evasion by offshore companies, and provides an estimate that firms that shift profits to lower tax jurisdictions cost Africa a whooping US $38 billion a year (Africa Progress Panel, 2013).55

55 Likewise, reflecting the non-inclusive nature of economic growth under the current commodity boom, the report finds disparities in resource rich countries are rising with economic growth, and dampening the potential for poverty reduction. The report analyzed the relationship between growth, inequality and poverty reduction in four countries: Ghana, Nigeria, Tanzania and Zambia. In each of the four countries,
Control over peripheral minerals by core and semi-peripheral capital, abetted by local elites and on terms favorable to individual capitals as well as the broader biophysical needs for the continued accumulation of capital - is at the heart of issues of ecologically unequal exchange and ecological imperialism. Under economic nationalism, reasserting national control over the mining sector was central to the efforts for resource sovereignty and goals of development, as such resources are non-renewable national assets. Without the capacity for African economies to derive maximum benefits, such as aiming to maximize the value of locally retained earnings, create linkages, transfer technology, or mitigate environment and social impacts, economies based on mineral extraction remain plagued by export enclaves. For example, in terms of value added, the Africa Progress Report 2013 found that even with the growth of natural resource exports in the 2000s, Africa remains crippled with underlying structural weaknesses. Africa remains an exporter of unprocessed or lightly processed commodities and consequently African exporters continue to capture only a small share of the final value of mineral exports. The DRC, for example, is the world’s largest exporter of cobalt, but it remains mostly in form of unprocessed ore. Meanwhile value is added outside the country, such as by the smelting industry in China and other importing countries. Likewise, Guinea exports bauxite, but it too is processed into aluminum overseas. Angola and Nigeria

there was a significant gap between the anticipated poverty reduction effects of growth and the actual outcomes. Further, in each of the four countries the wealthiest 10 per cent captured a disproportionately large part of the increase in overall consumption generated by growth. In each case the poorest 40 per cent saw their share of income decline. This increasingly unequal pattern of wealth distribution was already superimposed on highly unequal patterns of wealth distribution. The report also discusses the ‘hidden wealth of the elites.’ For example, in 2009, under a lawsuit brought by Transparency International, it was found that Presidents Omar Bongo Ondimba of Gabon, Denis Sassou Nguesso of the Republic of Congo and Teodoro Obiang Nguema of Equatorial Guinea bought luxury homes with state funds. Sassou Nguesso allegedly owned 24 estates and operated 112 bank accounts in France, while Bong and his relatives allegedly owned about 30 luxury estates on the French Riviera and in Paris and its suburbs. (Africa Progress Report, 2013)
continue to export low value-added crude oil, and in a classical dependency syndrome, import high value-added petroleum and petroleum-based plastics and fertilizers. Further, the report states, studies conducted of the value chain for a range of minerals in Africa have found that the value of processed products was typically 400 times greater than the equivalent unit value by weight of the raw material. The report concludes that without processing industries that add value, mining creates fewer jobs, produces less revenue and contributes less to GDP, and create an economy vulnerable to extreme price fluctuations on world markets. Such disarticulated economies, as Bunker had realized in his study of the Amazon, are inhibited from development along the lines of a diversified and integrated economy. Biophysical resources are simply transferred to core articulated economies, whose multiple internal linkages enable them utilize such resources for their technological and economic growth.

There are therefore a number of significant contradictions that undermine the ideological legitimacy of the neoliberal reforms as a sustainable development strategy. For one, as discussed in Chapter 2, scholars have criticized that such strategies are environmentally unsustainable. Further, IFIs and orthodox scholars and policy makers insist that increased FDI inflow brings foreign exchange, transference of technology and managerial knowledge, and provide access to international markets and build export capacity. While a case can be made that such FDI reforms did bring increased access to international market and have increased export capacity, such gains as technology transfer and managerial knowledge are hindered by their very prescriptions for attracting FDI such as the binding constraints discussed above under bilateral investment treaties. Domestic reforms, such as tax reforms, repealed the developmentalist policies aimed at
retaining higher profits. Examination of international treaties suggests that the policy arena for international economic integration for developing countries necessitates the repealing of the very developmentalist policies aimed at attaching stipulations to the operations of TNCs to ensure the transfer of technology and the construction of forward and backward linkages to build an integrated economy (Gallagher, 2010; Shalden, 1999; Neumayer and Spess, 2005). As Shalden writes of this paradox,

Thus, the price to be paid for increased market access under regionalism-bilateralism is that countries must relinquish many of the very tools that historically have been used to capture the developmental benefits of integration in the international economy (Shadlen, 1999, p. 750).

Further, a historical analysis as given above of the period of economic nationalism demonstrates that the Third World felt that sufficient funds from FDI flows and export of resources, transfer of technology and managerial knowledge, etc., would be much better achieved through some form of economic nationalism, including commodity cartels, the collective demands of the NIEO and in general higher levels of resource sovereignty. However, the cold reception, even resounding rejection, of such demands like the NIEO, has been well-documented by scholars, mainstream and radical alike (Bhagwati, 1977; Samir Amin, 1990; Onwuka and Aluko, 1986; Adejumobi, 2003).

The ‘new scramble for Africa:’ the 21st century global demand for Africa’s resources

In the first decade of the 21st century FDI inflows began to increase rapidly in African primary sectors, with heavy emphasis on traditional sectors such as mining, but also across a full spectrum of African ecological goods and services. In a world capitalist
system characterized by the tension between a growing global economy and dwindling sources and sinks, Africa has emerged as a last bastion for resources for both core and emerging economies alike. Several scholars have termed this the ‘new scramble for Africa’ in comparison with the colonial scramble for Africa by the European powers (Carmody, 2011; Southall and Melber, 2009). As some scholars have noted, it was the structural adjustments beginning in the 1980s that set the stage for the new scramble for Africa by opening up what had been relatively closed economies and making their primary sectors attractive to foreign investment (with unintended consequences such as increasing competition from emerging economies such as China, India and Brazil) (Carmody, 2011; Kragelund, 2010). While population growth and urbanization are important factors in African environmental degradation, nonetheless, the continuing emphasis on export-led development strategies has also had severe ecological repercussions, both in terms of localized pollution associated with such activities as mining (Akabzaa, 2001) but also more generally in terms of depletion of natural capital stocks. On the one hand, the liberalizations have opened African ecologies as a source of secure access to cheap resources for developed and emerging countries alike. On the other hand, with increasing demand and dwindling supplies, prices of important natural resources have boomed, offering substantial profit to foreign investors.

Overview: African trade flows in physical terms and FDI inflows

Since the 2000s, African countries have been growing at a relatively fast rate. This has partially been beneficial, leading to improvements in trade, and moderate increases in government revenue, infrastructure development and provision of social
services (UNCTAD, 2012). However, according to UNCTAD’s latest *Economic Development in Africa 2012 Report*, which focuses on issues of environment and sustainability, the current pattern of growth is neither inclusive nor sustainable. Largely, this is due to the fact that this economic growth has been based on the extraction of natural resources. The most important resources driving this growth dynamic are fossil fuels, and metallic and non-metallic minerals, which are non-renewable, being depleted at a very rapid rate, and subject to highly volatile commodity prices and global demand. As had been alluded to earlier, this growth pattern has been accompanied by a deindustrialization trend. The share of manufacturing in Africa’s gross domestic product fell from 15 percent in 1990 to 10 percent in 2009, with some variation among countries, but substantial decline in most regions nonetheless. As such, the structural changes African countries have witnessed over the last 30 years have not been productivity-enhancing structural changes, but rather the results of an increasing importance of the commodity economy and the rising importance of low-productivity informal economic activities in the service sector (UNCTAD, 2012). The report emphasizes that despite major reserves, the region’s stocks of non-renewables are being depleted, particularly through international trade, though domestic use of resources such as population and urbanization also contribute. In addition, Africa is suffering from land degradation, deforestation, and loss of biodiversity. Sixty five per cent of Africa’s agricultural land, 31 per cent of its pasture lands, and 19 per cent of its forests and woodlands are degraded. Such trends have been caused mainly through deforestation, desertification, and erosion (UNCTAD, 2012).
One way the increased interest in African resources can be captured empirically is through quantifying Africa’s trade in physical terms (metric tons). According to the UNCTAD 2012 report, the volume of Africa’s material trade in physical terms (metric tons) rose substantially, reflecting the global interest in African resources in the 21st century. Overall, the volume of Africa’s material trade in physical terms rose from almost 260 million tons in 1980 to 506 million tons in 2008. Fossil fuels, dominated by petroleum, hard coal and for a short time natural gas, are African countries’ main exports in physical terms. After a decrease during the mid-1980s, exports of fossil fuels reached a peak in 2008 amounting to 534 million tons. Metals, dominated by iron ores and concentrates, and followed by manganese and chromium ores and concentrates, are Africa’s second largest export flows, with around 78 million tons exported in 2008. Mineral exports comprise the third largest export group, with a volume of 52.3 million tons in 2008. The last material category, biomass, has lowest share of African exports, with fruits, timber, products made of biomass like paper, and crops such as coffee, cocoa and tobacco main as the primary biomass exports, exporting about 14.5 million tons in 2008. Graph 1 displays the growth in physical terms of African exports from 1980-2008. Since the mid-1980s, all material categories have grown. (The relationship of this trend to ecologically unequal exchange will be discussed in more in-depth in Chapter 5).
In addition to an increase in exports in physical terms, the new scramble for Africa is reflected in part in increased FDI inflows, largely due to high prices for important commodities as well as the opening of African economies to foreign investment. From an ecological perspective looking at total FDI alone can be deceiving, as the monetary amount of FDI flows divulges neither the draining of natural capital nor potentially associated environmental impact. What may register as an insignificant inflow into the timber sector, for example, may be associated with devastating effects on an old growth African forest. Nonetheless, the rapid growth in inflows, and their concentration in minerals and fossil fuels, reveals the predominant interest of the core and emerging economies in securing such strategic resources for industrial purposes.

According to the UNCTAD World Investment Report 2007, in the extractive industries, the high prices of metals, oil, and natural gas in recent years have led to the
increased activity of TNCs in Africa, with inflows from emerging economies like China becoming increasingly important. In 2006, FDI inflows to Africa rose by 20% to 36$ billion, twice their 2004 level, in large part related to investments in extractive industries. An estimated 442 green field investments were undertaken in Africa in 2006, 258 by developed country transnationals, particularly from Europe, 175 by developing economies (134 from Asia and the remaining from within Africa), and a few from South East Europe and the CIS. The value of cross-border acquisitions of African enterprises reached a record level 18$ billion in 2006, almost half of this in the form of M&As by Asian TNCs, representing a huge expansion of activity since the start of the decade (UNCTAD, 2007).

The extractive industries accounted for most of the increase in inflows to Africa in 2006, as the surge of FDI inflows were concentrated mainly in oil and gas as Table 1 shows (UNCTAD, 2007) Though in addition, the growing services sector, particularly transport, storage and communications, continued to attract FDI, as reflected by the data on cross-border M&As in 2006. However, it grew at a lower rate than the primary sector.
Table 1: Distribution of cross-border M&As, by Sector and Main Industry in Africa, 2005-2006

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<tr>
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<tbody>
<tr>
<td>Total Industry</td>
<td>10 509</td>
<td>17 559</td>
<td>15 505</td>
<td>11 208</td>
</tr>
<tr>
<td>Primary</td>
<td>908</td>
<td>4 788</td>
<td>249</td>
<td>356</td>
</tr>
<tr>
<td>Mining, quarrying and petroleum</td>
<td>908</td>
<td>4 788</td>
<td>249</td>
<td>356</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>873</td>
<td>5 24</td>
<td>237</td>
<td>335</td>
</tr>
<tr>
<td>Petroleum</td>
<td>34</td>
<td>4 265</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>Secondary</td>
<td>1 676</td>
<td>2 017</td>
<td>35</td>
<td>156</td>
</tr>
<tr>
<td>Food, beverages and tobacco</td>
<td>17</td>
<td>1 136</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Chemicals and chemical products</td>
<td>12</td>
<td>3</td>
<td>-</td>
<td>120</td>
</tr>
<tr>
<td>Stone, clay, glass, and concrete products</td>
<td>907</td>
<td>-</td>
<td>29</td>
<td>-</td>
</tr>
<tr>
<td>Metals and metal products</td>
<td>12</td>
<td>783</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Machinery</td>
<td>545</td>
<td>-</td>
<td>-</td>
<td>36</td>
</tr>
<tr>
<td>Electrical and electronic equipment</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Motor vehicles and other transport equipment</td>
<td>3</td>
<td>13</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Services</td>
<td>7 925</td>
<td>10 763</td>
<td>15 221</td>
<td>10 693</td>
</tr>
<tr>
<td>Electricity, gas, and water distribution</td>
<td>58</td>
<td>307</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hotels and restaurants</td>
<td>22</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trade</td>
<td>312</td>
<td>1 001</td>
<td>47</td>
<td>87</td>
</tr>
<tr>
<td>Transport, storage and communications</td>
<td>1 534</td>
<td>8 321</td>
<td>1 307</td>
<td>698</td>
</tr>
<tr>
<td>Finance</td>
<td>5 308</td>
<td>1 086</td>
<td>13 787</td>
<td>9 318</td>
</tr>
<tr>
<td>Health and social services</td>
<td>587</td>
<td>-</td>
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</table>

Source UNCTAD 2007

Further, investors seeking mining locations drove an increase in FDI inflows in African least-developed countries (LDCs), increasing from $6 billion in 2005 to $8 billion in 2006, as shown in Graph 2. The 10 major recipients of FDI among African LDCs in 2006 were, in declining order: Sudan, Equatorial Guinea, Chad, Tanzania, Ethiopia, Zambia, Uganda, Burundi, Madagascar, and Mali. FDI grew especially quickly (by 50% or more) in Burundi, Djibouti, Guinea-Bissau, Somalia, Madagascar, Ethiopia, Cape Verde, Gambia and Sudan.
The UNCTAD 2007 report found that policy developments also indicate a further opening up to foreign investment, although some countries have also made changes in their regulatory frameworks with a view to securing greater benefits from inward FDI. While African economies have been encouraged to open to foreign investment since the 1980s, UNCTAD’s annual survey on changes to national laws and regulations shows that even as late as 2006, 40 Africa countries introduced 57 new measures affecting FDI, of which 49 encouraged inward FDI. A number of African countries introduced measures aimed at improving the admission and establishment processes applied to foreign investors. For example, Burkina Faso created one-stop shops for new businesses; Kenya strengthened its investment promotion agency (IPA); several countries eased or improved registration and fiscal procedures for business start-ups; and Nigeria cut registration time from 274 to 80 days. Other countries introduced other measures to promote foreign investment, such as various forms of tax reductions. At the international level, the
region’s development partners under the umbrella of the Fourth Africa-Asia Business Forum and Tokyo International Conference for Africa’s Development implemented measures to boost region’s FDI inflows (UNCTAD, 2007).

According to the newest UNCTAD World Investment Report 2013, investment in extractive industries remains the most important driver of FDI to Africa, though investment in manufacturing and services also witnessed investment increases. In East Africa, recently discovered gas reserves in Tanzania and oil fields in Uganda resulted in increased FDI, as inflows to the region rose from $4.5 billion in 2011 to $ 6.3 billion in 2012. Central Africa also saw its inflows rise to $10 billion, a record high, maintaining a trend of increasing FDI since 2010. In this region, natural resources continue to attract investment from mining transnational corporations. For example, significant FDI was targeted at the expansion of the copper cobalt Tenke Fungurume mine in the DRC. For West Africa FDI flows declined by 5 per cent to $ 16.8 billion, largely due to a drop in investment in Nigeria by 21 per cent. However, investment in oil-producing Ghana remained stable at $3.3 billion and mining interests in Mauritania helped that country’s inflows double to $1.2 billion. In the Southern African region, some countries saw substantial increases. Inflows to Mozambique doubled to $ 5.2 billion, attracted by the country’s huge offshore gas deposits. However, FDI flows to Southern Africa fell. Reflecting a trend some commenters criticize as a form of sub-imperialism (Shivji), South Africa registered FDI outflows at $4.4 billion, making the country the largest source of FDI in Africa. South African companies were active in acquiring operations in industries such as mining in 2012, as well as in manufacturing and services (UNCTAD, 2013).
As established under colonialism, African resources remain the primary draw for FDI flows, with sectoral concentration in mining. Resources, prospects of better world prices, changes in attitudes towards national ownership and sector specific incentives tend to be primary determining factors in attracting FDI (UNCTAD, 2007). Some scholars argue this creates a form of enclavism and uneven development. Ferguson argues that the standard interpretation that Africa remains underdeveloped because the continent is bypassed by capital is misleading. Rather,

….capital hops over unusable Africa, alighting only in mineral rich enclaves that are starkly disconnected from their national societies. The result is not the formation of standardized national grids, but the emergence of huge areas of the continent that are effectively off the grid. These areas are in many ways excluded from the global economy, but Africa is not a ‘black hole’ in the information society; rather, specific forms of global integration on the continent co-exist with specific and equally global forms of exclusion and marginalization” (Ferguson, 2005, p. 380).

This is a difficult trend to quantify, and critics could point out the FDI in manufacturing and services have been on the rise according to the World Investment Report 2013. However, Ferguson’s comments carry weight, because FDI is still primarily driven by natural resources; economic growth is generally still driven by extractive based activities; such economic growth is neither sustainable nor inclusive, and has resulted in increased inequality and not led to the expected levels of poverty reduction; Africa has failed to make significant gains in moving up the value added chain and is instead witnessing a trend of de-industrialization; and that extractive industries in general tend to produce enclaves.
African ecologies in the global ecological context

This section briefly overviews, in general terms, the global drivers behind the increased demand for African resources since the 2000s. Despite the heavy concentration in minerals and fossil fuels, what is significant about the ‘new scramble for Africa’ is the extent to which the totality of African ecological goods and services are being exploited. While traditional resources such as fossil fuels and strategic minerals are attracting global attention with high FDI flows, African commons such as the land and African fisheries are increasingly being sought out as well.

African fossil fuels and the global demand for energy security

As discussed above, with the projected massive increase in global demand coupled with dwindling supplies, fossil fuels are central to the new scramble for Africa. Both core and emerging economies alike are competing to secure their access to oil, and Africa has attracted investments from virtually all the major oil companies in Europe and the US. While Middle Eastern oil reserves are substantially greater than African reserves (Africa contains about 7 percent of known global oil reserves), interest in African oil has been catalyzed by the desire to reduce energy dependency on the volatile region. Consequently, the US and other Western powers are seeking to decrease their dependence upon Middle East as region of supply and turning to Africa, especially North Africa, West Africa, and the Gulf of Guinea. The demand for oil is also rising dramatically in emerging economies such as China and India, as both have become net importers of oil. In the past decade and a half China has been increasingly engaged with African states in its quest for oil and other commodities. India’s growth rate, like China’s,
has led to growing oil imports, and Indian state-owned enterprises have also intensified their quest for access to African oil (Obi, 2010).

The developmental repercussions of such a massive inflow of foreign interest and investment in Africa’s petro states have been far from laudable. Africa’s petro states have suffered from corruption and lack of democracy, the dispossession of local communities in oil-producing areas, and environmental despoliation. Further, the determination of the US to secure its access to African oil, gas, minerals, and other energy sources is leading to its extension of a formidable apparatus of political military alliances with strategically placed countries in Africa, often justified by reference to the war on terror. (Southall and Melber, 2009).

Other strategic minerals

Africa accounts for 41 percent of world reserves of cobalt, 56 percent of diamonds, 34 percent of gold, 10 percent of oil, 12 per cent of chromites, 53 percent of phosphate rock, and a number of other important resources (UNCTAD, 2012). Africa’s minerals are of enormous economic and strategic importance. To begin with, Africa holds about 18% of the world’s recoverable uranium resources, and the demand for uranium has increased dramatically in recent years as it is the key raw material in nuclear energy production. While Western companies remain predominant, China is becoming an increasingly significant actor and is competing, especially with Russia, for deals in Namibia and Niger. These include the actual or potential takeover of Western operations (Southall and Melber, 2009). Coltan, from which the metals columbium and tantalum are extracted, is another key strategic resource, vital for electronic equipment such as mobile
phones. Of known global tantalite resources 80 percent are found in Democratic Republic of Congo.

As with oil, both uranium and coltan have been associated with conflict and environmental degradation. A regional scramble for coltan had helped fuel civil war in the DRC from 1998-2003, and involved eight African militaries at its height. Uranium mining, also, has been associated with pollution and violent conflict in Niger over the distribution of rents (Southall and Melber, 2009).

The dispossession of the African commons: land grabbing and the depletion of African fisheries

Aside from strategic metals and fossil fuels, Africa is also at the heart of the global land grabbing trend. Land and water for agriculture are increasingly becoming commodified and accessible to the global market. Despite the orthodox contention that land is plentiful and underutilized in Africa, land grabbing, as dubbed by its critics, has become an area of especial concern, as it is often associated with the dispossession of land from local communities and the deprivation of their current and future livelihoods. There are a number of factors driving the land grabbing in Africa and elsewhere in the periphery, but primarily, in a global context of shrinking resources, developed and emerging economies are trying to achieve food, water and energy security outside of their national boundaries (Smaller and Mann, 2009).

Concerning energy security, with high oil prices and depleting supplies, developed country and emerging country governments and their private sectors are acquiring land for energy crops. Hence the production of biofuels has become a major
driver of land grabbing in Africa, and has also been criticized for pushing the price of important grains up with adverse effects on the poor. Critics argue that the legalities surrounding foreign investment in land and water often shift rights from domestic to foreign actors due to the current frameworks of domestic and international law for foreign investment. In many of the host states, for example, domestic laws concerning land rights, water rights, or pollution controls for intensive agriculture are either insufficient or lacking. On the other hand, the international law framework often provides numerous hard rights for foreign investors (Smaller and Mann, 2009). Chapter 4 goes into further detail concerning the issue of land grabbing and Tanzania.

*African water supplies*

GRAIN, an international non-profit organization working to support small farmers and social movements in their struggles for community-controlled and biodiversity-based food systems, argues that behind the scramble for land in Africa is a global struggle for water. In general, land deals in Africa involve large-scale, industrial agricultural operations that consume, or plan to consume, large amounts of water. Hence, land grabbing in Africa concentrates around the continent’s largest river and lake systems. The dispossession of African water supplies reflects the larger global ecological crisis involving water shortages; in the near future, it is predicted that water will become the single most important physical commodity based asset class. In this context, many corporations are rushing to sign land deals that give them wide-ranging control over African water, especially when African governments are almost giving it away (GRAIN, 2012).
However, a third of Africans already live in water-scarce environments and climate change is likely to increase these numbers significantly. According to GRAIN, the massive land deals could rob millions of people of their access to water and deplete much of the continent’s most precious fresh water sources. Ecologically, nearly all land deals are located in major river basins with access to irrigation and often occupy fertile and fragile wetland, or in more arid areas that can draw water from major rivers. In some cases, farms directly access ground water by pumping it up. These water resources are lifelines for local farmers, pastoralists and other rural communities. Countries which the Nile River passes through, including Egypt, South Sudan, Sudan, and Uganda have received especial attention. Ethiopia, South Sudan, and Sudan have leased out millions of hectares, and will lease out more. To bring such land into production, it will need to be irrigated, and GRAIN argues that such irrigation will severely deplete the water resources. Another part of Africa targeted by agribusiness are lands along the Niger River, which millions rely on for agriculture, fishing, trade, and a primary water source. Mali, Niger and Nigeria are most dependent on the river, but seven other countries share its water (GRAIN, 2012).

The legalities surrounding the scramble for African water also tend to work in the favor of investors. Contracts are rarely made public, and from contracts that have been leaked, it has become apparent that these contracts tend not to contain any specific mention of water rights. This generally leaves companies free to build dams and irrigation canals at their discretion. Further, even in instances where governments may have the political will to protect local communities and environment, existing
international trade and investment treaties generally give foreign investors strong rights in this respect (GRAIN, 2012).

**African forests**

African forests have long been targeted for foreign harvesting, and deforestation remains a serious problem today. It is estimated that 4 million hectares of forest are lost each year, twice the world average rate of deforestation. The Worldwide Fund for Nature estimates, for example, that at current rates of deforestation Congo-Brazzaville’s forests will be two-thirds gone by 2050 (Carmody, 2011). European companies, under generous concessions granted by African governments, dominate the logging sector, though much logging is done illegally. Exports primarily flow to Southern Europe, though China is rapidly becoming a major destination for timber (Southall and Melber, 2009). Overall, it is largely Euro-American consumption that is driving the demand for tropical timber, and often European and American companies involved in the deforestation. This recurring dynamic, central to ecologically unequal exchange, means that while European and American consumers benefit from deforestation in Africa, local forest dwelling communities suffer the losses.

**African Fisheries**

Over the past twenty five years, the global trade in fish and fish products has sharply increased, and around 50 per cent of world’s fish exports come from developing countries (Carmody, 2011). For Africa, the growth of industrial fishing by foreign fleets has contributed greatly to the depletion of local fish stocks along the continent’s
coastlines. With external demand for fish, the continent exports around 2.7 billion dollars’ worth of fish annually. Western Africa in particular is increasingly supplying fish for Western Europe, Russia and China (Carmody, 2011). However, as with most of Africa’s resources, while foreign interests and consumers benefit from the exploitation of Africa’s fisheries, the local people suffer. Historically, local fishing populations have depended upon Africa’s rivers, lakes and coastlines as important supplies of food. While population expansion and urbanization have taxed fish stocks, the industrial fishing by foreign fleets in particular have contributed to the over-exploitation of Africa’s fisheries. As a result, many fishermen become poorer, with some fishing sectors in decline, while the bulk of profits flow to foreign interests. Further, while some fleet owners have negotiated agreements with coastal states that provide for the payment of a license fee or a share of income to the host nation, many have not. Illegal, unregulated and unreported (IUU) fleets, mainly from Europe and the Far East, fish within African territorial limits, operating with de facto impunity since few coastal states have capacity to impound such intruders (Southall and Melber, 2009). In addition, foreign fleets have often manipulated access agreements in order to overfish (Carmody, 2011).

**Conclusion**

This chapter sought to trace, historically, the policies of the era of economic nationalism to the era of neoliberalism and the ‘new scramble for Africa.’ From a political ecological perspective, the orthodox interpretation of African economic nationalism as little more than an inefficient failure is too reductionist to capture the totality of conflicting interests that this era contained. In historical hindsight the
economic nationalist strategies have been criticized from across the political spectrum. The point in this chapter was not so much to uncover the causes, external or internal, behind the failures of economic nationalism as to consider what this has meant in the broader picture of the continued accumulation of capital and the subsumption of peripheral resources. The argument is that the decline of economic nationalism in Africa and its replacement by neoliberal policies has meant the removal of obstructions to the subsumption of Africa’s resources in terms amenable to the accumulation of capital and the metabolic needs of core and, increasingly, emerging economies. Such ‘obstructions’ to capital had included the very mechanisms that African countries had sought to use to gain resource sovereignty and improve their terms of trade, with the ultimate aim of increased economic independence after an era of colonial subjugation.

If we conceptualize ecological imperialism as the subjection of peripheral political, social, and economic systems for the metabolic needs and needs of capital accumulation, a case can be made that historically ecological imperialism has been the norm in Africa since the colonial period, with a brief contestation during the era of economic nationalism.
Chapter 4 Tanzania: Foreign Investment in Mining and Land

Introduction: Tanzania in the global ecology

Tanzania is a resource rich country, endowed with valuable minerals, vast tracks of arable land and abundant water resources, and an extensive coastal region. Like other African countries, in a global ecological context of limited supplies and increasing demand, its resources have attracted global attention, evident through increased FDI inflows into its extractive and land sector in the past decade. And like other African countries, in the 1980s Tanzania embarked on IMF and World Bank-led structural adjustment reforms. After years of heavy state intervention and control, these reforms opened Tanzanian resources to foreign investment as a key strategy for economic growth and development. As discussed in Chapters 2 and 3, these reforms have been criticized as a ‘neoliberalization of nature,’ which I argued involves the subsumption of natural resources as necessary inputs in the process of capital accumulation, on terms favorable to capital, and can be conceived of as an unfolding counter-countermovement against the economic nationalism of the post-independence eras.

This chapter looks more closely at the political economy of the foreign investment regime governing Tanzania’s resources, that is, the policies that regulate the price and accessibility of Tanzanian resources to foreign capital, as well as the socio-political
conditions and conflicts surrounding foreign investment. While Chapter 3 had broadly discussed the changes in FDI regimes for much of the Third World since the era of economic nationalism, this chapter further elaborates this issue with Tanzania as a case study. The chapter focuses on foreign investment in land and Tanzania’s mining sector; the mining sector because it attracts the largest inflows of foreign investment and is characterized by equally large (and controversial) outflows of profit, and land because foreign investment has had significant, and often negative, impact on the lives of Tanzanian communities.

Tanzania is one of the top 11 countries globally to have been targeted for foreign investment in large-scale land acquisitions, a dubious position that has sparked substantial civil conflict and accusations of land grabbing and dispossession. In 2007/2008, the spike in agricultural commodity prices catalyzed huge transnational farmland acquisitions, dubbed by some as a global land rush. This land rush is driven by deep-seated socio-ecological challenges unlikely to abate in the long-run. Population growth, growing consumption rates, demand for food, biofuels, and other raw materials, have coupled with increasing water scarcity and natural resource constraints, and countries are seeking to invest in land for food, energy, and environmental security. Increasing demand and limited supplies has also resulted in rising prices, prompting financial speculation and investment for profit purposes. As discussed in Chapter 2, a defining characteristic of capitalism’s relation to nature is the capacity for ecological crises to be turned into sources of profit. Also as discussed in Chapter 2, this dynamic underlies much of the expansionary tendency of capital accumulation.

The Land Matrix, a specialized community of land experts from civil society
organizations, governmental and intergovernmental institutions and academia, has documented reports of 1,217 agricultural land deals worldwide, amounting to about 83.2 million ha of land in developing countries, or 1.7 percent of the world’s agricultural area. Africa is the most targeted region, with reported land deals covering an area equivalent to 4.8 percent of Africa’s total agricultural area. Though globally a large number of countries (eighty-four) are reported to be targeted by foreign investors, 70 percent of total land area is concentrated in eleven countries, seven of which are in Africa. Tanzania is one of the seven African countries, making it a top destination for large scale land investment globally (Land Matrix Tanzania webpage).

Investors are both public and private actors, and originate from three groups of countries: emerging countries (Brazil, South Africa, China, India, Malaysia, and Korea); Gulf states; and countries in the ‘Global North.’ Overall, investment is coming from wealthier, food importing countries with an average GDP per capita four times higher than target countries. In contrast, targeted countries are among the poorest nations in the world and tend to have high incidences of hunger. Investors also tend to seek out countries with weak land institutions that also offer relatively high levels of investor protection. As food and energy security are primary drivers, most investment projects are export-oriented and target high-yield, easily accessible arable land with access to water resources (Land Matrix Tanzania webpage). For Africa, this trend has become problematic, resulting in the acquisition of rural land at a scale unknown since colonial times. Further, African governments appear to be giving fertile land to foreign investors, including governments, at ‘giveaway prices.’ In contrast to promises of social and economic development and poverty alleviation, land acquisitions have been associated
with lack of democratic oversight and management, loss of livelihoods and access to resources, and conflict between villagers, governments, and investors (Land Matrix Tanzania webpage).

As noted in chapter 3, global demand for minerals and energy commodities has, like the demand for land, resulted in high inflows of FDI into Africa in the past decade. Tanzania has various valuable and highly-demanded minerals, and its mining sector is the second fastest growing sector after tourism, with economically proven deposits of gold, diamonds, tanzanite, ruby, tin, copper, nickel, iron, soda phosphate, gypsum, kaolite, coal, natural gas and uranium. But also like the issue of land, foreign investment in such resources has not translated into substantial benefits for the Tanzanian people. While classical producers of minerals and fossil fuels like Australia, Canada and Saudi Arabia benefited from the 2003-2008 rise in commodity prices (Sturmer, 2010), Tanzania, like other Sub-Saharan countries, was burdened by foreign investment regimes that guaranteed that largely profits flowed out of the continent. Further, despite an overall high economic growth of 7 percent per annum over the last ten years, Tanzania has failed to translate this economic growth into significant reductions in income poverty or structural industrial development. The poverty headcount ratio at the rural poverty line remains at 37.4 percent as of 2007, and the poverty headcount ratio at the national poverty line is 33.4 percent. Twenty-three percent of all households in rural mainland Tanzania are food insecure, and while life expectancy gains have been made in the past decade, the average life expectancy is still only 58 years old (REPOA, 2012).

Inequality is high in Tanzania, with a Gini coefficient of 0.35. Reflecting the non-inclusive nature of economic growth under the current commodity boom, Tanzania’s
wealthiest 10 percent captured a disproportionately large part of the increase in overall consumption generated by growth. In contrast, the poorest 40 percent saw their share of income decline (Africa Progress Panel, 2013).

**Tanzanian’s integration into the world-system: the political ecology of land and mining in the colonial era**

Tanzania’s colonial economy and integration into the world-system began under German conquest and subjugation in the 1880s. Under German colonial control, Tanzania’s economy was organized and geared to export raw materials, mainly agricultural goods, as a response to human and industrial consumption needs in the core economies, particularly Germany. Through violent conquest, forced labor, and laws imposing taxes on the African population, the colonial mode of production was introduced. Roads, bridges, seaports and railways were built as the infrastructure to extract and transport the surplus from periphery to metropole, and the plantation became a central way of organizing African labor to produce new commodities. By the late 1890s, Africans, either as peasants or paid laborers, were forced to cultivate and produce such primary commodities as sisal, new varieties of cotton, rubber, groundnuts and coffee (Kanika, 1980).

Land acquisition was central to the colonial agenda of political control and the economic goal of producing surplus for the needs of the metropole. Conflict over land dispossession underpinned major anti-colonial struggles, beginning with multiple, sporadic resistances in the late 1800s to the Maji Maji War in the early 1900s, up until the Meru Land Case and the Kiembe Samaki Uprisings in the mid-1900s (Chachage, 2011).
The contentious features of the currently existing land regime were inherited from the land regime created in the colonial political economy. The colonial land regime was established by the Germans from 1885 to 1916. Under the German colonial government the Imperial Decree of the 26 of November, 1895, converted all territorial lands into ‘crown lands.’ All lands for which private ownership could not be established by documentary ownership were considered ownerless, and while communities could prove ownership through occupation and use, land not continuously used was considered ownerless. Due to this decree, some 1.3 million hectares were alienated from indigenous control, and thereafter German authorities issued freehold grants to settlers along the coast and northern highlands (Land and Natural Resource Tenure in Africa Program, 2010).

With the defeat of Germany after WWI, land control and ownership fell under the British, and colonial control over land became even more centralized. The British colonial land regime (1918-61) essentially assumed indigenous occupants had no ownership rights over land. The property regime established by the British colonial state was intended to facilitate the production of cheap agricultural goods through peasant labor on plantation lands, but Tanganyika was considered a trust territory. Hence, the colonial state had to legitimize its laws and actions in regards to native interests, while allowing the British administration to maintain the legal capacity to control and alienate indigenous land. In pursuit of these goals, the British ended up placing all lands in the hands of the state and effectively centralized land administration (Shivji, 2009).

In 1923, the British passed the Land Ordinance, the principal piece of legislation whose original architecture still underpins the existing land tenure system. The Land
Ordinance installed authority over all land to the colonial Governor, declaring that ‘no title to the occupation and use of any such lands shall be valid without the consent of the Governor.’ The Governor was given the power to grant ‘right of occupancy,’ that is, the right to occupy and use land for a period of up to 99 years, to natives and non-natives, and to demand rent for use of any public lands granted to any native or non-native. Further, the ultimate disposal of land was subject to the will of the Governor. Section 2 of the Ordinance declared that all lands were public lands, while section 3 stipulated that all public lands were under the control of the Governor and subject to the disposition of the Governor (Shivji, 2009).

In 1928, in response to criticisms from the Permanent Mandates Commission of the League of Nations, the Ordinance was amended to formally recognize ‘customary law’ (that is, law arising from traditional practices and ownership of land). Right of occupancy was re-defined to include ‘the title of a native or a native community lawfully using or occupying land in accordance with native law and custom.’ Nonetheless, customary right (also known as ‘deemed right of occupancy’) was not equated the same status as ‘granted right of occupancy’ by the state. Hence, despite some recognition of the customary right of occupancy, a dualistic system of land governance evolved, whereby rights granted by the state were in practice considered superior to customary rights to land. The rights of customary holders were not entrenched in law, and there were no stipulations as to the rights of customary holders against the rights of the state. Ultimately, land remained public land, subject to control of the state, disposition of the Governor, and not protected by law, though natives were legally allowed to occupy land through customary occupancy (Shivji, 2009).
Hence, Tanganyika’s role as a trust territory was nominally justified through allowing peasant and pastoralist customary landholders to have permissive rights regulated by native law and custom. However, when the colonial political economic interests required alienation, customary occupants could legally be evicted, having no land tenure security. With independence, the post-colonial state was to inherit this hierarchically organized dual land tenure system (Shivji, 2009).

Exploitation of Tanzania’s minerals also began under colonial control when the Germans explored for gold in the area surrounding Lake Victoria in the 1890s. While Arab and local traders mined and sold Tanzania’s natural resources including gold, copper, iron, and salt, German colonialism established the first commercial mines. During the pre-independence era small and large-scale mining companies were established and grew in number, seeking to exploit both precious metals and industrial minerals. In the 1920s and 1930s British and South African mining operations also opened. Mines in Sekenke, Geita and Mpanda were established for gold and in Mwadui for diamonds, and mineral production increased consistently in this period throughout the pre-independence period, save for a decline during the WWII (Nyankweli, 2012). After the war mineral exports kept increasing, and by 1959 mineral exports exceeded pre-war production levels. However, just before independence, outputs fell dramatically with investment fears of economic and political changes, as well as the persistently low price of gold at the time (Nyankweli, 2012).

Hence it was under colonial control that Tanzanian resources in the form of agricultural goods, land and minerals were subsumed by foreign capital and integrated

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56 From 1962-1964 Tanzania was known as the Republic of Tanganyika. In 1964, Tanganyika joined the islands of Zanzibar to form the United Republic of Tanganyika and Zanzibar, changing its name to Tanzania.
into the world-capitalist system, to be exported from Tanzanian soil to the associated metropoles. Needless to say, with the means of production under foreign control, the flow of profits followed the direction of the resources as well.

**Economic nationalist policies and Tanzanian resources**

Like other post-colonial African countries, upon gaining political independence from the British in 1961, Tanzania was left in a state of economic dependency, or neo-colonialism. The structure of its trade profile remained essentially the same as established under colonialism- exporting primary commodities (mainly coffee, cotton, diamonds, and sisal) at low prices to capitalist markets, and importing finished products and industrial goods at high prices. Trade remained heavily biased towards a few traditional Western partners, with Britain still the largest export and import market. Tanzania’s means of production remained heavily under the influence of Britain, and the West in general. The government continued to depend upon British financial resources, with banking and insurance predominantly British-owned, while in contrast the majority of Tanzanians remained as rural subsistence farmers (Crouch, 1987).

In regards to foreign investment in the early post-independence years (1960s), the government sought to create an attractive environment for investors, a stance to be repeated under the neoliberal reforms a quarter of a century later. Foreign capital was seen as a necessary component for development, and policies such as the Foreign Investments Protection Act of 1962 and the Preventive Detention Act of 1962 were enacted to attract foreign investors, with tax holidays, easy repatriation of profits, and strict labor laws to discipline workers (Shivji, 2009). As such, despite formal political
independence, the command of the economy remained under foreign control. However this situation, coupled with increasing social and economic inequality, led to mounting political tension and dissatisfaction and the desire for economic self-reliance. Nyerere, the first president of the newly independent Tanzania and ideological father of ‘African socialism,’ became increasingly convinced of the need for a more equal and self-reliant society. He decided that this necessitated the democratization of institutions at every level, with the state playing the role as representative of the people (Crouch, 1987).

In 1967 Nyerere issued the Arusha Declaration, a series of policy documents expounding new economic and social priorities. The central tenets of The Declaration were socialism, self-reliance, rural development, mass participation and responsive leadership. The declaration sought to translate socialist theory, in terms of greater social justice and economic independence, into practice. Socialism, according to the Arusha Declaration, was to be built upon the absence of exploitation, the control of the major means of production and exchange by the peasants and workers, and socialism as a belief. In terms of policy, a more egalitarian society was to be achieved by increased expenditure on social services in rural areas, a more equitable distribution of income, and the facilitation of worker participation in decision-making (Crouch, 1987).

To these ends, a command economy was seen as central, especially in achieving greater self-reliance and economic independence. Public ownership was crucial to the socialist project, and all major means of production and exchange in the nation were to be controlled and owned by the peasants through the control of the Government. Nationalization began one day after the Arusha Declaration and foreign commercial banks were the first to be nationalized. In the first week after the Declaration the state
took over the six largest foreign-owned import-export houses, all insurance businesses, eight flour milling firms, the sisal industry, and the controlling interests in seven MNC subsidiaries (Crouch, 1987). Other economic controls included centralized control over investment planning for both domestic private and foreign investment, administrative allocation of foreign exchange and import licensing along with price controls administered by the National Price Commission; regulated/controlled interest rates and credit rationing according to the annual financial plan as well as state control on wholesale trade for some import and domestic commodities to specific parastatal organizations (Nyankweli, 2012). Orthodox critics point out that with the Arusha Declaration, a number of policies enacted were responsible for directly or indirectly discouraging private (both foreign and domestic) investment including nationalization of all means of production, distribution and exchange, prohibiting private ownership of small industrial enterprises in villages and cracking down on entrepreneurs who had started small scale enterprises despite these prohibitions (Nyankweli, 2012). Leftists critics, however, argue that while ideologically the Arusha Declaration sought to redistribute wealth and place the means of production within the hands of the producers, in reality, economic policies such as the nationalizations expanded the power of the bureaucratic elite.  

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57 However, for practical reasons Nyerere still sought to reassure potential investors that private investment would be welcome in any new or existing industry not listed as reserved for public ownership, and that minority private participation might be permitted in several of the listed industries. Consequently, some sectors of the economy were 100% government owned, in others sectors private and government partnership existed, while others sectors some enterprises were privately-owned (Crouch, 1987).

58 A note on the issue of class: Radical scholars such as Shivji and Rodney, commenting on the class structure of Tanzania, noted the emergence of a bureaucratic bourgeoisie post-independence. Unlike the productive national bourgeoisie of the developed countries that played an important role in revolutionizing the means of production, the bureaucratic bourgeoisie’s power is linked mainly to political power and control over property as leading officials in government. During the colonial period, according to Shivji and Rodney, Asians from British India were brought in as a ‘layer’ between the colonial powers and the
Typical of the post-independence era of economic nationalism and the New International Economic Order, as discussed in Chapter 3, natural resources were brought under national control as well. The mining sector was brought under state control and nationalized. Private mining, by private persons or companies, was prohibited and only the state mining company STAMICO, a parastatal established in 1972, could conduct exploration and mining for all minerals (Nyankweli, 2012). In terms of land, the post-colonial laws largely replicated the essential structure put in place by colonial authorities and in some cases expanded the scope of centralized control over land. This was to have negative consequences for the alienation and dispossession of land from customary owners in both the eras of economic nationalism and neoliberal reform, as will be

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African population, and were encourage to become supply traders, clerks, and artisans, thus in effect forming a ‘commercial’ or ‘merchant’ class. As traders they exploited the peasants and as employers, their workers. Their presence also limited the development of an African petty bourgeoisie. With independence, however, came the rise of what both Shivji and Rodney describe as the ‘bureaucratic bourgeoisie.’ This class came from a typical underdeveloped African country weak petty bourgeoisie class, and its ruling section came to possess the instruments of state on the morrow of independence. Relative to the rest of its power, Shivji argues that it came to command enormous power. With the Arusha Declaration, the state took over the function of the big capitalists and ran the economy in the interest of this petty bourgeoisie, particularly with the nationalization of a wide range of activities and the greatly increased the scope of the bureaucracy. This also led to conflict between the Asian commercial bourgeoisie and the bureaucratic elite, who sought to take over many of the functions of the Asians. Asians began to leave the country, and take their money with them, and the class basis of the commercial bourgeoisie began to disintegrate, while the power of bureaucratic elite grew. Both authors argued that with independence, class distinctions sharpened, and the contradictions between the interests of the bureaucratic bourgeoisie that held state power and the peasantry and working class grew. However, Rodney seems to disagree with Shivji concerning the Arusha Declaration. Shivji argues that the Arusha Declaration reflected a program of destroying the commercial or merchant bourgeoisie, and the beginning of bureaucratic capitalism. However, Rodney, though essentially argued that the Arusha Declaration reflected the relative weakness of the bureaucratic class post-independence, as this class was unable to oppose a document that had overwhelming support from the peasantry and workers. The intent of ujamaa, or African socialism, was to halt the incipient penetration of the money economy and class formation of the country side. However, Rodney claims that despite the progressive intent of the Arusha document, and villagization, the bureaucratic elite treated and found other ways to establish their power, particularly with the nationalizations and during villagization. In the end, it seems both Shivji and Rodney felt that class distinctions- intended or not- were sharpened, not weakened, with the Arusha Declaration (Shivji, 1975; Rodney, 1980).
discussed. For example, the independent government simply replaced the word ‘Governor’ with ‘President’ in the 1923 Land Ordinance that had centralized control under the British. Nyerere then issued a further series of laws that expanded the domain of public land and abolished freehold tenure (Chachage, 2011). The ultimate effect of post-colonial laws regarding land was to further centralize control and place it under the executive power. Under nationalism, the state could dispossess a customary owner because land was considered *mali ya umma-* public property and all public property fell under the jurisdiction of the President (Shivji, 2009).

From 1967-1973 the Nyerere’s government enacted the controversial Villagization Program (Ujamaa) which involved a forced relocation of approximately eighty-percent of the rural population to 5,528 villages (Shivji, 2009 cite)The program aimed to establish large collective farms and modernize agriculture, with large-scale agriculture and pastoralism under parastatals and small-scale agriculture under villagization. Under villagization, the local government was not legally vested with powers to govern land, and villages were often allocated land in public meetings without following any formal procedures. Customary tenure systems were generally ignored, large portions of customary land were alienated and disputes over existing land rights were largely disregarded (Chachage, 2011).

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59 For example, the Freehold Titles (Conversion) and Government Leases Act of 1963 converted freehold titles (<1% of land) to 99-year leaseholds with development conditions. The Rights of Occupancy Development Conditions Act of 1963 obligated lessees to pay rent. The Rural Farmland (Acquisition and Regrant) Act of 1965 empowered the government to acquire undeveloped private land and transfer it to people who would occupy and develop it (in practice, land transferred to state corporations parastatals, and cooperatives) (Chachage, 2011).

60 The post-independence village settlements actually had their genesis in modernization theory and development plans from the World Bank and USAID. As Shivji notes, the first five year plan adopted immediately after independence was based on the World Bank report ‘The economic development of Tanganyika.’ Modernizing traditional peasants or pastoralists meant removing them from traditional surroundings so as to integrate them in the world capitalist market through production of cash crops for export. The transformation approach recommended by the World Bank involved settling selected farmers in villages supervised by a government agency, the Rural Settlement Commission. A similar philosophy informed the Fallon Report, published by USAID, and the report was the basis of the Range Development Act, in 1964 (Shivji, 2009).
Though villagization was acknowledged to have failed by 1966, in hindsight the process appears to have further eroded land tenure from the domain of customary law and the placement of individual tenure, placing the land under the supervision of the government through detailed regulations, rules and laws. Parastatals took over nationalized assets including land, holding such lands under ‘rights of occupancy.’ Such lands had often belonged to customary holders in villages, and villagization destroyed what little was left of the security of ‘deemed rights.’ Importantly, the overall direction of the political economy of production of cash crops for export and integration within the world capitalist market was not transformed (Shivji, 2009).

**The era of structural adjustments: neoliberalism and foreign investment in land and mining**

Though nationalism and African socialism defined Tanzania’s ideological front in the 1960s and 1970s, in practice the Tanzania’s economy moved ..erratically between import substitution and export-oriented industrialization with state capital, a bit of local private capital, and a substantial element of foreign public loans and private management contracts” (Shivji, 2009, p. 169).

But by the time Nyerere retired from presidency in 1985, the political and economic foundation of nationalist ideology was crumbling. While some mass goods industries like textile, oil and leather were established with some success, other industries stagnated. Further, like other African countries, Tanzania fell into debt after its period of economic nationalism. Within the government ideological differences had formed; ‘reformists’ wished to open up Tanzania to market forces while ‘statists’ wished to see state dominance continue. In the end, however, Tanzania had to adopt a series of market
reforms as IMF and World Bank-imposed preconditions for debt relief. After Nyerere stepped down peacefully from power in 1985, Tanzania underwent a dramatic change in economic direction in the reformist direction, symbolized by the signing of an agreement with the IMF in 1986 for $77.5 million over 18 months to support an economic recovery program (Crouch, 1987).

The overall emphasis of the structural adjustments was to re-orient Tanzania’s economy towards a market-based, export-led economy (in particular the boosting of agricultural export crop production), with private capital conceived as the main engine of growth, as opposed to import substitution and government intervention in the economy. Major structural adjustment measures included privatization of state-owned enterprises, removal of subsidies, lowering or abolition of tariffs, dismantling of state-marketing boards, liberalization of foreign exchange regimes, reductions in public expenditure, and an emphasis on creating a business-friendly environment in terms of FDI, among others (Nyankweli, 2011). With large external debts, Tanzania was highly dependent on multilateral aid and had little bargaining power with regard to debt-relief conditions. With the process of liberalization, marketization and privation (LIMP), labor, land, and natural resources were liberalized, marketized and privatized and a number of legal and institutional reforms were introduced (Shivji, 2006).

*Tanzania, Structural Reforms, and the Global Rush for Land*

Tanzania is a heavily agriculture-based country, with approximately eighty percent of the population’s livelihoods depending on subsistence farming. Food production dominates agriculture, with maize, sorghum, millet, rice, wheat, beans,
bananas and potatoes among the major staple crops. Coffee is the main cash crop, along with sisal, cashew, cotton, tobacco, tea, cloves, and oil seeds. Agriculture is dominated by small-scale farmers cultivating farm sizes between 0.9 and 3 hectares. Women make up the majority of the labor force, and farming techniques are characterized by low productivity, leaving Tanzania households often vulnerable to climatic and economic shocks. In recent years, such shocks have apparently increased, as Tanzanian harvests have suffered substantially from droughts and floods, with resultant increased prices for basic food staples (Oakland Institute, 2011). As of 2009, Tanzania has a population of approximately 43.7 million, and about 94.5 million total hectares of land. Total arable land area is estimated, however, to be only around 44 million hectares with about 10 million hectares currently cultivated (Tanzania Natural Resource Forum, 2009).

The Land Matrix identifies Tanzania as one of the top 11 recipient countries worldwide for large-scale land investment deals. As of August, 2012, there have been reported cases of over 41 deals in Tanzania, equal to approximately 1,115,179 ha. Of these deals, thirty-seven are agriculture related, 6 livestock related, and 1 related to forestry for wood or fibre (Land Matrix Tanzania website). As a politically stable country with vast tracts of fertile agricultural land and bountiful water supplies, Tanzania has attracted much foreign investment in recent years; total foreign investment in

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61 Climatic changes can have large effects on individual households and communities. During field research, many Tanzanians complained to me that their farmlands had suffered from drought in the past decade, with subsequent rising prices of food and food shortages. The consequence of such climatic changes has been for many households to suffer from hunger and drops in standards of living.

62 It must be kept in mind, according to the Land Matrix, that official records are often unclear and information is not always available on the exact amounts of land which have been allocated and leased to different investors, making it difficult to quantify the total amount of land acquired. Hence this is an estimate at best.

63 Statistics do not include the biofuel investments to contracted farmers.
agriculture in Tanzania has grown from 0.1 percent of Tanzania’s GDP in 1990 to 32.9 percent in 2005 (Oakland institute, 2011).

Table 1 covers the top ten investors in Tanzania according to investor, investor country, investor region, investor sector, crop and hectares (Land Matrix Website Tanzania). The full list of investors is given in Appendix II.

**Table 1: Top Ten Investors in Land in Tanzania**

<table>
<thead>
<tr>
<th>Investor</th>
<th>Investor Country</th>
<th>Investor Region</th>
<th>Investor Sector</th>
<th>Crop</th>
<th>Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>AgriSol Energy LLC, Summit Group Pharos Global</td>
<td>United States of America, United Arab Emirates</td>
<td>Northern America, Middle East</td>
<td>Agriculture, livestock</td>
<td>Corn, maize</td>
<td>219,800</td>
</tr>
<tr>
<td>Int. Water and Electric Corp</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Agriculture</td>
<td>Corn, maize</td>
<td>101,000</td>
</tr>
<tr>
<td>Green Resources, AS</td>
<td>Norway</td>
<td>Northern Europe</td>
<td>Agriculture, forestry</td>
<td>Trees</td>
<td>100,000</td>
</tr>
<tr>
<td>Korea Rural community crop</td>
<td>Republic of Korea</td>
<td>Eastern Asia</td>
<td>Agriculture</td>
<td>Unknown crop</td>
<td>100,000</td>
</tr>
<tr>
<td>Investor</td>
<td>Country</td>
<td>Region</td>
<td>Industry</td>
<td>Product</td>
<td>Area</td>
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<td>----------</td>
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</tr>
<tr>
<td>Sithe Global Power, LLC</td>
<td>United States of America, United Arab Emirates</td>
<td>North America, Middle East</td>
<td>Agriculture, ranching</td>
<td>Corn, maize</td>
<td>80,317</td>
</tr>
<tr>
<td>Pharos Miro Agricultural fund</td>
<td>United States of America</td>
<td>North America</td>
<td>Agriculture</td>
<td>Oil palm</td>
<td>50,000</td>
</tr>
<tr>
<td>CAMs Group</td>
<td>UK, Northern Ireland, United Arab Emirates</td>
<td>Northern Europe, Middle East</td>
<td>Agriculture</td>
<td>Rice</td>
<td>50,000</td>
</tr>
<tr>
<td>UNKNOWN INVESTOR</td>
<td>UK, Northern Ireland</td>
<td>Northern Europe</td>
<td>Agriculture</td>
<td>Sorghum</td>
<td>45,000</td>
</tr>
<tr>
<td>UNKNOWN INVESTOR</td>
<td>Malaysia</td>
<td>Southeast Asia</td>
<td>Agriculture</td>
<td>Oil palm</td>
<td>45,000</td>
</tr>
</tbody>
</table>

*Source: Land Matrix Tanzania website*

As table 1 shows investors from the USA, UK, United Arab Emirates, and Malaysia are top investors presently important in agriculture in Tanzania. As with other large-scale land investments in other developing countries, the investment trends are driven by three main issues: energy security, food security, and environmental security.

Concerning energy, according to a study by the Oakland Institute, land deals are dominated by investments in agro-fuels, and both Tanzanian and foreign governments
have been promoting this surge in investments (Oakland Institute, 2011). Biofuel investment is typically driven by the growing global demand created by high oil prices, energy security concerns, global climate change concerns, and now some of the world’s largest oil firms are investing in biofuels in order to profit from it. Tanzania’s government has promoted it for its potential to provide a partial energy substitute for costly oil imports, which take up to 25 percent of total foreign exchange earnings. It is also promoted as a new source of agricultural income and economic growth in rural areas. Many biofuel investments involve large plantations, though some are carried out by smallholder farmers and locally contracted farmer arrangements (Tanzania Natural Resource Forum, 2009). Investments in Tanzania have also included carbon sequestration initiatives, whereby large tracts of land have been bought in order for foreign countries to secure carbon credits. Countries have also invested in Tanzania to meet food security concerns. Food production investments include investors from the UK, USA, Singapore, India, United Arab Emirates, China, Jordan, Saudi, Arabia, Turkey, Bangladesh (Oakland Institute, 2011).

A key argument made by proponents of large-scale land investments is that Africa has the most under-utilized, fertile land in the world, and would gain in economic growth and development through the influx of foreign capital and technology. This argument has been criticized on a number of grounds. Concerning the alleged bounty of under-utilized and available land, critics have argued that in reality, systematic empirical data on land availability in Africa remains limited. Further, the meaning of land ‘availability’ is open to interpretation. Although a common argument is that ‘marginal lands’ can be used for large-scale production of agrofuel feedstocks, in reality it is higher value lands, with
higher rainfall, access to irrigation, and proximity to markets that investors commonly target. In many cases across Africa, such land is already being used, but as will be discussed, such use often goes unacknowledged, as local people using the land often have no formal land rights or access to the relevant law and institutions (Oakland Institute, 2011).

These issues plague land scale acquisitions in Tanzania, as evident from the numerous land conflicts which have arisen over the issue of land in recent years. The Tanzanian government is actively seeking investors in agriculture and other sectors as part of its development and economic strategies, based on official rhetoric that there is an abundance of land available for investment. But most of the land sought after and being acquired by foreign investors in Tanzania is already classified as village land. Even if such land is not permanently settled, often it is used for a wide range of rural people’s livelihood activities. This includes land used by Tanzania’s many pastoralists, which is often labeled as barren, idle, degraded or marginal and therefore potentially available to investors (Oakland Institute, 2011). Moreover, while the Tanzanian government considers available land as meaning that there are no rural communities fully utilizing the land, there are currently no proper guidelines in place for potential future agricultural production and no standard mechanisms for calculating future population growth. A district officer of agricultural development in the rural town of Lushoto explained that Tanzania has limited land resources already under strain from population growth, and large-scale land investments from foreign investors are further exacerbating this problem. Further, the amount of land actually available is not at all clear according to NGOs writing on the subject, nor is it known how much land is acquired by local or foreign
investors each year. It is impossible, therefore, to keep investors accountable without publicly accessible information regarding investments, such as readily accessible data showing how much land is available or has been acquired and granted to local or foreign investors (Oakland Institute, 2011).

Hence, while one of the central arguments for land investment in Tanzania, and Africa in general, is the perceived abundance of underutilized land, a growing body of literature has criticized that in reality large-scale, land-based investments are typically associated with dispossession, loss of resource access rights and ensuing conflicts, as the following section discusses in more detail. These problems associated with large-scale land investments have prompted critics to dub such transactions as ‘land grabs.’ More specifically, the term land grab has been defined by the Tirana Declaration as land acquisitions which do one or more of the following:

- Violate human rights, particularly the equal rights of women.
- Flout the principles of free, prior, and informed consent of affected land users, particularly indigenous peoples.
- Ignore impacts on social, economic, and gender relations, and on the environment.
- Avoid transparent contracts with clear and binding commitments on employment and benefit sharing.

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64 In November 1995, over one thousand representatives of civil society, governments, and multilateral institutions came together in Brussels, Belgium for a conference on hunger and poverty. In 2003 this coalition was renamed the International Land Coalition, and created the Tirana Declaration.
o Eschew democratic planning, independent oversight, and meaningful participation.

In these respects, a host of literature from academics, NGOs, and civil society groups suggests that the large-scale land investments occurring in Tanzania warrant the label of land grabbing. The Tanzania media has reported that there are well over 1000 land-based conflicts reported in Tanzania on an annual basis, for reasons including denied or limited ownership of and access to land and resources attached to it such as water; forceful evictions, involuntary resettlement, unfair compensations or lack of compensations, environmental destruction, among others (Ngowi, 2012). Such conflicts appear to have intensified in the period of economic liberalization (Mwalongo, 2012).

The neoliberalization of land: background and legalities

While the term land grab seems to imply an illegal transaction, in the case of Tanzania, large-scale land investments usually occur through legally sanctioned land acquisition. Within the context of broader neoliberal reforms, a number of legal and institutional reforms paved the way for land privatization and marketization, in order to create an atmosphere for the promotion of foreign investment.\(^{65}\) The result of such measures was the increase in both foreign and indigenous investment in land. However, the combination of a centralized land administration inherited from colonialism and economic nationalism, legal confusions over land tenure, and increased investment has made land an issue of much conflict between villagers, the government and investors.

\(^{65}\) One major reform was the Tanzania Investment Act no. 26 of 1997 that established the Tanzania Investment center (TIC), the institution currently responsible for granting derivative rights to land to foreign investors.
Popular discontent over the issue of land had erupted as early as the beginning of the 1990s, as Tanzania’s land regime had been problematic for customary holders since colonialism and into the pre-independence era. In response to this popular discontent, the government had established the Presidential Commission of Enquiry into Land Matters to hear complaints, which led to new land legislation seeking to redress some of the issues. A new Land Legislation was enacted in 2001, specifically the Land Act of 1999 and Village Land Act of 1999. Both acts currently provide the framework for the exercise and administration of land rights. In some areas, there has been substantial reform towards the benefit of customary holders from the prior tenure framework. For example, all Tanzanians above 18 years of age have rights to acquire and own land and all existing property rights are recognized and protected, including customary titles (HAKIARDHI, 2011).

However, land laws continue to retain problematic features of the old system. To begin with, and perhaps most significantly, under the ‘radical title’ of the Land Act, the ultimate ownership of land remains in hands of the President, as a trustee for all Tanzanians. Ultimately, all aspects of land use and ownership, including rights of occupancy and imposition of development conditions, and land rent, remain under bureaucratic control. Under the Land Act, only the Ministry of Lands, through the Commission of Lands, has the authority to issue grants of occupancy (HAKIARDHI, 2011).

Problems arising from centralized executive control over all land in Tanzania are exacerbated by a number of confusions originating from the Village Act and Land Act themselves. Land in Tanzania is divided into three categories: general, reserved, and
village land. Reserved land includes all land set aside for special purposes like forest reserves, game parks, game reserves, etc. This includes about twenty-eight percent of all land. Under the Village Land Act, which provides the legal framework for the administration of village land, village land is all land within the boundaries of the more than 11,000 registered villages including. Confusion has arisen from the different definitions of general land, and is the source of much conflict regarding the issue of customary tenure arrangements. Under the Village Act, general land is a residual category, that is, any land that is not reserved land or village land. However, under the Land Act, general land includes all public land that is not reserved land or village land, and includes unoccupied or unused village land. The Land Act does not define unoccupied or unused village land but nonetheless places all general land under the authority of the Ministry of Lands, Housing and Human Settlements Development, thereby leaving a legal loophole that continues to undermine customary tenure of land (HAKIARDHI, 2011).

Further, though the Village Land Act provides that the customary right of occupancy is in every respect equal in status to granted right of occupancy, in practice this is not the case. A dualistic statutory customary character of land rights that prevailed since colonialism still remains. Government officials do not recognize customary land rights as equal to statutory, and do not respect the legal authorities of village government. (HAKIARDHI, 2011)

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66 Village land constitutes nearly 70% of all lands in Tanzania and provides customary rights of occupancy automatically to village lands in perpetuity. By the Village Act, village land is under the managerial authority of the Village Council elected by the Village Assembly, which includes all residents aged 18 years and above. The Village Council is accountable to the Village Assembly for land management decisions, with responsibility and authority to manage land, including issuing certificates of customary right of occupancy within their area and establishing and administering local registers of communal land rights, must apply customary law. As Tanzania is still largely rural, most Tanzanians own land through customary law (Chachage, 2011).
In regards to the issue of land grabbing and foreign investment, the problem lies in the presidential power to transfer ‘in the public interest’ any area of village land to any other category of land (such as general land), whereby public interest also includes investments of national interests. It is the legal process of transferring land from one category to another (uhawilishaji) that is at the heart of dispossessing village land into investment land. In essence, the state has the legal right to dispossess village land for foreign investment. As discussed in Chapters 2 and 3, contrary to the argument that neoliberal policies mean removing inefficient state obstacles in order to promote a free market, in reality such policies mean a re-definition of the role of the state, one that guarantees resources are available for the process of capital accumulation.

Hence, although the Village Council and Assembly have the authority regarding the arrangement and allocation of village land they have no ultimate influence in the President’s decision to acquire and transfer any part of their land, especially in the case of large-scale foreign private investment. While affected persons can register their unwillingness to support a transfer, they cannot in actuality refuse the proposal. In the end, the president can resort to lawful expropriation (subject to payment of compensation), even if the result is involuntary settlement. Also, while the Village Land Act stipulates that village land may not be transferred until the type, amount, method and timing of payment of compensation has been agreed upon between the Village Council and the Commissioner, in reality villagers often lack the financial and human resources to mount any legal challenge against the government.67 There are also no clear mechanisms

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67 Land acquisition is legally restricted to Tanzanian citizens unless investment is involved. Under the Tanzania Investment Act, 1997, which replaced 1990 National Investment Act, the Tanzania Investment Centre (TIC) is mandated with identifying and providing land to investors. Land is vested with the TIC and transferred to investor on basis of a derivative title, and at end of investment project it is supposed to revert back to TIC.
in the Village Act by which communities can appeal or block such reclassifications of their lands. While the law gives village assemblies the power to approve or reject the removal of village land by the state for areas of less than 250 ha, it does not provide for any check on land removal for areas larger than 250 ha. (Chachage, 2011).

The standard agricultural land lease lasts 99 years at mere price of 200 shillings (0.14 $) per hectare per year, and this price does not vary according to the location of the land or the crops grown (the price used to be 600 Tanzanian shilling, $0.4 per hectares, but was reduced following investor complaints!) Rent due on land is collected by the Ministry of Lands district staff, and money is incorporated into the government budget. Ten percent of total rent due on the lease every year goes to the Tanzanian Investment Center as a facilitation fee. Leases, however, are supposed to become invalid if investors do not start production within two years and do not ask for extension or give explanation for lack of production (Oakland Institute, 2011).

In sum, criticism of land legislation tends to revolve around two distinct problems. First, the legislation has provided a massive loophole which has been the source dispossession and ensuing conflict: the Village Land Act essentially reserves the right of the Present of Tanzania to transfer land from the village sector, transforming it legally into general or reserved land. The second loophole is the inconsistent definition of general land, whereby the Village Land Act defines general land as all public land not reserved or village land, while the Land Act defines general land as all public land not reserved land or village land, but including unoccupied or unused village land.

Finally, as an important note, current development policies do not appear to bode
well for the issue of land grabbing in Tanzania. In 2009 current President Kikwete launched the agricultural development program *Kilimo Kwanza* (Agriculture First). Kilimo Kwanza emphasizes modernization of both small-scale and large-scale agriculture, through technological and political reforms, public-private partnerships, value chain approaches, and foreign investments. However, critics have pointed out that it fails to provide the necessary safeguards for risks already associated with large-scale land acquisition, and moreover, may even exacerbate land grabbing. For instance, statements within the development plan imply that small-holder farmers will be taken over by larger-scale mechanized commercial enterprises and that their labor will be released into the labor market. Also, the National Framework Land Use Plan, 2009-2029, proposes to increase commercial farming and ranching from 2% to 18% primarily for Kilimo Kwanza. This land is to be made available from the existing land use category which the National Land Use Framework Plan (NLUFP) defines as ‘scattered village settlements, agriculture, grazing and mining’ - a strategy that could potentially involve involuntary resettlement (REPOA, 2012).

With respect to pastoralist activities the NLUFP 2002-2029 indicates that the areas currently categorized as being used for grazing, hunting, game control areas, scattered settlements and agriculture are to become ‘community ranching areas’ covering an area of 12 million hectares, with various conditions attached on how these areas are to be used. Finally, Pillar 5 of Kilimo Kwanza concerns making land available for these initiatives. The first activity listed is to amend the Village Land Act No. 5 of 1999 to facilitate equitable access to village land for Kilimo Kwanza. Critics worry that these
initiatives will increase insecurity around access to and use of land and natural resources for the rural population (REPOA, 2012).

**Socioeconomic-ecological impacts and conflicts over the land issue**

Conflict has been endemic to the large-scale land acquisition in Tanzania, sparking accusations of land grabbing and anger against the government from NGOs, academics, Tanzanian and international media, and civil society groups specifically sprung up around the issue of land. Among the most pressing issues are accusations of land dispossession by villagers with attendant loss of resource access, facilitated by the above discussed problems surrounding customary ownership. Further, according to critics, investment processes lack transparency and accountability, and fair and equal practices, and there have even been accusations of corruption within the bureaucratic institutions responsible for land management (REPOA, 2012). The literature also suggests that promised benefits of economic development often fall short of reality.

Studies carried out by international NGOs and Tanzanian civil society groups have found that a number of large-scale land investments have resulted in land dispossession for villagers, with negative consequences for rural livelihoods dependent on land and its resources. The Tanzanian branch of the civil society group, Participatory Ecological Land Use Management (PELUM), issued an extensive report on agribusiness, forestry, and biofuel companies in the Morogoro, Iringa, and Pwani regions. The study found that such ventures posed threats to land access, ownership and use among villagers, with deleterious effects on villagers’ food sovereignty. Once dispossessed of land and made into plantation workers, the report also accused that their labor value was
undervalued, thereby undermining the commonly made argument that large-scale land investment result in economic opportunities and development. Another extensive report by the Oakland Institute, an independent policy think tank based in California, found that the controversial Sun Biofuels project in Kisarawe negatively affected over 11,000 people living in 11 villages who lost land to the investors in terms of loss of access to resources. Though Sun Biofuels claimed that such land was only bushland and hence unutilized, villagers complain that they were economically dependent on such land for firewood collection. One village lost 40% of its total land area to Sun Biofuels. Overall, the report found that the project had negative impacts on local livelihoods through the loss of land used for collection of natural resources (Chachage, 2011).

The Oakland report also raised the issue of land dispossession for pastoralists, commenting on the historical evidence of land dispossession of the Maasai land in the Arusha area. Apparently, pastoralists in particular have been affected by land dispossession. Many projects acquire supposedly ‘idle’ or marginal land, assuming it is unoccupied as it is not settled or farmed. For pastoralists such as the Maasai, their claim to land tenure is even more tenuous than settled villagers, as land laws leave loopholes for the government to claim ownership of lands neither settled nor farmed. Historically, the Maasai have suffered from land dispossession, when in Arusha 40 years ago, they were pushed off fertile grazing land by investors from Holland and South Africa to grow wheat and white beans. As a result, the Maasai are left with only very marginal land. The problem of pastoralists being dispossessed of land remains an ongoing source of conflict, as of March 2013 the Tanzanian government, through the Minister for Natural Resources and Tourism, is moving forward with a plan of taking 1,500 square kilometres
which are essential dry season grazing land from the Maasai of Loliondo in Ngorongoro District (Just Conservation webpage, 2013).

Hence, concerning the issue of loss of access to resources, at the heart of the conflict is a false categorization of land as ‘unused’ or ‘unutilized.’ In reality, such land often provides important resource services to villagers who use it to collect firewood, charcoal, honey or fruits, or to pastoralists who use such land for seasonal grazing or access to water sources. Finally, like the PELUM report, the Oakland Institute found that labor forced off land was undervalued when re-hired as plantation workers; when BioShape took land from village of Muvuji, Kilwa, which was fully dependent on maize cultivation, they then employed 70-80 percent of the villagers to work on its plantation as casual laborers. Workers were paid only 2 dollars a day, worked 6 days a week, and were left no time for their own cultivation, but did not earn enough to sufficiently sustain their families. If people become reliant upon the market in such cases, they become vulnerable to fluctuations in food prices and food security (Oakland Institute, 2011).

According to the literature, the process of large-scale land investments itself is problematic, often violating the principle of free, prior and informed consent. Aside from the fact that ultimate control resides in the executive power as discussed above, a joint report by the Tanzanian Policy Research for Development (REPOA), the Tanzania Natural Resource Forum (TNRF), and International Institute for Environment and Development (IIED) argued that weak governance in land administration poses a significant threat to land rights. Complex procedures, lack of legal regulations for oversight, transparency and accountability, corruption at various level including the local level, general lack of financial and human resources, and the impossibility for the public
to access necessary info about investments, continuously undermine good quality land administration. The report further argues that even with local participation, local governance bodies tend to mirror social hierarchies in communities and often lack representation from groups that are marginalized (REPOA, 2012).

For example, the Tanzanian Land Rights Research and Resources Institute Haki Ardhi, a civil society group which sprung up to address the land issue in Tanzania, found that that villagers in the Kilolo District in Iringa and the Kilwa District in Lindi had faced a series of such issues since 2006 associated with the land acquisitions of New Forest Company and BioShape in Tanzania Ltd. The study found that in both cases villagers were inadequately informed as to the amount of village land to be transferred. In the Oakland study, local people thought they had only ‘let’ their land, and investors had only sensitized people about potential benefits, but not about potential disadvantages. Cases studied by Theting and Brekke, found that consultation processes involved no real community participation, and the Oakland field work supports this view- the majority of rural people who had given land away did not fully realize its value at time, being mainly bushland used for collection of various natural resources but not used to grow food crops. Such processes violate the principle of free, prior, and informed. HAKIARDHI has also criticized that land laws contain provisions which are allow for corruption and self-enrichment among land administrators, allowing them to acquire profitable or well-resourced village land and pass it on to private companies and rich individuals (HAKIARDHI, 2011).

Also of issue is the lack of manifestation of proposed benefits. In the study by PELUM, of the villages in Kilolo District in Iringa and Kilwa District in Lindi, benefits
such as new employment opportunities and investments in the communities had been limited and short-lived, in all cases falling far short of what communities expected when agreeing to the initial investments (Chachage, 2011). Though investors have implemented some activities associated with corporate social responsibility, HAKIARDHI argues that such benefits mask losses villagers would incur in the long-run, and strongly suggests that villages could generate more of these benefits by other means. (HAKIARDHI, 2011)

The Oakland Institute likewise found that often promises of employment, social services and infrastructure between local people and investors are primarily verbal, and therefore difficult for anyone to hold the investors accountable (Oakland Institute, 2011).

Associated with loss of resource access and land dispossession is the lack of sufficient compensation for such losses. Before land can be transferred from village to general land so as to be leased to foreign investors, the level of compensation to the affected people is supposed to be decided upon. However, in the Oakland study of Sun Biofuels in Kirasawe, the report found that Sun Biofuels only compensated 152 households for land taken from 11 villages, partially because official compensation values fully cover all land uses and activities that take place on land. Many market values of land are hidden, or difficult to capture in a formal economic valuation sense. Compensation methods being used in Tanzanian do not allow for or take into consideration potential future land use and production activities of local people.

Furthermore, following government guidelines, the compensation for land loss is not

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68 The Oakland study provides an example whereby the value of natural resources found on land is greater than the amount compensated for the land. The study found that for the Sun Biofuels’ land, valuers found land sought by company in Kisarawe had basic value of 170$ per hectares, with added-value for trees or buildings found on land. However, much land was natural forest and woodland, for which no compensation was paid, yet conservative estimates of commercial value of sustainably harvested timber are around 28$ per hectares. For the 8,211 ha granted to Biofuels, the level of harvesting which would be possible from this land could therefore amount to a figure in just one year which is higher than entire compensation package paid by Sun Biofuels to 152 households (Oakland Institute, 2011).
meant to make a household either better or worse off (Oakland Institute, 2011). Another report, issued by the Tanzanian Forestry Working Group and the Tanzanian Natural Resource Forum, argued that most land obtained or in the process of being obtained by biofuel companies has been village land not permanently settled but still used by village members. For example, most of land obtained in areas such as the Kilwa and Kisarawe Districts is miombo woodland, with patches of coastal forest and thicket, often used for forest-based economic activities, including commercial charcoal production, harvesting of forest production for medicines, fuelwood, building materials, and mushrooms (Tanzania Natural Resource Forum, 2009).

Finally, concerns have been raised about adverse environmental impacts of large scale biofuel investments on water supplies and forests in coastal areas, which occur when large plantations are established in formerly naturally forested areas. Other indirect impacts have also been noted to occur, such as adversely affecting food prices through transferring land to biofuel production rather than to meet food needs (Tanzania Natural Resource Forum, 2009).

Mining sector reforms and the global rush for African minerals

During the years of structural adjustment throughout Africa, mining was identified as a primary sector to galvanize economic growth, and targeted for extensive reforms. It was argued that the mining sector in Africa, suffering from a declining share in the value of world mining output and trade, was underperforming and failing to generate sufficient revenues for development. Poor policies, political interference, lack of investment in geological mapping, poor technical data on mineral endowment, weak
infrastructure and the lack of cheap and reliable energy supplies were seen as hindering the efficient functioning of the mining sector.\textsuperscript{69} (UNCTAD, 2005). As such, deregulation of Africa’s mining sector started in the 1980s in the context of structural adjustment reforms. Broadly, the reforms called for increased liberalization, deregulation and privatization as means of correcting macroeconomic imbalances, stimulating economic recovery, and establishing a more a sustainable growth path. Importantly, during this time, the World Bank began to shift from its traditional role of the 1960s as supporter for exploration and production activities, to the commercialization and privatization of SOEs in the 1980s and capacity building. In the 1990s, its role evolved to emphasize private sector development and attraction of FDI. In recent years, the Bank emphasized issues of governance and transparency, pro-poor growth, mitigating environmental and social risks, and protecting rights of people adversely affected by investments in extractive industry.

However, overall reforms have shifted governments’ primary objective towards generating tax revenue, rather than utilizing the sector to pursue political objectives such as sovereign control of resources, as had been the case during the era of state-controlled mining enterprises. Reforms ensured that privatization was considered central to the efficient functioning of mining enterprises. Given the lack of financial and technological resources, as well as the lack of local entrepreneurs, reforms have thus concentrated on attracting capital from foreign mining companies. To this end, African countries were encouraged to create stable legal and fiscal frameworks, including mining codes, 

\textsuperscript{69} UNCTAD’s report on foreign investment argues for a more nuanced analysis. UNCTAD argues that in most of Sub-Saharan Africa a prolonged economic downturn which started in late 1970s along with a collapse in commodity prices following the boom of mid-1970s, was a major source of rent depletion. In many cases, any revenues generated by the sector were appropriated for BOP support, including debt service payments, thus depriving the mining sector of re-investable surplus for exploration, modernization, and rehabilitation of mines.
contractual stability, guaranteed fiscal regimes, profit repatriation, and access to foreign exchange (UNCTAD, 2005).

By end of 1995, under the auspices of the World Bank which played a key role in conceptualizing and introducing the institutional reforms, 35 countries were reported to have published new mining codes, which reduced tax levels, eased immigration laws for expatriate workers, and granted tax exemptions for imported equipment. Guinea’s reforms were introduced in the mid-1990s, and followed later by those of Madagascar, Mali and Tanzania at end of 1990s. All phases of reforms followed each other with continuity, and each succeeding phase built upon the set of policies enacted under previous mining regimes (UNCTAD, 2005).

Tanzania’s mineral code was introduced in 1998 as a result of a five-year World Bank-financed sectoral reform project. It includes the typical elements introduced in reforms, to be discussed in more detail below. It was argued that Tanzania’s mining sector, despite being endowed with various kinds of metallic minerals, gemstones, industrial minerals, energy-based minerals, as well as gravel and sand, did not make substantial contributions to country’s economy. This was largely due to its absence of a business-friendly environment and choice to pursue a state-led socialist economy. According to the World Bank, Tanzania’s 1979 Mining Act was problematic- it did not offer private investors a risk-free investment climate; security of tenure over minerals rights was not adequately protected within a legal framework; it created a climate of uncertainty, arbitrariness, and potential for bureaucratic delays (Nyankweli, 2012). Overall, Tanzania’s mining regime was hostile towards private investment, and reforms were intended to create an investor-friendly environment to encourage FDI. As such,
reforms have sought to accommodate corporate objectives, such as maximizing profits, minimizing risk and recovering investments as early as possible. In addition, reforms emphasized policy continuity and predictability, especially towards securing property rights and open markets, with tax regimes responsive to the preceding objectives (UNCTAD, 2005).

As a consequence, the new 1998 Mining Act allowed 100 per cent foreign ownership, provided guarantees against nationalization and expropriation, and offered unrestricted repatriation of profits and capital. It pegged the royalty rate at a maximum of 3% (the same rate as in Mali and Guinea), and provided waivers in respect of import duties and tax exemptions on imported machinery, equipment and other inputs. It also waived the requirement (in the 1979 Mining Act) for local procurement of goods and services (UNCTAD, 2005).

As a result of such reforms, Africa has become much more attractive to FDI in its mining sector, especially with high global demand for minerals in the 2000s. Proponents cite the fact that new investment has expanded the capacity of existing producers and new mines have been developed where before the African mining sector stagnated. For places like Mali and Tanzania, which did not have large mining sectors before 1990, they now host substantial flows of FDI in large-scale operations. These trends, it is argued, can allow Tanzania’s mining sector to become an important engine of development and economic growth, and indeed the mining sector is allocated an especial role in Tanzania’s current development policies. Nonetheless, like the issue of land, Tanzania’s mining sector has sparked much criticism and conflict. NGOs, civil society groups, and academics have accused Tanzania’s mining regime as unjustly giving away Tanzania’s
precious resources, especially gold, at fire-sale prices to foreign investors with practically no benefit actually ‘trickling down’ to the Tanzanian people. In contrast, Tanzanians, especially those living within the vicinity of mining, bear the burden of environmental degradation, and loss of access to land and/or former livelihoods as small artisanal miners. Further, critics argue, on a larger, structural scale, the large inflows of FDI and the nature of the current mining regime has fostered a political culture of secrecy, corruption, and un-democratic practices in the governing of Tanzanian resources.

Statistics for FDI in mining and economic impacts

The mineral sector is the second fastest growing sector after tourism in Tanzania, with economically proven deposits including gold, diamonds, tanzanite, ruby, tin, copper, nickel, iron, soda phosphate, gypsum, kaolite, coal, natural gas and uranium (REPOA, 2012). In terms of its share of exports, mining is the fastest growing sector. The value of mineral exports in terms of precious stone and metals (Graph 1) alone increased from US$ 21,501,804 in 1997 to US$ 1,764,315,785, and the Tanzanian Investment Center’s website states that this

...underscores the sector’s current position as one of the fastest growing sectors that guarantees investors security of tenure, repatriation of capital and profits and ensures a transparent regulatory and administrative system in the acquisition of mineral rights.

The growth of gold exports has meant that precious stones and metals now dominate 40 percent of total exports in monetary value, an issue that, as will be discussed further in Chapter 5, reinforces Tanzania’s position as an extractive, peripheral economy.
Graph I: Export values of pearls, precious and semi-precious stones, precious metals

Source: UNCOMTRADE export data for 'precious stones and metals'

In particular, since the first large-scale gold mines began production in late 1998, gold mining has been the fastest growing sector of the economy and the largest source of foreign investment. By January 2008, gold had hit a record high world price of US $876 per ounce (Curtis and Lissu, 2008). Six major gold mines operate in Tanzania, with two foreign mining companies dominating the sector: the Canadian company, Barrick Gold Corporation, which operates three mines (Bulyanhulu, North Mara, and Tulawak) and is developing a fourth (at Buzwagi); and the South African based AngloGold Ashanti
(AGA), which operates the Geita mine, the country’s largest gold deposit. Tanzania has current proven gold reserves of around 45 m ounces. At current gold prices, the country’s potential gold fortune reaches up to US $39 billion—over three times country’s annual GDP of $11 billion, without taking into account extraction costs (Curtis and Lissu, 2008).

However, even though the mining sector accounts for a large share of total export earnings, the share of mining in GDP is still small. In 2001, the share of mining as a percentage contribution to GDP was only 1.8%, and grew to only 3.3% by 2010 (REPOA, 2012). The contribution to the Gross National Product is likely to be even smaller compared to the GDP because of the outflows of the mining companies’ dividends and interest on debts, which represent part of the difference between GDP and GNP (Nyankweli, 2012). The small contribution is attributed to the underdevelopment of the sector, which is characterized by low domestic technological capacity, heavy dependency on imported inputs, and weak linkages with other domestic sectors (REPOA, 2012). However, as will be discussed in-depth further, critics argue that investment incentives and tax breaks given to investors, compounded by the fact that mining companies retain a large share of their export earnings in offshore accounts, are the major reasons behind the sector’s minimal contribution to net national foreign exchange receipts. The sector’s contribution to government revenue has been minimal, despite the fact that it has attracted significant FDI stocks. Such low contribution to government revenues is worrisome given that the country’s current proven reserves of 45 m ounces are presently being extracted at a rate of over 1.6m ounces a year for five of the six major mines, and hence reserves may last only another 28 years (Curtis and Lissu, 2008).
Structural reforms, legalities of mining, and the neoliberalization of the means of production

Tanzania’s Mining Act of 1998, the major architectural framework governing Tanzania’s mining regime, has been the subject of much criticism and controversy. In 2008, in response to growing public discontent, an extensive and comprehensive report written by Tundu Lissu and Mark Curtis, and commissioned by various Tanzanian civil society groups and international NGOs, Tanzanian religious organizations, and the University of Dar es Salaam, criticized the Tanzanian mining regime, as well as the broader political economy in which it is embedded, as essentially allowing foreign plunder of Tanzania resources. The report, “A Golden Opportunity? How Tanzania is Failing to Benefit from Gold Mining,” argued that the mining sector (with focus on the gold sector) in Tanzania was plagued with three main severe problems: the government is receiving very low tax revenues from gold mining; gold mining is subject to minimal governmental or popular democratic scrutiny and is widely perceived to suffer from associated corruption; and people in gold mining areas fail to benefit significantly and many are actually being made poorer.

Government revenues are the primary way in which a country is monetarily compensated from FDI in the extractive sector. As noted, Tanzania’s tax regime has its genesis in the neoliberal reforms of the 1980s, with the New Mining Act of 1998 a direct outcome of the five-year World Bank Financed sectoral reform project. 70 As Tanzania

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70 World Bank papers on the mining sector from 1989 and 1992 called for Tanzania to develop private investment in mining and attract foreign capital. In 1994, the World Bank funded the Mineral Sector Development technical assistance project and promoted fiscal reforms to develop private sector minerals. This project led to the Tanzanian governments’ Mineral Sector Policy of 1997, which emphasized the primary role of private companies in mining and
had reformed its investment laws to attract FDI, the government had offered a range of incentives to all foreign investors, which critics argue are responsible for the low levels the government actually receives in revenues. The following policies in particular from the 1998 Mining Act are criticized by the ‘Golden Opportunity’ report:

- Investor ability to repatriate 100 per cent of profits
- Ability to carry forward company losses to set these off against future tax liability
- Tanzania’s mining law stipulates a royalty rate\(^7\) of just 3 per cent on gold, criticized as too low to ensure a fair return to Tanzanians
- In addition, royalty is calculated as a proportion not of total production value of minerals but their ‘net back value’, defined as market value of minerals minus cost of transport and cost of smelting or refining in-country. Further, payment of this royalty can be deferred if the ‘cash operating margin’ i.e. the company’s revenue minus its operating costs such as capital expenditure, interest payments on loans and depreciation costs, falls below zero. According to the authors of the report, an official at Tanzanian Revenue Authority stated that such “…royalty deferment is as good as a tax exemption.”

\(^7\) Royalties are the most common instrument for taxing the extractive sector. Royalties tax the fiscal dues on the basis of either the volume (unit royalty) or the value (ad valorem royalty) of production or exports. For governments, royalties ensure a relatively stable stream of revenue, but for producers, royalties constitute additional costs that have to be paid irrespective of profit levels. Very high royalties are thus a major deterrent to investment (Sturmer, 2010).
• Mining companies pay 0 per cent duty on imports of mining related equipment during prospecting, and up to the end of the first year of production; after this, they pay 5 per cent. Mining companies enjoy zero import duty on fuel.

• Mining companies enjoy the right to employ an unlimited number of foreign nationals, which compares to a limit of five for non-mining companies. The Immigration Act of 1995 was changed in order to allow this.

• The mining laws allow mining companies, unlike other companies in Tanzania, to be exempt from paying capital gains tax.

• Mining companies enjoy special VAT relief, which includes exemption from VAT on imports and local supplies of goods and services to mining companies and their subcontractors.

• The cost of all capital equipment incurred in a mining operation can be offset against income from the mine in the year in which it is spent, meaning that mining companies have been able to avoid declaring any taxable income and thus payment of corporation tax. In contrast, non-mining companies are entitled to a 100 per cent depreciation allowance only for the first five years of operations. This incentive creates, according to the report, avenues for ‘tax planning’ to minimize tax liability and has deprived government of corporate revenues from the sector. The 100% capital expensing coupled with absence of ring-fencing lead to perpetual declaration of huge tax losses by mining companies even where they make commercial profit.
• Rate of stamp duty (tax paid when buying property or shares) is set by law at 4 \%\text{, while recent contracts signed have set the rate of stamp duty at maximum of 0.3 \%.}

• The law allows the government to enter into contracts with companies that may contain provisions binding on the United Republic, such as guaranteeing the fiscal stability of a long-term mining project. In 2004, Minister of energy and minerals Daniel Yona revealed mining agreements signed by government and companies included tax stability clauses that precluded the raising of tax and royalty rates upward.

• Foreign mining companies have exclusive ownership of their operations and minerals recovered and complete power to dispose of them as they wish, including to transfer those rights to other companies without incurring capital gains tax. Yet the practice of buying and selling mining operations can be very lucrative. For example, in 2003 the Australian company East African Gold Mines made US $252 m selling on Tanzanian gold mine to Canadian Placer dome, later bought by Barrick, from an original investment deal of US$ 90m. Neither the government nor the people received anything from these deals.

• Mining companies are allowed to maintain their accounts in US dollars and their tax liability will then be assessed in dollars, enabling them to avoid costs associated with currency exchange; they can also open and operate foreign bank accounts and are allowed to keep money inside country that will only be sufficient to keep mining operations going. Thus actual ‘investment’ in country is limited.
As noted, the code allows 100 per cent foreign ownership, and provide guarantees against nationalization and expropriation.

For ‘strategic investors’- companies investing more than 20$ million, which is typical of mining- obtain ‘strategic investor status’; can have individual fiscal agreements with the government, some of which offer special concession never made public.

Newly licensed companies on the Dar es Salaam Stock Exchange with at least 30 percent of their shares issued to the public pay only 25% corporate income tax, compared to the standard 30 percent for first three years. In addition, the share of companies listed on the DSE are exempted from paying capital gains tax (whose normal rate is 30%).

Other VAT exempted items include insurance, education, financial services and tourist services.

Another report points out also that the maximum payment of local government taxes from mining companies is up to $200,000 a year, which is lower than the 0.3 % of turnover required by law (Policy Forum, n.d.).

The above such policies, critics argue, have resulted in considerable loss of potential revenue for the Tanzanian government. While an exact figure is near impossible to calculate, the report by Lissu and Curtis has made some estimations of the amount of revenue loss due to such policies for the gold sector. According to their report, between 1997 and 2005, Tanzania exported gold worth more than US$2.54 billion. The government received around $28 million a year in royalties and taxes on these exports, amounting to just 10 per cent over the nine year period. (The 3 per cent royalty brought
the government only an average of US$17.4 m a year in recent years. Raising the royalty rate to, say, 5 per cent would have increased government revenues by around US$58 million over the past five years). The authors calculate that Tanzania has lost at least $265.5 million in recent years as a result of an excessively low royalty rate, government tax concessions that allow companies’ to avoid paying corporation tax and possibly even tax evasion by some companies. Tundu and Lissu also claim that this estimate is quite conservative. They also estimate that the prioritization of large-scale gold mining in the country has come at the expense of small-scale artisan miners, around 400,000 of whom have been put out of work (Curtis and Lissu, 2008).

Further, Nyankweli (2012) argues that the government has suffered loss of sovereignty with the 1998 Mining Act. Significantly, in contrast to the 1979 Mining Act, the 1998 Mining Act entitles private license holders to use their mineral rights as collateral and to transfer mineral rights to banks or financial institutions without requiring ministerial approval or consent. This, Nyankweli states, practically enables foreign financial institutions to acquire mineral rights in Tanzania, offering investment houses a new level of protection. That is, the Tanzanian government is no longer the sole grantee of mineral rights, and this can be regarded as a significant erosion of Tanzanian sovereignty over its mineral sector. Further, in the 1979 Mining Act, the minister was the only authority in disputes and his decision was final, but in the 1998 Mining Act (Mine Development Agreements Section 10) settlement of any dispute must be done by international arbitration (i.e. the International Convention for the Settlement of Investment Disputes, ICSID).

Also concerning the issue of erosion of sovereignty the 1979 Mining Act provided
the Tanzanian government with the right to acquire ‘on stipulated terms or on terms to be agreed, an interest in any mining venture which may be carried on in relation to land in, or which constitutes, the prospecting area’, with the stipulation to be included in the prospecting license. In 1998 act, this right disappears. At the same time as the Tanzanian government suffered the loss of the ability to hold an interest in any mining venture, Nyankweli states, new provisions in the 1998 Act allow individual Ministry of Mines officials to hold shares in mining companies:

> While the 1979 Mining Act expressly prohibited the Ministry of Mines officials from holding shares in mining companies or mining licenses, this prohibition is dropped from the 1998 Mining Act. This seems to open the door for ministry officials to act with private, rather than state or public interests in mind, and creates additional avenue for private mining companies to try to influence or even directly bribe public officials (Nyankweli, 2012, p. 71).

Criticism has also been targeted at the lack of provisions guaranteeing that the mining sector will bring general developmental benefits. In the 1979 Mining Act, general developmental benefits (employment and spill-over effects) were treated as part of the overall package of mining ventures and were included in the approval and licensing process. For example, the 1979 Mining Act required applicants for prospecting and mining licenses to demonstrate their plans for employment and training of Tanzanians. Also, mining license applicants were required to reveal their plans for goods and services to be procured in Tanzania. Such requirements were annulled with the 1998 Mining Act (Nyankweli, 2012).

*Socioeconomic-ecological impacts and conflicts of the mining sector*
Aside from national level issues, such as loss of government revenue, loss of sovereignty over resources, and capacity to direct the sale of such resources in a designated way specifically for development purposes, there are features of the Tanzania’s mining regime that have sparked social conflict and discontent among the Tanzanian population. The first major issue that has sparked public anger is the absence of democratic control over natural resources by the Tanzanian people. Like land, rights to mineral and petroleum resources ultimately belong to the state. Any rights of occupancy of land do not extend to mineral and petroleum resources. Instead, such resources are regulated by statutory instruments and their use administered by the government (REPOA, 2012). Though supposedly acting as a trustee for the Tanzanian people, in reality it appears state control over resources translates into elite privilege to benefit from resources. This inequity together with an inequitable shouldering of burdens from mining activity, such as environmental degradation and loss of land, has sparked at times even violent conflict, as, for example, the case of the gold mine at Bulyanhulu, where conflict between artisanal miners, the gold mining company Barrick, and the government resulted in the deaths of up to 70 people.72

72 Bulyanhulu is located in northwest Tanzania, and the gold mine there is currently owned by Canada’s Barrick Gold Corporation. Following the discovery of gold by nomadic herders in Bulyanhulu in 1975, families from Northern had Tanzania began to migrate there and carry out artisanal mining. The 1994 Small Scale Miners’ Association submitted an official request to the government to gain community title to hundreds of mine shafts constructed by the artisanal miners themselves at Bulyanhulu. However, around same time, Canadian Embassy submitted a proposal for a mining license under the local subsidiary, Kahama Mining. At same time, Tanzanian Government was under intense pressure by IMF and World Bank to promote private foreign investment in the mining industry, and to eventually do away with all public ownership of the mineral extractive industries. Kahama Mining was soon granted permission to begin its operations. Small scale miners of the area were declared illegal intruders to be evicted from land. At the end of July 1996, Kahama forcefully evicted the residents, with reinforcement from Tanzanian Field Force Unit riot police. Homes were flattened, settlers’ properties confiscated, and entire population was forced to flee. Further, as a number of people were continuing to work in the mine shafts, company officials ordered additional bulldozers to fill the mine shafts with gravel. The exact number of people who died remains unknown, but from accounts of families and eyewitnesses, over seventy people were allegedly buried alive. The police arrived a few days later, but in the end, little was done and the government essentially called the case closed. Despite calls for independent, comprehensive investigation of evictions, backed by Amnesty International, all efforts have been prevented by Tanzanian officials. By 1999, Barrick Gold bought Sutton Resources and became the operator at Bulyanhulu Gold Mine, under an arrangement made possible with
Public discontent has also festered in regards to the lack of democratic oversight over mining contracts. Mining contracts are shrouded in secrecy with no real democratic scrutiny, and even lack parliamentary oversight. The Tanzanian parliament has never seen any contracts signed by government with the mines—except the Buzwagi contract, which was leaked to the media. As such, elected representatives have no influence over, or even knowledge, the specific terms given to foreign mining companies to extract the country’s resource wealth. Further, according to Curtis and Lissu, journalists and activists reporting on corruption and mining have been the subject of pressure and even anonymous death threats. Many critics suggest that the favorable treatment given to some mining companies is linked to this corruption. Curtis and Lissu also note the following: the country’s Auditor General estimates that annually over 20 percent of the government budget is lost due to corruption, theft and fraud; the World Bank’s investment climate assessment states that the Tanzania Revenue Authority, which collects taxes, is very prone to corruption; and the Business-Anti-Corruption website states that employees of the Mining Department demand bribes in order to issue mining or prospecting licenses. Further, Tanzania’s Economic and Social Research Foundation, in their State of Corruption in Tanzania report, acknowledged that the Ministry of Energy and Minerals is prone to corruption, possibly linked to the fact that some officers of the minerals division also own minerals rights (Curtis and Lissu, 2008).

financial backing from World Bank and the Canadian Government’s Export Development Corporation (Women and mining network, 2010).

73 Though difficult to verify exact numbers, belief that favorable terms for foreign investors is linked to corruption, seems fairly widespread, as evidenced by Tanzanian media, and numerous conversations I have held with ordinary Tanzanians. The website Tanzanian Corruption Tracker, a Tanzanian NGO has written a number of articles on corruption and the Tanzanian mining sector.
Land dispossession, degradation of land/environment and loss of access to shared resources such as forests, rivers and lakes are also associated with gold mining, and to some extent tanzanite and diamond mining, creating conflict between communities, mines, and the government. As pointed out in a report commissioned by the Economic and Social Research Foundation, the Land Act does not define a mineral land among its three categories of general, village and reserve because mineral land is not known till discovered. According to the Land Act Section 22(2) minerals are by definition not a part of land in Tanzania; once resources such as gold are discovered, the land turns into a minerals land and falls under the Minerals Act and policies, which take precedent over land policy and laws that govern rights of occupancy. Hence, upon discovery of minerals, the land turns into minerals land, overriding all categories of land except conservation areas in the reserved category. This situation is the root cause of many conflicts between mining investors and communities, and it arises from a dis-harmony between land laws and mineral policies. The discovery of new deposits and issuance of mining licenses almost automatically nullifies existing land rights claims, and can result in the relocation of hitherto existing communities against their will.

Further, as the report by the Economic and Social Research Foundation notes, compensation for displacement, environmental degradation, or loss of resource access is often very low, also sparking dissatisfaction and conflict (Lugoe, 2012). For example, in the North Mara Gold Mine in Tarime District, Barrick Gold Corporation has been accused of taking by force villagers’ land done by dumping millions of tons of waste rock and rubble onto village lands without seeking the community’s consent, or paying compensation as required by law. This was supposedly done with the active participation
of the district administration. Hence, as the report notes, in Tanzania communities have lost their lands not only through takeovers but also through degradation, as the hazardous land subcategory overrides all three public land categories, and once declared hazardous, communities lose all rights over such land (Lugoe, 2011).

The argument for large-scale mining is that it brings economic benefits to local communities- creating employment, importing new technologies, stimulating economic activity by mines’ buying local goods and services, and community development projects. However, while large scale mines can create jobs, there is extensive evidence that they create only a very small number, generally due to few linkages with the broader economy, and the fact that transnational corporations also tend to use more capital intensive technologies and processes than domestic enterprises (UNCTAD, 2005). Further, as noted, stipulations such as buying local goods and services, have been removed from the mining regime since the neoliberal reforms. The Tanzanian mining law does not require mining companies to buy any percentage of goods and services locally, as the 1998 Mining Act had abolished that provision in the 1979 Act as part of the recommendations the World Bank had made to African governments in its 1992 Strategy for African Mining technical paper (Nyankweli, 2012). Figures suggest that around half of company expenditure goes to local suppliers, which has some positive benefit, but, critics argue, not enough (Curtis and Lissu, 2008).

Tanzania’s six major gold mines employ total of 7,135 people, according to government figures. A study for the ICMM noted that the mining industry, although employing less than 8000 people, has created 45,000 additional jobs. However, as Lissu and Curtis point out, large scale mining has made many more unemployed. Before the
arrival of MNCs, precious metal mining was dominated by small-scale artisan miners using simple tools and techniques, providing small incomes for a large number of people, generally uneducated and poor. Citing a survey conducted by the World Bank in 1995, which estimated that 550,000 people were directly employed in small scale mining, Curtis and Lissu point out that large-scale mining may have made around 400,000 people unemployed (Curtis and Lissu, 2008).

Further, the 1998 Mining Code allows mining companies to employ an unlimited number of foreigners. Government figures show that of 7135 people employed in the six major gold mines, 565 or 8% are non-Tanzanians. However, expats usually occupy management and supervisory positions and earn very large salaries in comparison with Tanzanian nationals, and there have been accusations that mines pay Tanzanians less than foreigners, even when doing the same job. The average pay for mineworkers between $128$ - $240$ a month, while the pay pack of the chief executive of Barrick is $9.4$ m including the basic salary, bonus and stock options. Further, the organizing of unions is not easy, and a 2006 report commission by the World Bank notes that when unions at Geita mine tried to organize workers in 2002, mine management refused to meet them (Curtis and Lissu, 2008).

Critics also complain that although community development spending is touted as another benefit for large-scale mining, the actual amount spent is small in comparison to local needs or company profits. According to figures provided by the Curtis and Lissu report, AGA’s annual community development spending has averaged around US$0.7 million a year, while Barrick’s appears to be somewhere between US$3-5 million across all of its mines in Tanzania. Not only are these figures very low compared to the amount
of gold exported, and unlikely to generate significant local economic impacts, they are deductible from taxable income (Curtis and Lissu, 2008).

The environmental degradation associated with mining activities and the impact on local communities is a classic example cited by political ecologists and theorists of EUE as the shifting of environmental burdens onto the global South for the benefit of consumers in the global North. Typically, extraction activities are associated with very high levels of environmental degradation. Large scale gold mines in particular generate more waste per ounce than any other mineral. Extracting one ounce of gold requires the removal of more than 250 tons of rock and ore. Piles of infertile soil, effluent from chemical processing plants containing lead and mercury in large quantities, etc., are often disposed. The UN Industrial Development Organization estimated that for every gram of gold recovered, 2-5 grams of mercury is released into environment (Lugoe, 2011).

Section 10c of the Mining Act 1998 does state that development agreements may contain binding provisions related to environmental matters, and the 1998 Mining Act is supposedly an improvement from the 1979 Mining Act in terms of environmental regulations. However, a report by Policy Forum that examined the Tulawaka, Buzwagi, and Geita gold mines development agreements found that despite environmental legal provisions provided for in the 1998 Mining Act, the government did not actually incorporate any environmental terms that address the needs of the local communities and would be enforced by the governing legislate. For example, Policy Forum found that there is a distinct absence in the three agreements of any provision for mine closure procedures to mitigate negative impacts on local communities. Further, the government has no voice concerning the terms of identification, selection, monitoring of contracts and
sub-contractors on behalf of the mining companies, and no provision that mining companies will be liable should any of the contractors commit faults (Policy Forum, n.d.).

The laxity of the government in environmental regulation, and the taking advantage of such laxity by the mining companies, is another root cause of conflict between communities, government and mines. There are a number of such examples that have garnered high media attention, and for the sake of space only a few high profile cases are listed here. For example, between 2005 and 2008 chemical disposals from processing plants at the North Mara mine in Tarime District created environmental and land hazards, adversely affecting the surrounding communities. A study conducted by three independent groups found that compared to WHO, USA and Tanzanian standards, levels of heavy metals were above normal in the area surrounding the mine. Poisonous chemicals, in the form of acid mine drainage, came from the mine’s tailing dam and waste rock piles. In addition, the nearby River Thigithe was also affected (Lugoe, 2011). The toxic waste from the Mara mining operations is believed to be responsible for killing over 1350 livestock and negatively affecting the health of over 40 people. Kitula, in a case study of the Geita District, found pressing problems such as pollution of water sources from mercury and cyanide, dust, mine pits, cracking and the collapse of buildings. Such pollution had caused land degradation, damage to water quality, and harm to livestock and wildlife biodiversity. Kitula also points out that although there is growing awareness of the importance of environmental management amongst mining stakeholders and government officials, that mitigation strategies are offset by conflicts of interest, economic and political, and at the central and local levels. (Kitula) At the
mining site in Bulyanhulu, where Barrick Gold has been accused as responsible for the death of up to 70 people, millions of liters of water are pumped to the mine every hour without consideration for the provision of clean water to the local communities. This mine has been accused of devastating the local ecology with waste rock piles, mine tailings that emit heavy metals into the surroundings, and also depleting precious water resources (Women and mining network, 2010). Other studies, such as Nyankweli’s dissertation on various gold mines in Tanzanian, have likewise found serious issues of land degradation, water degradation, and air degradation due to mining due to the excavation of large tracts of land, the pollution of water both surface and underground, and the release of particulate matter into the ambient air along with noise pollution. Such environmental degradation causes major adverse effects on the health of the population as a whole, not to mention associated effects such as the spreading of malaria through creation of stagnant water, and the spread of HIV and STDs through migrant workers (Nyankweli, 2012).

*The New Mining Act of 2010*

In late April 2010, in response to years of public discontent, conflict, and pressure from civil society groups, Tanzania’s parliament passed a new mining legislation. The Mining Act 2010 replaces the 1998 version. Since the 2010 Act is fairly new, not much has been written extensively on its impact, though there are a few policies which have been touted as addressing public grievances concerning the former 1998 Act. In particular, the new legislation raises royalty rates across the board by basing calculations on gross profits rather than net back values, as before. In addition, royalty rates on gold
rise from 3 to 4%, while diamonds stay at 5% and uranium is set at 5%. Further, under the 2010 Act, the government has the right to take a stake in any strategic mining operation, to be determined by type of minerals and level of investment. All companies are forced to list on the local stock exchange, and to set aside a certain percentage of their production for processing, smelting or refining within the country. No foreign firms are to be granted licenses for gemstone mining without entering a 50-50 partnership with a Tanzanian company, and mining contracts, while granted for the life of the mine, are to be subject to performance review every five years (Ng’wanakilala, 2010). The act also made it mandatory for the government to set aside specific areas for small-scale miners, in the effort to avert conflicts between artisanal miners and big mining companies.

Unsurprisingly the new Mining Act 2010 has attracted criticism from the mining industry: on the one hand, the mining industry argues that Tanzania’s hostile business environment grants the country less space to charge higher royalties, and that the nationalistic provisions found in the new act will scare off investment and hinder the growth of the mining sector. Further, the issue is not the mining regime per se, but rather a highly corrupt state incapable of managing public funds. On the other side of the spectrum, other critics say the bill has not gone far enough. They point out that legislation would not affect existing mining contracts\(^4\) (Ng’wanakilala, 2010). The large gemstone producer Tanzanite One will not be affected by new ownership rules, for example, and

\[\text{However, though the Mining Act 2010 does not legally bind mining contracts established before its enactment, recently giant gold mining companies, including Barrick Gold Limited, Geita Gold Mines and Resolute Gold Mines Ltd have started abiding to the new mining law after concluding a series of negotiations with the government. The government had undergone negotiations with the miners in a bid to persuade them to adhere to some of the terms instituted under the new law, including pushing up the royalties. Negotiations also included other issues not part of the new law, including convincing miners to accept the ring-fencing practice income tax, which entails limiting cost recovery for an extractive project to the revenues generated by that same project. The big three gold miners ABG, Geita, and Resolute have begun to pay royalties of 4% (The Citizen, 2012).}\]
government officials said agreements with AIM-listed miner Petra Diamonds, which owns a 75 percent stake in Tanzania’s Williamson diamond mine, will not be affected by the new rules (Ng’wanakilala, 2010). Further, the Executive Director of HAKIARDHI said the new law gives too much power to the Minister and Commissioner of Mines. According to Mr. Mhind, too much power is not in line with the recommendations of the Mining Commission, saying that ‘giving so much power to these executives may provide them with the leeway to make agreements that are unfavorable to Tanzania, like what happened to many previous mining agreements’ (TanzaniaInvest webpage, 2010).

Further, the new royalty is insubstantial. Critics argue that the gold mining contracts signed in 1990s were established when prices of gold were low, and now it is justifiable to increase the royalty rate to at least 5 percent because prices are now between five and six times higher. Further, other African countries such as Ghana and South Africa are charging royalties of more than five percent.\(^{75}\)

**Discussion and Conclusion: The Politics of Ecological Imperialism**

Tanzania’s history and current situation in regards to foreign investment and natural resources is not exceptional. The country largely mirrors the broader trend of

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\(^{75}\) Tanzania’s former royalty rate of 3% is at the lower end of the 3 to 12 per cent sliding scale royalties levied on gold production in Ghana, and 3 to 8% royalties that gold mining companies negotiate in Mozambique. Botswana levies 5% royalty. Tanzania’s VAT laws are similar to other African countries which also exempt mining companies from paying VAT on imports and local supplies, such as Ghana. Other aspects of Tanzania’s fiscal regime for mining broadly similar to other countries; most countries corporation tax rates similar at between 25-30 %; most allow losses to be carried forward against tax; many allow 100% deductions, and others allow zero customs duty on mining equipment. In Tanzania foreign firms have been guaranteed 100% ownership of mines, while Botswana government Mining Act gives government mandate to acquire 15-50% stake in major mining projects (Curtis and Lissu, 2008). An interesting paper examining the three case studies of Ghana, Namibia, Zambia, compared to classical mining and quarrying countries, such as Australia, notes that if sub-Saharan countries had achieved the same implicit tax rates and sales revenues per km\(^2\) as such classical mining countries as Australia, their tax revenues from the extractive sector could have been significantly higher. Hence, unlike classical extractive economies like Australia, Canada, and Saudi Arabia, which benefited greatly from the commodity boom in recent years, Sub-Saharan countries were unable to take obtain much advantage, despite skyrocketing prices and demand, and high inflows of FDI, tax revenues from the extractive sector were quite modest in three case study countries (Sturmer, 2010).
other African nations as discussed in Chapter 3; the initial countermovement against economic dependency during the era of post-independence economic nationalism, whereby national control of resources was seen as crucial, and the subsequent countercounter movement involving the neoliberalization of Tanzanian resources, evident in the structural reforms favoring foreign investors in the land and mining sectors. Chapter 2 had argued that this counter-counter movement was a result of an expansionary tendency of capitalism to subsume resources (biophysical resources and labor) on terms favorable to capital accumulation. These arguments were made in depth in Chapters 2 and 3, and will not be repeated here. Instead, the value of a more in-depth case study, such as the study of foreign investment in the mining and land sectors in Tanzania lies in the fact that certain important internal socio-political characteristics become more apparent. Tanzania exhibits many socio-political features of a classical extractive economy, and such features can be conceptualized, as noted in Chapter 1, as ‘internal supportive features’ of ecological imperialism. Such features are likely to be present in many peripheral economies outside of Tanzania, but to varying degrees and with local variation.

The first socio-political feature is centralized, non-democratic governmental control over resources, as evidenced in lack of ownership or control over land and minerals by the Tanzanian people. Though ostensibly the state is meant to act as a trustee of national resources for the Tanzanian people, in reality control is placed in the relevant ministries, whose actions are not subject to democratic oversight by the Tanzanian people or elected officials in parliament. Placing national resources under state control with no democratic oversight or accountability is elite control, not social control. The secretive nature of land and mining deals, and the public discontent and conflict surrounding them,
are visible manifestations of the non-democratic control of resources. In Tanzania’s case, the state is the intermediary actor in the process of ecological imperialism, a situation likely to be similar in many other peripheral countries as well.

This does not mean the Tanzanian government has always been univocal in regards to the issue of foreign investment- some members of the Tanzanian government have in fact been vocal dissenters against what they considered a neocolonial situation. But it means that until very recently, much of the politics surrounding foreign investment has been heavily top-down. For all the reasons discussed above, power has been heavily tilted towards certain ministries with decisions completely out of the hands of ordinary citizens, or even elected officials of parliament. The Mining Act of 1998 gives the Minister of Energy and Minerals in particular the discretionary powers to award and revoke mining licenses, enter into Mining Development Agreements, and defer royalties. Further, under the 1998 Act it is illegal to disclose any information obtained from reports between mining companies and the Minister or any other authority.

However, this does not mean all government officials have been agreeable or complicit to such a power structure. Some members of parliament have actively protested against various aspects of how foreign investment in the extractive sector is governed. But again, demonstrating an unequal balance of power, outspoken critics on the mining issue have been penalized. For example, in 2002 the Tanzanian government charged two environmental activists and an opposition political leader with sedition for speaking out about allegations of widespread human rights abuses at the gold mine Bulyanhulu. Rugemeleza Nshala and Tundu Lissu of the Lawyers' Environmental Action Team (LEAT) and Augustine Mrema, Chairman of the Tanzanian Labor Party, raised
concerns over allegations of killings, illegal evictions and destruction of livelihoods at the Bulyanhulu Gold Mine in August 1996. Tundu Lissu has since become a vocal member of parliament, and has a history of activism as a campaigner of rights of rural communities. Another example includes Mr. Zitto Kabwe, the MP for Kigoma, who in 2006 was suspended for disclosing the details of a mining contract.

This issue of lack of democratic control is closely tied with the second internal feature, the lack of practical legal channels for addressing the grievances of citizens and communities. To the extent that such legal channels exist, for practical purposes they are too difficult for ordinary citizens to access, whether for financial, technical or other reasons.

The third significant socio-political feature concerns the broader class structure. Tanzania, despite experiencing substantial growth for the past decade, has failed to translate such growth into poverty and inequality reduction, rather as stated in the introduction, inequality has grown. Neoliberal policies appear to have fostered a class structure classically criticized by dependency theorists such as Girvan, Baran, Frank, and Galtung; the growth of a sort of comprador class whose interests overlap with the interests of foreign investors, especially in regards to the specific ministries that control the resources and are responsible for the contracts between government and investors. Also on the issue of class, the lack of democratic control over resources and the secretive nature of land and mining contracts seem to foster corruption among the elites. In that sense, the current focus of the World Bank and Western donors on good governance and accountability are on mark. However, what seems to elude the mainstream critique of corruption is the relationship between corruption and foreign investment. As noted, it
was not until the reforms and the 1998 Mining Act that ministers were allowed to hold shares in mining companies. Further, even if corruption could be eliminated, policies that largely benefit foreign capital over the Tanzanian people could be made perfectly legal. The issue is not one solely of corruption, but also lack of effective democratic control, and a broader politico-economic structure that ensures the flow of both profits and resources from periphery to core. Class conflict has also manifested in the conflict between the government and communities adversely affected by land and resources issues.

The fourth socio-political feature of significant import is the simmering of discontent, conflict and resistance in Tanzania, arising for all the reasons discussed in this chapter. On the one hand, in Tanzania’s case resistance appears to be inchoate and not of a national scale. Importantly, it does not seem to be organized by any political party or particular ideology on a substantial scale. Chama Cha Mapinduzi (CCM), the dominant party in Tanzania, has been in power since 1977 and it was under this party that the neoliberal policies of the 1980s were ushered in. The only other major contender for political power is CHADEMA, a center-right political party that openly endorses free market policies. One could argue, therefore, that there does not appear to be any ‘Polanyian’ countermovement at the national level against continuing primitive accumulation as had been the case during the era of economic nationalism.  

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76 Particularly in comparison to places in Latin America like Bolivia, where a leftist party gained power, and the government itself has engaged in a form of nationalization of the natural gas sectors. In Bolivia, the leading party MAS is an openly declared socialist party that has at least rhetorically challenged imperialism, capitalism, and environmental degradation and implemented policies to protect against the vicissitudes of the international market. The indigenous population in Bolivia put MAS in power, and from my three months of research in Bolivia, I met with individuals and NGOs more radical than MAS. Bolivia hosted the largest ecological conference in recent years, one that openly condemned the environmental effects of capitalism and called for a new world order. In comparison with its past of African socialism and also in comparison to Bolivia, Tanzania’s resistance is limited and incipient.
Nonetheless, particularly within recent years, various civil society groups have organized and resisted over issues related to mining, land, and more broadly, environmental issues. Mittelman understands civil society to be

….a contested political space, established and extended by collective action, and composed of voluntary associations distinct from the economy and, while not completely separate from, nonetheless, outside the direct control of the state (Mittelman, 2000, p. 30).

In Tanzania, civil society organizations began to proliferate with the privatization and rapid downsizing of the public sector under structural adjustment. Recent estimates approximate the number of civil society organizations from between 4000 to 8000 (Haapanen, 2007). The sector which could be considered ‘civil society’ in Tanzania includes a diverse set of groups, from small, local organizations of women to large-scale groups affiliated with international agencies.

When conceptualizing environmental resistance to globalization, Mittelman wrote of five levels of civil society that actively participate; such categorizations are also useful for analyzing civil society and resistance in Tanzania. At the first level, as in many developing countries, in Tanzania there are diverse international environmental organizations that either have local affiliates or are working closely with indigenous groups. Such groups tend to be located in urban areas, and examples include the World Wildlife Fund, the Birdlife International, Wildlife Conservation Society, and the International Institute for Environment and Development (IIED), all of whom have local chapters in Tanzania. Some of these institutes, for example IIED, have published critical reports on government policy concerning resources and foreign investment, and have
actively worked with other NGOs in organizing workshops, meetings, and calls for change directed at the government.

At the second level are the national coalitions or networks of NGOs that have also sprung up in recent years. A good example is Policy Forum, a network of NGOs incorporated as a non-profit company whose membership currently includes over 100 non-governmental organizations registered in Tanzania. Policy Forum acts as a network that draws together various NGOs to address issues of poverty reduction, equity and democratization through informed civil society participation. Likewise, Participatory Ecological Land Use Management (PELUM) is a legally registered national network of NGOs that have come together to facilitate learning, networking and advocacy in ecological land use management for sustainable agriculture. Both PELUM and Policy Forum have published critical reports on land grabbing advocating change in national-level land tenure policies.

At the third level, there are a number of individual NGOs at the national level that play multiple roles, including facilitating action, mobilizing resources, providing expertise, and undertaking research on specific issues. One example is The Land Rights Research and Resources Institute (HAKIARDHI), a Tanzanian national level NGO centered on the issue of land tenure. HAKIARDHI seeks to spearhead the rights to land of rural and peri-urban based small producers through activist researches, lobbying and advocacy for policy changes, critical analysis of policies and laws and active participation in policy processes. The Institute conducts land rights training through
district and grassroots level workshops, monthly seminars, training of trainers, media programs and dissemination of publications.  

At the fourth level, a number of grassroots organizations engaged in actual implementation of projects also exist. In the case of Tanzania, such grassroots organizations tend to be small and focused on specific development projects within specific localities with the aim of ameliorating environmental degradation. Finally, concerning the fifth level of civil society which consists of unorganized masses that can potentially be mobilized around issues of severe environmental degradation, recent years have witnessed a proliferation of conflicts, with local communities organizing around issues such as land grabbing and mining alone. An example would be the protests over the environmental destruction at the gold mine in the Tarime district or the human rights abuses at Bulyanhulu, as discussed above.

In terms of resistance, therefore, the greatest organized resistance appears to come from such civil society groups, in particular the NGOs that organize around environmental issues combined with issues of social justice. In Tanzania, a country with relatively low-levels of formal education, NGOs have a privileged position as gatherers and disseminators of information, and can make broader connections, address root or structural causes, and can protest a national state of affairs due to national policies. Unlike small communities pushed into reacting after environmental degradation occurs

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77 Similar to HAKIARDHI, numerous ‘land rights’ national-level NGOs exist throughout the developing world, particularly in other African countries and Latin America concerning indigenous land rights. This is unsurprising, given the conflict over large-scale land investments that has erupted in recent years.

78 A purview of the 50 or so registered environmental organizations in Tanzania reveals that by far the majority are apolitical, working on localized, specific issues such as conserving this particular forest, or this particular species, or encouraging sustainable development through small scale environmentally projects like beekeeping or tree planting. I would not classify the majority of NGOs as actively engaged in resistance against the neoliberalization of Tanzanian resources— they seem to side step the issue, and focus on environmental degradation due to local populations, like the cutting down of trees by villagers.
within their own backyard, NGOs call for changes in economic policies at the national level. It was the published reports of NGOs that most of this chapter’s information came from. In terms of other civil society groups, there is also evidence of resistance from religious leaders. A prime example of protest would be the report, “A Golden Opportunity?” discussed above, endorsed by Christian and Muslim leaders.

However, NGOs and other civil society organizations operate in a restricted environment. During the research period, informal interviews were conducted with two of the major NGOs that published critical reports and actively called for changes in government policy- REPOA and Tanzanian Natural Resource Forum (TNRF). In private, both organizations complained of government corruption and foreign investment. Further, both expressed the danger involved in advocacy around such issues, having been subject to intimidation on different occasions. Literature on civil society in Tanzania indicates that the political space for civil society is restricted (Haapanen, 2007), and my interviews with NGOs have confirmed this. Essentially, the state recognizes civil society organizations as partners in service delivery, but seeks to limit their political participation. As such, according to the literature, while civil society organizations have expressed criticism towards certain procedures and policy issues, they have avoided a strong watchdog role towards the state and radical critique (Haapanen, 2007).

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79 In an informal interview with TNRF, I was informed that much care has to be taken not to use overtly political or radical language. Also, I was told about an event where TNRF held a workshop on the issue of land grabbing, together with REPOA. I was informed that a top ranking official of Barrick Gold Mining registered for the workshop under a false name. The official then attended the workshop, sitting in the back of the room in a manner, TNRF described, that appeared as a subtle threat. A top economist from REPOA who had also worked with the government also described to me the years he had spent trying to push through policies that would help to redistribute wealth in the country and how such policies were continuously blocked.
Apart from civil society organizations, from a Gramsian concept of counterhegemonic ideology, Tanzania arguably exhibits signs of resistance in terms of counterhegemonic ideology. Rather surprisingly the major Tanzanian newspapers such as The Citizen and the Guardian publish highly critical pieces on foreign investment in mining and land grabbing, outright indicting the government and questioning the economic logic behind such investment. This chapter drew from a number of such articles in the preceding sections. Another important example of resistance, which could be classified under a Gramsian ‘counterhegemonic’ movement against the state, is the prolific number of conflicts and protests concerning issues of land grabbing as well as environmental degradation due to foreign investment in mining, as discussed in the preceding sections. Largely, such movements are localized however.

As the work of James Scott (1985, 1990) points out, the absence of openly declared contestations should not be mistaken with acquiescence. Scott’s concept of infrapolitics, that is, everyday forms of resistance conducted singularly and collectively, but which fall short of openly declared contestations, effectively describes many of the outcomes of the informal interviews I had conducted. Every person I had held informal interviews with was highly critical of foreign investment, and felt that it reflected ‘neocolonial situation.’ They also felt elites in power were corrupt and largely to blame, as it was the elites who gave the contracts to the foreign investors and agreed to the terms. They also argued that a major problem was general societal levels of corruption that encouraged a culture of corruption from top to bottom in every major institution—education, medical, community development level, government, and so on. Such corruption made it possible for investors, for example, to buy off local leaders in large
scale land investments. Overall, at the micro-level and in terms of ‘counterdiscourses,’ there seems to be a high level of discontent in Tanzania.

The extent to which all forms of resistance have overall successfully managed to challenge the top-down politics of ecological imperialism is perhaps best illustrated through the 2010 Mining Act. After years of discontent and public outcry, the drafting of the 2010 Mining Act included weeks of consultation with civil society organizations, members of Parliament, companies, and other stakeholders. During the preceding debate, the Minister for Energy and Minerals was subject to scrutiny, and forced to answer how the bill would address the mining sector’s lack of integration with other sectors, the slow development of small-scale mining, the weak government capacity to administer environmental issues and other parts of mining sector, the low levels of value-added for minerals, and finally, the insignificant contribution of the mining sector to state revenue and GDP. (Revenue Watch)

The bill that was eventually passed made modest improvements in some of the expressed areas of concern, as discussed in the preceding section, such as insufficient state revenue generation due to low royalty rates and lack of linkages to other sectors of

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80 In the months leading up to passage of the bill, Revenue Watch and its local partner Policy Forum, two major NGO networks organizing civil society organizations from across Tanzania, worked to build capacity for parliamentarians, civil society and the media through various workshops and meetings. Revenue Watch and Policy Forum, along with the media, other civil society organizations such as Faith Based Organizations, and members of parliament, such as Dr. Zainab Gama, brought up numerous issues of concern from civil society, such as the lack of public scrutiny over mining contracts and mining development agreements, and the government’s failure to enforce environmental law despite environmental hazards. Revenue Watch and Policy Forum organized workshops on mining policy framework, and various civil society organizations and the media issued statements appealing to the government to ensure broad-based consultation and transparency. In the weeks leading up to the bill, such organizations reviewed the proposed bill, and voiced their opinions as to what the new bill adequately or inadequately addressed. (Revenue Watch webpage)
the economy. Such attempts in the new act demonstrate some progress and response to public outcry, but a number of central issues of concern remained unaddressed. Mainly, the Mining Act continues to place an excessive concentration of power in the hands of the Minister for Minerals, and also continues to keep mining contracts confidential. The bill still grants the Minister and the Commissioner for Minerals to enter into Mineral Development Agreements. Meanwhile, in the bill there are no provisions stating the legislative role in ratifying the Mineral Development Agreements, nor procedures for reviewing such development agreements. The bill designates nearly all information on mining operations confidential. Overall, the outcome of the new mining bill both expresses both contestation and resistance from below, but also the limited and restricted environment in which such movements operate.

81 According to Revenue Watch, a general split in attitude could be deceived among government members. Legislators were often eager to protect public interest and maintain voter trust, and were open to citizen concerns and the concerns of small-scale miners. In contrast, the executive branch generally sided with mining investors.
Chapter 5: The Sociometabolic Profile of Tanzania and the Issue of Ecologically Unequal Exchange

Introduction

Returning to the issue of global environmental distributional inequalities as discussed in Chapter 1, ecologically unequal exchange theorists postulate that the world-system is characterized by an asymmetrical transfer of biophysical resources and sink capacity from peripheral regions to core accumulating regions. According to EUE, accumulation occurs not only through the extraction of surplus value, it occurs in biophysical terms. The implications of EUE theory are that the living standards in the Global North are at least in part a result of accumulation, based upon the extraction of surplus value and the asymmetrical transfer of ecosystem goods and services from the Global South.

Also as discussed in Chapter 1, EUE theorists argue that this pattern can, and should, be investigated empirically. One of the techniques that has garnered attention in

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82 In this chapter I am dealing with the transfer of biophysical resources only. The literature on the transfer of surplus value is controversial, even among Marxists scholars. Bettelheim, for example, in arguing against Emmanuel’s position, contends that the poverty of the Third World is due to the low level of development of the productive forces, and wage differentials with the West are the result, not the cause of underdevelopment. Such a discussion though important is unfortunately beyond the scope of this dissertation.

83 Living standards in the Global North are obviously a consequence of a large number of variables, as is poverty and underdevelopment in the Global South. The point here is not, of course, to claim that high living standards in the North and poverty in the South are due exclusively to ecologically unequal exchange. The technological level of the forces of production, the social organization, the improved distribution through class struggle, and so on, are all important factors. However, the point EUE makes is that accumulation is also an ecological process; it is the physical transfer of resources from one place to another. The amount of resources used in the Global North, for its production and consumption and hence related to the overall standard of living, is according to EUE theory, dependent on ecologically unequal exchange.
the study of ecologically unequal exchange is Material Flow Accounting and Analysis (MFA), based upon the theoretical concept of societal metabolism. This chapter presents the results of a time-series, economy-wide MFA (EW-MFA) for Tanzania from the years 1970-2010, in the attempt to answer the following questions:

1.) The years 1970-2010 coincide with the implementation of economic nationalist policies under Nyerere and subsequent neoliberal economic reforms. How have the structural reforms affected the socio-metabolic profile of Tanzania? Is there evidence of increased asymmetrical transfers of resources or ecologically unequal exchange, as measured by an EW-MFA, due to the structural reforms?

2.) What are the strengths and weaknesses of an EW-MFA approach in evaluating ecologically unequal exchange?

**Societal metabolism**

The term metabolism was originally derived from the concept of metabolism in biology, whereby living organisms absorb nutrients from their environment, assimilate the nutrients for energy, and expel what is not required as waste. In an analogous manner, ecological economists conceive of economies as embedded in a larger natural environment, constantly drawing in resources, processing them and utilizing them for human needs, and subsequently expelling waste. The metabolic processes of economies are viewed as essentially entropic. The total input of resources from the greater environment and the total output of wastes are known as the ‘material throughput of the economy’ (UNCTAD, 2012). Socioeconomic metabolism refers to flows of materials and energy between society and nature (Fischer-Kowalski and Weisz, 1999).
Certain sustainability scholars have argued that the specific stage of development of a society, or its ‘mode of subsistence,’ determines the magnitude of this throughput.\textsuperscript{84} Primitive hunter-gatherer societies largely performed what is known as ‘basic metabolism,’ that is, they mainly depended on the solar energy captured in the biomass found in their immediate environments. Further, they extracted only what was required for subsistence. As such, in terms of both input and output, they largely remained within their environment’s carrying capacity, or the amount their greater environment could sustain indefinitely given the food, habitat, water, and other necessary ecosystem goods and services. Over time, however, the emergence of agriculture as a new socio-ecological regime evolved whereby humans started ‘colonizing’ nature at the expense of other species and utilizing land solely for crops useful to humans (Weisz et. al, 2001; Haberl et. al, 2011). This enabled human access to surpluses, which in turn, resulted in the expansion of populations as well as the increased scale of throughput and consequently greater pressure on the surrounding ecosystems. Under the pre-industrial agricultural socio-ecological regime, the main source of energy is still solar-based, as humans continue to rely on the energy conversion provided by biomass sources. Many economies are still largely agrarian in the world-system today, especially in Africa (UNCTAD, 2012).

Industrialization has emerged as a qualitatively and quantitatively new socio-ecological regime. Through technological and scientific development, humans have learned how to utilize non-renewable sources of energy, in particular fossil fuels. With the use of fossil fuels and new production techniques, industrial societies are

\textsuperscript{84} The concept of ‘mode of subsistence,’ as well as the concept of reliance upon solar energy, was first proposed by Sieferle, and later expounded upon by Marina Fischer-Kowalski. (Fischer-Kowalski and Heisz, 1999)
characterized by ‘extended’ metabolism with unprecedented levels of productivity, surplus, and increased per capita material and energy consumption. However, while industrialization has solved some of the problems of previous modes of subsistence, such as periodic scarcity, it has also severely strained the Earth’s ecosystems. Resource extraction has surpassed the Earth’s natural regeneration rates and the production of wastes is greater than what can be absorbed by the planet’s sink mechanisms (Steffen et al., 2011).

Currently, the world-system contains all the socio-ecological regimes, with varying levels of transition between them (though very few hunter-gather regimes remain). The metabolic profile of the least-developed countries is largely agrarian, with total energy and material use per capita and per unit of area quite low. For developing and emerging economies, total energy and material use per capita is higher, though on average they seem to be closer to an agrarian profile than to an industrial one. In contrast, developed nations utilize high levels of energy and resources, with very strong dependency on fossil fuels (UNCTAD, 2012, Krausman et. al, 2008). For example, in agrarian societies, energy use per capita is estimated to be approximately 40-70 GJ/year/capita, and 150-400 GJ/year/capita in industrial societies. Material use per capita in agrarian societies is approximately 3-6 tons/year/capita, while in industrial societies material use per capita runs up to 15-25 tons/year/capita (Krausman et. al, 2008).

Central to the issue of ecologically unequal exchange, scholars have noted that international trade substantially affects the metabolic profiles of different types of economies. With industrialization, the material and energy requirements expand greatly and exceed domestic capacity. As a consequence, industrial countries require foreign
resource imports for production and consumption needs, particularly regarding fossil fuels and strategic metals (European Commission, 2006). Concomitantly, countries incorporated into the world-system as resource exporters also reveal higher levels of material extraction rates and resource use. As a result, resource exporting countries that are also LDCs or developing countries can experience high levels of environmental pressure coupled with low levels of per capita consumption (UNCTAD, 2012). In this way, EUE theorists argue, industrialized countries shift the environmental burden away from their own territories through trade, and externalize it to the developing South. (Schutz et al 2003, Giljum and Eisenmenger, 2004).

Unlike proponents of the theory of comparative advantage, who would conceive of this pattern as mutually beneficial, EUE theorists argue that this pattern is largely detrimental to peripheral environments, leading to problems of sustainability, declining environmental utilization opportunities, and the imposition of exogenous environmental burdens (Rice, 2010). They also point out that EUE tends to occur under global power imbalances, in particular through international trade whose structure originated under colonialism.

**Operationalizing societal metabolism: material flow accounting and analysis**

Material Flow Accounting and Analysis (MFA) is an accounting system that measures resource flows in physical units, and is used as the operational tool for societal metabolism. MFAs track resource use (usually in metric tons per year) from the extraction and production stages to the period of final use and waste disposal. In MFA the economy is conceptualized as a set of activities, extracting materials from nature,
transforming them, keeping them as society’s stock for a certain amount of time, and in the end of the production-consumption chain, disposing of them again in nature. The aim of an MFA is to draw a complete picture of the physical dimension of a social system by capturing all material flows driven by these systems activities at a point in time. The total amount and the progress through the economy of these materials are ideally reported within an accounting framework provided by MFA methodology, and where greater detail is needed, physical input-output tables [PIOT] can be constructed (Schandl and Shultz, 2000). Taken from the Eurostat 2001 ‘Economy-wide material flow accounts and derived indicators methodological guide’ Figure 1 illustrates the basic conceptualization of a material flows account.

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85 Material flow accounts measure resource flows in weight, usually metric tons. As such, MFAs do not measure environmental impact, but environmental pressures. Pressures are considered socio-economic activities that imply changes or effects on the environment. For example, material extraction activities and consumption patterns imply certain physical uses. MFAs measure these uses in physical weight. MFAs do not measure the impact of such activities on the greater environment, which depends on a host of factors, including type of material extracted, method of extraction, pollution associated with various economic activities, the particular ecosystem being affected by economic activities, and so on. Impacts are thus direct changes in the natural system, changes of natural stocks for example like changes of the carbon concentration in the atmosphere or changes in nutrient balances in soil (email correspondence with Nina Eisenmenger, Institute of Social Ecology, Vienna on August 26, 2013).
An economy-wide material flow account (EW-MFA) is based upon two boundaries. The first boundary delineates the economic subsystem from the larger natural system. All materials that are extracted from the larger natural system and enter into the economic process are counted within the EW-MFA. The second boundary delineates the national economy from other national economies by distinguishing the flows of resources related to imported and exported materials. In general, MFAs consider four major types of resources, which are accounted in terms of their weight (measured in tons):

a.) Biomass (from agriculture, forestry, fishery, and hunting)

b.) Fossil fuels (coal, oil, gas, and peat)

c.) Minerals (industrial and construction minerals)

d.) Metal ores

Source: Eurostat 2001 Economy-wide Material Flow Accounts and Derived Indicators Methodological Guide
Material flows accounts have been constructed on the ‘material balance principle.’ The first law of thermodynamics states that matter, i.e., mass or energy, is neither created nor destroyed by any physical transformation (production or consumption) process.\textsuperscript{86} This material balance principle, according to the EUROSTAT 2001 compilation guide for material flows account, ‘provides a logical basis for the physical book-keeping of the economy-environment-relationship and for the consistent and comprehensive recording of inputs, outputs and material accumulation’ (EUROSTAT, 2001) For a given system such as production or consumption processes, in companies, regions, or national economies, the material balance principle leads to the following identity:

\[ \text{Total inputs} = \text{total outputs} + \text{net accumulation of stocks} \]

This identity means that what goes into the system is either accumulated in the system or leaves the system again as an output. As stated, for an economy-wide material flows account the first boundary delineates the national economic subsystem from the larger natural system. All materials that are extracted from the larger natural system and enter into the national economic process are counted within the EW-MFA, and in this equation would be considered the ‘input.’ The second boundary for EW-MFAs delineates the national economy from other national economies by distinguishing the flows of resources related to imported and exported materials. As such, all imports would be considered ‘inputs’ in this equation. ‘Outputs’ released to the environment means that society loses control over the location and composition of the materials. Waste, to the extent that it exits the economic process and is no longer utilized for economic purposes, is considered

\textsuperscript{86} Material flows account record \textit{material flows} based upon the material balance principle. They do not record energy flows, such as energy inputs into the economic process and outputs that involve energy lost to the environment in the economic process. MFAs are therefore to be distinguished from material and energy flow accounts (MEFAs) that do track energy flows.
an ‘output,’ as would be exports. However, infrastructure, capital goods, and so would be regarded as a net accumulation of stocks as they continue to be used within the national economic process (EUROSTAT, 2001).

A number of indicators are derivable from material flow accounts that are helpful in providing an aggregate picture of a society’s metabolic profile. However, to establish a full material balance account, one would need to account for the net output and net accumulated stock, which is a lengthy and complex procedure beyond the scope of this dissertation. Still, certain indicators can be derived without the need to establish a full material balance account. This study does not establish a full material balance account, and so only derives a limited set of indicators, as described below. Also, it is important to emphasize that in this study only inflows that are used in the economy (used flows) are accounted for. Hence the unused extraction- that is, materials that are moved without the intention of using them in the economy (e.g., overburden from mining)- are left out. This does not diminish the importance of unused materials. However, the necessary coefficients for such calculations have not yet been established that would be suitable for Tanzania, as will be discussed in the conclusion when evaluating the limitations of this study. As such this study is therefore primarily concerned with the following indicators:

a.) Domestic Extraction (DE) - includes all the raw materials extracted within a country’s territory.

b.) Domestic Material Consumption (DMC) - calculated as DE plus imports minus exports. DMC provides information on the quantity of the materials that remain within the national territory.
c.) Domestic Material Input (DMI)- comprises all materials that enter the economy for further use, in either production or consumption processes. It is calculated as domestic extraction plus imports, and measures the direct input of materials for use into the economy.

d.) Physical Trade Balance (PTB)- measures the physical trade surplus or deficit of an economy and is equal to imports minus exports. The PTB reveals whether a country is a net importer or a net exporter in physical terms.

Simron Jit Singh from the Institute of Social Ecology, Vienna, first proposed in his dissertation on the Nicobar Islands that the approach of societal metabolism, operationalized through material flow accounting and analysis, could be useful for the empirical investigation of ecologically unequal exchange. As Hornborg had essentially argued concerning the issue of accumulation, Singh states,

…regardless of the debate as to whether capitalism is 500 years old or not, or whether surplus is generated by means of production of accumulation, or whether value lies largely in the labor or in the resource itself, the crucial point remains that there is a net flow of materials and resources from one place to another (rural to urban, periphery to core) to allow for surplus to accumulate. Production could not occur without moving resources from their places of origin to the industrial centres where they are processed for added value, and surplus could not be generated without the exploitation of one by the other (Singh, 2003, p.68)

Subsequently, other scholars, notably Eisenmenger and Giljum, have expounded upon the potential use of the concept of societal metabolism in order to further analyze, theoretically and empirically, the connection between international trade and ecologically unequal exchange (Giljum and Eisenmenger, 2004). To date, a number of studies have been carried out using MFAs to investigate EUE, and it remains one of the major empirical methodologies in the EUE research agenda. (Giljum and Eisenmenger, 2004;
Singh and Eisenmenger, 2010; Vallego, 2010; Perez-Rincon, 2006; Manrique et. al 2013)

And, while not using the term ‘ecologically unequal exchange,’ a number of major reports have utilized MFAs to investigate the shifting of environmental burdens from industrial regions to developing countries through international trade (UNCTAD, 2012; UNEP, 2011).

From net physical imports minus net physical exports, the Physical Trade Balance (PTB) aggregate indicator can be derived and a physical trade ‘surplus’ or ‘deficit’ can be indicated. Countries that export more in physical units than import run a physical trade deficit, and vice versa, countries that import more than export run a physical trade surplus. Hence, in a manner the PTB can be an indicator of ecologically unequal exchange.  

In sum, in terms of measuring EUE, PTB indicators are arguably useful for several reasons. As discussed in Chapter 1, Hornborg argues that ostensibly fair monetary exchanges ‘conceal’ asymmetrical flows of resources in a manner that systematically deteriorates the (environmental) position of the periphery. From the perspective of EUE, MFAs have an important advantage in that they reveal resource flows that are ‘concealed’ by standard economic indicators which are typically rendered in monetary values only. In addition, EUE theory posits an overall asymmetrical transfer of resources from periphery to core, not just the net transfer of a specific resource. EW-MFAs are constructed to capture all material flows- biomass, metals, non-metallic minerals, and fossil fuels- associated with trade.

87 As discussed in Chapter 1, Hornborg points out the necessity of examining flows of resources as opposed to solely monetary flows, especially in regards to EUE. For example, countries can be experiencing a monetary trade surplus coupled with a physical trade deficit; gaining financially but being drained ecologically. Or, even worse, countries can be experiencing both monetary trade deficits as well as physical trade deficits.
There are, however, several shortcomings of EW-MFAs in regards to measuring EUE that are worth mentioning. For one, MFA analysis aggregates many different qualities of material flows in order to derive aggregated indicators based upon physical weight. As a result, aggregate MFA indicators can be dominated by particular materials that relatively weigh a lot, while other material groups with relatively less weight can be diluted or obscured. Interpretation of MFA data therefore requires care, as well as discussion of disaggregated economic sectors and material groups. Another major issue is the fact that weight-based MFA indicators do not reveal anything about actual environmental impacts. Certain material flows may weigh very little, but have devastating impacts on the surrounding environment, be significant from the standpoint of sustainability, and be important in the overall discussion on economic development. Scholars such as Giljum (2004) have suggested linking the MFA framework to land-use accounting and comparing MFAs with other methods of environmental-economic accounting (Giljum, 2004). Finally, on a more specific note, in classical EW-MFAs, standard economy-wide material flow indicators of trade (such as are used in this study) only register the weight of traded commodities at the point of entry into or exit from a country. Indirect flows, or raw material equivalents (RMEs), are materials extracted or moved but do not enter the economy, such as overburden from mining. These flows are important in determining both domestic resource depletion as well as environmental impact. Additionally, indirect flows associated with extractive activities can be substantial, and sometimes equal to or higher than direct flows. This is especially true for economies based on mineral extraction that extract large amounts of crude metal ores with low concentrations, but export highly concentrated ores (UNEP, 2011). Without the
inclusion of indirect flows, the ecologically unequal exchange a peripheral country is experiencing may very likely be under-reported. However, calculation of RMEs is still very much a work in progress in the MFA community.

The societal metabolic structure of Africa: an overview

Chapter 1 provided the literature review of empirical work on ecologically unequal exchange, including work that has utilized material flows accounting. It discussed the overall global trend of industrial countries tending to be net material importers, while developing countries tend to serve as net exports. It is important to note, however, that exceptions do exist to this general pattern, such as Australia and Canada being net exporters and emerging economies such as China and India becoming net importers in recent years (UNEP, 2011).

Recent work using material flows accounting has found that in terms of physical weight Africa as a region is also an overall net exporter of resources, though with nuances according to material category. In 2012, UNCTAD released an economic report on African development, attempting to synthesize the approach of societal metabolism with more traditional issues such as economic growth. The report highlighted the increasing salience of environmental factors in African development and discussed a number of important drivers of environmental degradation such as population growth. Utilizing MFA and other methodology, the report presented an aggregate overview of the

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88 For example, land degradation is a major environmental sustainability problem in Africa. Population growth has been identified as a primary driver behind land degradation, as it is associated with rising rural populations and declining farm sizes, which has compelled people to move to more and more fragile lands particularly given the lack of substantially increased agricultural productivity. This has led to high levels of deforestation, which has been exacerbated by fuel dependence on wood and charcoal, and in certain cases, civil unrest. Desertification has been linked to climate change, overgrazing, and intensive cropping (UNCTAD, 2012).
metabolic structure of a large number of African countries and pointed out trends that are important to note. First, growth in African economies is largely attributable to the extraction and exporting of resources rather than a structural transformation towards activities of higher productivity, either in the agricultural or industrial sectors. Further, across most of Africa there has been a trend of deindustrialization, largely coinciding with the era of structural reforms (UNCTAD, 2012).

In terms of trade, Africa has experienced a significant increase in global trade volume, though the continent’s share of global material trade fell due to growth in trade in other regions of the world. The following briefly overviews Africa’s trade profile in physical terms, in regards to Africa’s exports and imports to and from the rest of the world.89 The volume of Africa’s material trade in physical terms rose from almost 260 million tons in 1980 to 506 million tons in 2008, however during same period, the PTB of most other world regimes rose more rapidly. From 1980-2008, both imports and exports increased. African countries imported around 301 million tons of biomass, fossil fuels, and metals and non-metallic minerals, while they exported around 711 million tons of materials (UNCTAD, 2012). In physical terms, fossil fuels are the dominant material export of Africa, and they are also Africa’s main import. African countries account for about 10.5 % of fossil fuels supply to the world market in physical terms. Metals, dominated by iron ores and concentrate, followed by manganese and chromium ores and

89 While the UNCTAD 2012 does not list Africa’s main trading partners in regards to physical terms, in monetary terms OECD partners (particularly from the EU) still dominate African trade and are growing. The share of OECD countries in Africa’s trade was approximately 60% in 2009. However, trade between Africa and non-OECD countries, particularly China, India, and Brazil, has been growing most rapidly in the past decade. The share of non-OECD countries in Africa’s trade has increased from 26% in 2000 to 39% in 2009. In 2009 intra-African trade was still small, comprising approximately 9% of total merchandise trade (Numbers taken from the OECD library, http://www.oecd-ilibrary.org/sites/factbook-2011-en/04/01/05/index.html?itemId=/content/chapter/factbook-2011-37-en).
concentrates, are Africa’s second large export flows. Mineral exports are Africa’s third largest export group. Fossil fuels are also Africa’s dominant material imports, and biomass is the second most important material import. Graph 1 shows the physical trade balance of all African countries, 1980-2008 (UNCTAD, 2012).

**Graph 1: Physical trade balance of all African countries (thousands of tons), 1980-2008**

![Graph 1](image)

*Source: UNCTAD report 2012*

Overall, Africa is a net exporter of non-renewables (for fossil fuels and metals, but not for non-metallic minerals) and net importer of renewables (biomass). Africa has become a net importer of food and agricultural products, along with biomass products such as cellulose and paper. Studies have argued that this is a result of population growth, low and stagnating agricultural productivity, policy distortions, weak institutions and poor infrastructure. For poor African countries, this has meant the difficulties in
paying for their food imports (Rakotoarisoa and Iafrate, 2011).

In general, the report states, the PTBs of Africa reflect the endowment, production and consumption structure of the region and individual countries. Africa is endowed with significant amounts of fossil fuels and mineral resources, and its production and exports are dominated by resources and resource-based production (UNCTAD, 2012).

Aside from the PTB, a number of other indicators also reveal Africa’s position in terms of unequal resource distribution in comparison with other regions, at least in terms of their consumption. For example, domestic material consumption per capita in Africa is very low compared to the global average. In 2008, per capita DMC in the region was 5.3 tons, compared to the global average of 10.4 tons (UNEP, 2013). While domestic material consumption per capita grew in Asia and Latin America, overall it decreased slightly in Africa from 5.6 tons in 1980 to 5.3 tons in 2008, largely due to high population growth. (See Appendix V for a brief discussion on demographic transitions and resource use in Tanzania). Since 1995, Africa’s average per capita DMC has been the lowest, compared to all other regions of the world, though within Africa there are countries with very high DMC per capita like Seychelles and South Africa (UNCTAD, 2012).

Further, energy use in Africa is low and has been increasing much less rapidly than material use. In 2009, per capita electricity consumption in Africa was only 561

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90 A 2011 FAO report revealed that, based on data between 2000 and 2005, 43 of 51 African countries are net importers of food. However, the state of food import dependency is different across the continent and varies according to levels of income. The relatively wealthy nations in Africa had the highest net food imports per capita (USD 185 per year in real terms), but they also had adequate means to pay for their food import bills using revenue from non-agricultural sources. The majority of the Africa’s low-income countries (mostly in Sub-Saharan Africa), where two-third of its population lives, had also been net food importers. However, while they imported far less food per capita (USD 17 per year) they had difficulty covering their food imports bills, as their export revenues were limited (Rakotoarisoa and Iafrate, 2011). What is interesting, as noted in Chapter 3, is that a major reason African governments initially rejected the World Bank reforms encapsulated in the Berg Report was because they feared that such reforms would make their countries dependent on food imports.
kilowatt-hours (KWH) compared to 741 KWH for Asia, 1,884 KWH for Latin America, and 2,730 KWH for the world average. In 2009, the region was responsible for total CO₂ emissions of 928 million tons compared to 10,030 million tons and 12,045 for Asia and the OECD countries respectively. Africa accounts for only 3.2 percent of global CO₂. The report attributes Africa’s low energy and material consumption to Africa’s low-productivity, primarily agriculture mode of production (UNCTAD 2012).

Concerning climate change, Africa is likely to become the most affected region of world due to geography, high level of dependence on agriculture, and low capacity to adapt. It is thus the region that has contributed the least to global climate change but potentially will be affected the most, a fact that highlights the salience of the concepts of ecological debt and environmental justice. There is a projected reduction in agricultural yields in some countries as high as 50 percent by 2020, and the net crop revenue could decline by as much as 90 percent by 2100 in some areas. Further, the proportion of arid and semi-arid lands may increase by 5-8 percent by 2080 (UNCTAD, 2012). Land degradation (defined as a reduction in the capacity of the land to provide ecosystem goods and services over a period of time) has become a central sustainability issue in Africa (UNCTAD, 2012). Further, 65 percent of agricultural land, 31 percent of pasture lands, 19 percent of forests and wood lands are degraded, with associated high economic costs. For Tanzania, there has been a 19.4 percent depletion of forest area between 1990 and 2010. (Please see Appendix IV for more country specific statistics on the depletion of African forests). Deforestation, desertification, erosion, poor agricultural practices, and high population growth are listed as important drivers of land degradation. Africa suffers from a high rate of deforestation, and has lost about 10 percent of its forest area between
1990 and 2010. Desertification and loss of biological diversity are also increasingly of major concern with over 120 plant species in the region extinct and about 1771 under threat. Further, of salience to the issue of EUE, African fish stocks are becoming depleted, largely due to illegal fishing by foreign vessels coupled with excessive fishing by local fishermen and legal commercial fleets (UNCTAD, 2012).

Finally, water scarcity and stress have become major sustainability challenges in Africa. The UNCTAD report suggests that over 300 million people in Africa experience water scarcity, and by 2025 eighteen countries will experience water stress. An increase in consumption and withdrawal, due largely to population growth and decreasing water supply, are main reasons for water scarcity and stress in Africa. As noted in Chapter 3, critics have argued that the dynamics of land and water resource grabbing have exacerbated this problem.

While the low level of resource use in Africa can be attributed to its largely agrarian mode of production, its depletion of resources and environmental degradation is due to both internal factors such as population growth and inefficient use of resources as well as the exporting of its resources (UNCTAD, 2012). What this seems to indicate is a situation where environmental stressors such as population growth and inefficient use of resources is being exacerbated with the exploitation of resources by its integration in the world economy, either through trade or FDI. This is especially obvious in the case of land. Further, as the issue of climate change highlights, Africa suffers from the pollution

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91 According to an Intergovernmental Panel on Climate Change report, climate change and variability have the potential to impose additional pressures on water availability, water accessibility and water demand in Africa. However, the report notes, the impact of climate change on water resources across the continent is not likely to be uniform. According to climate change models, there is a likely increase in the number of people who could experience water stress by 2055 in northern and southern Africa. In contrast, eastern and western African will be likely to experience a reduction rather than an increase in water stress. (IPCC Fourth Assessment Report: Climate Change 2007, retrieved from http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch9s9-4-1.html)
of the global atmospheric commons by other regions without obtaining the same level of consumption and benefits. Unfortunately, the UNCTAD report engages in no systematic discussion of the link between such environmental sustainability issues and foreign investment, though other scholars positing a ‘new scramble for Africa’ have made such links, as I had overviewed in Chapter 3 in regards to various African countries, and in Chapter 4 more specifically in regards to Tanzania. Overall, with variation among countries, Africa’s socio-metabolic profile appears to be subject to the very problems theorists associate with ecologically unequal exchange, especially when the unequal dynamics of FDI are taken into account as discussed in Chapter 3 and 4.

**Tanzania: socio-metabolic profile and the issue of ecologically unequal exchange**

*Socioeconomic overview*

Tanzania is one of the world’s poorest economies in terms of per capita income, with the majority of the labor force’s livelihood’s dependent on low-productivity, subsistence farming. As of 2007, approximately 37.4 percent of the rural population lived below the rural poverty line, and overall 33.4 percent of the population lived below the national poverty line. The number of rural poor is approximated to be 12,353,175 as of 2010\(^\text{92}\), and in 2001, 92.1 percent of the urban population was estimated to be living in slums (UN statistic division, mdgs.un.org). The lowest 10 percent of the population held only 2.8 percent of household income, while the highest 10 percent held 29.6 percent of

\(^{92}\) International Fund for Agricultural Development Tanzania website, retrieved from http://operations.ifad.org/web/ifad/operations/country/home/tags/tanzania
household income as of 2007. As of 2009, life expectancy at birth was estimated to be a mere 56.6 years on average.\textsuperscript{93}

However, in recent years it has achieved high economic growth, driven largely by gold production and tourism. As Chapter 4 overviewed, the benefits of such growth are not inclusive (REPOA, 2012). In Tanzania, between 2000 to 2007, the poorest 40 per cent, and most of the deciles in between, actually saw their share of income decline (Africa Progress Panel, 2013). The economy continues to depend on agriculture, which accounts for more than one-quarter of GDP and employs about 80 percent of the workforce. Tanzania also continues to depend upon the World Bank, the IMF, and bilateral donors to provide funds to rehabilitate Tanzania’s aging economic infrastructure, including rail and port infrastructure that are important trade links for inland countries.\textsuperscript{94} Tanzania runs a deficit equal to -5.7 percent of its GDP as of 2012, and a current account deficit of $3.946 billion as of 2012.\textsuperscript{95}

\textsuperscript{93} Ibid.
\textsuperscript{94} Index Mundi Tanzania Economic Profile 2013
\textsuperscript{95} IFAD website http://operations.ifad.org/web/ifad/operations/country/home/tags/tanzania
Table 1: Socioeconomic profile of Tanzania 2012 estimate

<table>
<thead>
<tr>
<th>GDP PPP US$$</th>
<th>GDP official exchange rate</th>
<th>GDP real growth rate</th>
<th>GDP per capita</th>
<th>GDP composition by sector</th>
<th>Labor Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>$73.5 billion</td>
<td>$27.98 billion</td>
<td>6.5%</td>
<td>$1,700</td>
<td>agriculture: 27.1%</td>
<td>24.77 million total: 80% in agriculture, 20% in industry and services</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>industry: 24.1%</td>
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<td></td>
<td></td>
<td></td>
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<td>services: 48.7%</td>
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Source: Index Mundi 2013

Manufacturing activities have grown at an average annual growth rate of over 4 percent, and have contributed to GDP at an average of eight percent over the last decades and account for over half of government revenue collection. Nonetheless, manufacturing activities in Tanzania are at a relatively incipient stage, and are concentrated in the manufacture of simple consumer goods such as food, beverages, tobacco, textiles, furniture, and wood allied products. With the government’s decision to liberalize trade and investment policies since 1986, a number of firms, even those believed to be strong, were undermined by competition from imported manufactures.\(^{96}\) Services include

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\(^{96}\) Tanzania National Website
government services, finance and business services, transport and communications, and trade, hotels and restaurants.\textsuperscript{97}

In terms of its trade structure, Tanzania remains characterized by the export of primary commodities, with agricultural products including commodities such as coffee, cashew nuts, and cotton, but also including some low-level manufactures, such as agricultural processing, apparel, and processing of minerals such as salt, soda ash, oil, and fertilizers. As discussed in Chapter 4, gold has become the dominant commodity in Tanzania’s exports. It remains reliant upon imports for consumer goods, machinery and transportation equipment, industrial raw materials, and crude oil.\textsuperscript{98}

In many aspects, Tanzania’s socioeconomic profile fits the classic description of a peripheral economy; a dual economy whereby the majority of citizens are employed in rural subsistence farming, with a disarticulated, national economy largely based upon export of cash crops and extraction of preciousities and minerals, especially gold. Graph 2 displays Tanzania’s export structure by sector in 1997 and 2011, with each sector’s significance shown, in monetary terms, as a percentage of total exports. Primary commodities from animals, vegetables, and basic derived products has decreased as a percentage of overall exports in monetary terms from about 70 percent in 1997 to 24 percent in 2011. On the other hand metals, minerals and basic derived products have increased dramatically as a percentage of overall exports in monetary terms, rising from about 6 percent in 1997 to about 66 percent in 2011, reflecting the importance of gold

\textsuperscript{97} (OECD http://www.oecd.org/dev/emea/40578365.pdf)

\textsuperscript{98} Index Mundi, http://www.indexmundi.com/tanzania/exports.html and http://www.indexmundi.com/tanzania/imports.html
exports. Precious stones and metals alone account for about 40 percent of total exports.

The textile sector also saw a drop from its 1997 levels of about 22 percent to only about 4.5 percent in 2011 of total exports. Higher level manufactures, including various machinery and parts thereof, rose marginally from 1.4 percent in 1997 to about 4.7 percent in 2011 of total exports.

**Graph 2: Tanzania export sector by percentage of total exports in monetary terms, in 1997 and 2011**

Source: UNCOMTRADE export data. UNCOMTRADE data is relatively disaggregated. Data has been aggregated by author according to sector, to demonstrate the theoretical concept of a peripheral trade structure. In dependency theory, peripheral economies are marked by low forces of production. As such, typical peripheral export structures include the export of cash crops, mineral and metal extractives, and low-value added manufactures that do not necessitate high levels of technology. On this basis, the data was organized into the following categories: **Animals, vegetables and basic derived products** category, which includes live animals, animal products, animal and vegetable fats and oils, and cleavage products, prepared foodstuffs, raw hides and derived products, vegetable products, and wood products; **Metals, minerals and basic derived products** which includes fossil fuels, articles of stone, plaster, glass, ceramic, base metals and articles of base metals, mineral products, precious stones, precious metals, plastics and articles, products of chemical or allied industries. **Textiles and other clothing**, which includes textiles, clothing and other gear, and **Higher VA manufactures** which includes arms and ammunitions, instruments, optical, photographic, medical, clocks, musical, or part thereof, machinery and mechanical appliance, miscellaneous manufactures, and vehicles such cars, boats, airplanes, and parts thereof.

*Comparison with official government figures for the year 2009 show agricultural products, including fish and horticulture, to account for approximately 21 per cent of total exports; minerals to account for approximately 36 percent of total exports, manufactured goods to account for approximately 16 percent of total exports, ‘other exports’ and ‘re-exports’ to account for approximately 12.6 percent of total exports; and ‘unrecorded’ trade at approximately 15 percent. It should be noted that in government reports the manufactures category includes a broad range of manufactured goods, with the most important being low level manufactures, in particular cement, cooking oil, copper products, and tobacco products. (United Republic of Tanzania Economic Survey, 2009)
In contrast, as Graph 3 shows, as a percentage Tanzania’s imports are dominated by metals, minerals (importantly including fossil fuels) and derived industrial products, and higher level manufactures. In 2011, the two single largest import categories in monetary terms were vehicles and mineral products, including fuels, minerals ores, stones, and plastering materials. Tanzania’s import structure reflects a general peripheral structure in its reliance upon imports of higher level manufactures, such as machinery and vehicles, but it also shows physical reliance on the import of minerals and fossil fuels. In particular, Tanzania imports oil at a cost of an estimated $1.3-$1.6 billion per year, accounting for up to 25% of total foreign exchange earnings (Tanzania Natural Resource Forum, 2009). Imports have continued to increase, at a faster rate than exports, due to increasing demand for capital and intermediate goods (REPOA, 2012).

**Graph 3: Tanzania import sector by percentage of total imports in monetary terms, in 1997 and 2011**

Source: UNCOMTRADE import data. Data has been aggregated by author, to demonstrate theoretical concept of a peripheral trade structure. In dependency theory, peripheral economies are marked by low forces of production. A typical peripheral country imports structures include the higher value added technology, various forms of machinery and capital goods, as well as luxury items like cars for elites. On this basis, the data was organized into the following categories, which are the same categories for the exports: *Animals, vegetables and basic derived products* category, which includes live animals, animal
products, animal and vegetable fats and oils, and cleavage products, prepared foodstuffs, raw hides and derived products, vegetable products, and wood products. Metals, minerals and basic derived products which includes fossil fuels, articles of stone, plaster, glass, ceramic, base metals and articles of base metals, mineral products, precious stones, precious metals, plastics and articles, products of chemical or allied industries. Textiles and other clothing, which includes textiles, clothing and other gear, and Higher VA manufactures which includes arms and ammunitions, instruments, optical, photographic, medical, clocks, musical, or part thereof, machinery and mechanical appliance, miscellaneous manufactures, and vehicles such cars, boats, airplanes, and parts thereof.

Tanzania Resource Use

Domestic Extraction

Domestic Extraction (DE) includes all the raw materials extracted within a country’s territory. Graph 4 shows that all categories of Tanzania’s domestic extraction have witnessed an increase in the absolute amount of domestic extraction from the years 1970s-2010. Tanzania’s domestic extraction is dominated in terms of physical weight primarily by biomass, reflecting Tanzania’s largely agrarian-based economy. Metals are the second largest category of DE, and the increase from the late 1990s to the 2010 has been driven largely by gold production. Copper production began in 2001 and continues, and silver production began again in 1998 and continues until now, after a lull in 1973. Non-metallic minerals is third largest category, with the bulk of materials in this category construction materials. The smallest category in terms of physical weight is fossil fuels. Tanzania is not a significant producer of fossil fuels. However, it is a minor producer of coal. Also, since 2004, it has become a minor producer of natural gas, and there has been a small increase in fossil fuel domestic extraction, from 4,634 thousand in 1970 to 664 thousand tons in 2010.
Physical Trade Balance

In the MFA method, the PTB is the most widely used indicator to analyze biophysical aspects of international trade. As discussed, physical trade surpluses and deficits have been used to indicate global patterns of ecologically unequal exchange between developed and developing countries respectively. One calculates the PTB as the inverse of the monetary trade balance— that is, by subtracting exports from imports. In the following PTB, only direct flows (direct weight of imports and exports and not including indirect flows) were included.99

For imports (Graph 6), in terms of physical weight all categories have witnessed overall increases since 1987. In terms of physical weight for 2011, imports were

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99 On a methodological note, for the purposes of EW-MFAs, traded goods are grouped into material groups similar to the classification of material flows for domestic extraction, that is, biomass, minerals, metals and fossil fuels. This classification is needed in order to enable the addition/aggregation of domestic extraction and trade components in order to derive indicators. The MFA community recognizes this grouping as very crude, because products are composed of many different materials. As the closest approximation, trade products have to be grouped into those material classes which form the main component of the respective good (e.g. motor vehicles are grouped into a class termed products mainly from metals) (EUROSTAT, 2009). Hence, whenever ‘net metals exports’ is referred to, this implies the aggregate of all exports that are in raw metal form as well as all exports that are primarily composed of metal, and so on for the other material categories.
dominated by fossil fuels (approximately 40.1%), reflecting Tanzania’s heavy reliance on external sources of energy, especially oil. Biomass is the second largest category of imports in terms of weight, accounting for approximately 20 percent of imports. The bulk of biomass imports are mainly cereals, raw and processed, sugar crops, raw and processed, and fibers, raw and processed. Similar to the rest of Africa, Tanzania is increasingly becoming reliant upon imports of foodstuffs. Metals constitute approximately 11 percent of imports in terms of weight (mainly iron ores and concentrate, iron and steel, raw and processed, and products mainly made from metals), and non-metallic minerals approximately 15.4 percent (mainly mining and quarrying materials, chemical fertilizers, clays and kaolin, and products made from non-metallic minerals). The last remaining category was ‘others’ at 4.5 percent, a category that includes highly processed goods from various materials.  

For exports (Graph 5), all categories witnessed growth as well since the early 2000s, though there was little increase in export of fossil fuels given Tanzania’s low production. Tanzania’s main exports in terms of weight are biomass, accounting for about 57.3 percent of exports and comprising mainly cereals, veggies, timber, and processed foodstuffs. Non-metallic minerals were the next largest category (mainly mining and quarrying materials, chemical fertilizers, clays and kaolin, and products made

\[100\] Allocation of foreign trade categories to the EW-MFA categories not unambiguous because the trade classifications always distinguish between different goods, whereas the EW-MFA classification distinguishes between different types of materials. As goods are often a mixture of different materials no unequivocal correspondence between these two classification systems is possible. Despite this conceptual incompatibility between EW-MFA and trade classifications it is possible to determine for most goods the main material component, or main raw materials used in production. For others, it is only possible to classify the good as either of biomass, mineral, or fossil fuel origin. In these latter cases, the commodities are assigned to material categories such as e.g. products mainly from biomass. The remaining goods, mostly commodities that are highly processed and consist of a complex mix of materials for which it is not possible to determine a main material component, are summarized in the EW-MFA category ‘other products.’
from non-metallic minerals). Despite their importance in monetary terms, metals comprised only 14.4 percent, with exports including iron ores and concentrates, gold, precious metals and products from metals. If indirect flows were included, this category would most likely be much higher. This is an important issue and will be discussed below. Fossil fuels contributed only a small amount of 2 percent of overall exports, reflecting the lack of endowment of fossil fuels. The residual category of highly processed goods was only 4.6 percent in terms of physical weight. The growth of both imports and exports demonstrates Tanzania’s increased integration into the world economy during the neoliberal era.

**Graph 5: Tanzania physical exports (tons) from 1976-2011**

*Source: author’s calculations*
In terms of physical trade balances (Graph 7), in contrast to the broader trend on the African continent and the overall trend of the developing world, Tanzania is a net importer of all material categories, meaning it has a net physical trade surplus for all material categories. Further, Tanzania’s physical trade surplus in tons has increased for the years 1976-2011 (for available data, not all consecutive years available), with the exception of biomass, which has shown more erratic increases and decreases since 1980. Tanzania socio-metabolic profile thus runs counter to many developing nations. Since 2000, many developing nations have monetary trade surpluses and physical trade deficits, while industrialized countries have monetary trade deficits and physical trade surpluses (UNEP, 2011). In contrast, Tanzania has a monetary trade deficit and a physical trade surplus, indicating its reliance upon external resources to fulfill its consumption and production needs, with implications for EUE theory as will be discussed below. It should be noted, however, that though Tanzania has a physical trade surplus, overall its surplus is much smaller than industrial countries. For example, Tanzania has an overall PTB

Source: author’s calculations
surplus of about 5,460,866 tons, while Japan has an overall PTB surplus of about 671,140,838 tons.\textsuperscript{101}

Graph 7: Tanzania Physical Trade Balances by Material Category (tons) from 1976-2011

\textsuperscript{101} Japan’s PTB surplus downloaded from the Material Flows website http://www.materialflows.net/data/datadownload/
Domestic Material Input and Domestic Material Consumption

Graph 8 shows a comparison of the relative weight of imports and exports as a percentage of domestic material input. Domestic material input (DMI = DE + imports), includes all materials entering the economy for use and is the sum of tons of domestic extraction plus tons of imports. Graph 8 shows that Tanzania is increasingly relying upon material input from global markets.

Graph 8: A comparison of the relative weight of imports and exports (in % share of Direct Material Input, DMI) for Tanzania, 1976-2010

Source: Author’s calculations
Domestic material consumption (Graph 9) provides information about the quantity of materials that remain within the national territory. That is, it measures the total amount of materials directly used by an economy. The DMC indicator provides an assessment of the absolute level of the use of resources, and allows one to distinguish consumption driven by domestic demand from consumption driven by the export market. DMC does not include upstream hidden flows related to imports and exports of raw materials and products.

One calculates DMC by subtracting direct physical exports from DMI. For example, DMC metals = net domestic extraction of metals + net import of metals – net export of metals. DMC measures the total amount of material directly used in an economy, excluding indirect flows. Although termed consumption, this indicator differs from how economists would define consumption in the sense that DMC includes not only those materials that make up the final product, but also those intermediary resources needed for its production, either for domestic consumption or for exports (Eurostat, 2001). Data for the years 1982 to 1994 were unavailable.

**Graph 9: Tanzania domestic material consumption, total and by category (1000 tons), from 1976-2010**

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102 EUROSTAT website

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The relation of DMC to DMI indicates to what extent inputs of material resources are used for own domestic consumption or are exported to be consumed in other economies. When the gap is large, it indicates that inputs of material resources are used largely for export and consumption in other economies. When the gap is small, it indicates that inputs of material resources are largely used for domestic consumption. For Tanzania, the relatively low weight of exports for all categories has meant that, in terms of weight, the difference between DMC and DMI is very little; in terms of weight, most material is used for domestic consumption.

DMC per capita (Graph 10) does not show much variation, only a slight increasing trend since 1997, but overall decrease since 1976. Population has steadily increased from 16,480,000 in 1976 to 45,030,000 in 2010, and it appears that DMC has not kept pace with population growth, decreasing from 3.77 in 1976 to 3.21 in 2010, despite some increase since 1997.\(^\text{103}\) (See Appendix V). It should be noted that DMC per capita remains very low compared with the global average, at approximately 3.21 tons per capita in 2010, well below the global average of 10.4 tons and the average in Africa of 5.3 tons per capita in 2008. It is also important to note that DMC per capita may not even indicate the average material standard of living for economies based on mineral extraction, such as Tanzania. In such economies an important share of DMC ends up as waste in mineral industry.

\(^{103}\) Population growth has also contributed to a host of environmental and social problems. Population growth has put further pressure on the land, resulting in deforestation. With deforestation, villagers, (especially women) are forced to walk further distances to gather firewood, and the price of wood derived fuel has increased. The problems from population pressure on land seem to be exacerbated by the land grabbing dynamic discussed in Chapter 4.
Material intensity of Tanzania’s economy

This section discusses two methods typically used to assess de-materialization trends and the position countries hold in the global economy by the societal metabolism and EUE literature. To begin with, some scholars have argued that it also possible to calculate the material intensity of an economy by relating DMC to GDP, that is, the amount of domestic material consumption needed to generate a unit of GDP (Russi et. Al 2009). The goal of sustainability requires that countries undergo a process of ‘de-materialization,’ that is, increased decoupling of economic growth from material usage. Many resource exporting countries exhibit high levels of material intensity, while resource importing countries often exhibit lower levels of material intensity. The argument, in relation to EUE, is that resource importing countries are able to obtain lower levels of material intensity by shifting the more materially intensive economic activities onto the periphery, and hence the apparent ‘de-materialization’ is actually a shifting of
economic burdens through international trade. This also implies that through increased economic integration peripheral economies should experience the opposite of de-materialization, that is, relatively higher levels of material intensity.

In terms of kilograms of domestic material consumption per US dollar Gross Domestic Product, in 1995 Tanzania used approximately 10.6 kg domestic material consumption of matter to produce 1$ of GDP, a very high amount of material per unit of GDP. For instance, Chile in 2000 required 9 kilograms domestic material consumption of matter to produce $1 of GDP, and Peru required about 8 kg. Both countries are considered to have high material intensity levels. In contrast, the EU-15 material intensity level was only 0.8 kg per dollar in 2000 (Russi et. Al 2009). However, Tanzania shows an ostensibly favorable de-materialization trend (whereby more GDP is generated with less materials used), as by 2010 it’s level had dropped to approximately 7.2 kg per US dollar.

This ‘de-materialization’ trend, while potentially pointing towards a positive development, must be interpreted cautiously however. First, it is a minor drop in comparison with EU levels, but more importantly, the use of DMC as an indicator is problematic as Tanzania’s mining sector has grown, as discussed above, absolutely in physical terms. As shown above, metals as a biophysical category metals have increased absolutely in terms of domestic extraction from 195,581 tons 1995 to 19,565,558 tons in 2010. DMC, as a reminder, is equal to domestic extraction plus imports minus exports, and does not include hidden flows or unused domestic extraction. However, mining activities often involve large amounts of materials that are moved during the mining process, but they do not physically enter the economic process, and are therefore not
included in the DMC indicator. Such material, in societal metabolism terminology, is known as ‘unused domestic extraction’ and mining overburden is a class example. Without recourse to the calculation of unused domestic extraction, it is difficult to assess whether or not Tanzania has actually undergone a de-materialization trend.

Such indicators do exist in the MFA framework, including the Total Material Input (TMI) which equals DMI plus unused domestic extraction, or Total Material Requirement (TMR), which equals TMI plus any hidden flows that might be associated with imports. In addition, as discussed in Chapter 4, gold mining and other forms of mining are associated with substantial levels of pollution. Neither domestic extraction nor DMC captures associated outputs (pollution or waste) in the environment with mining activities. As such, in Tanzania’s case as an increasingly ‘extractive’ economy, relating DMC to GDP is limited as a methodology to assess de-materialization trends.

In the societal metabolism and EUE literature, scholars have also used indicators to assess trends in the position a country holds in the international markets (Russi et al. 2009). In order to do so, they calculate prices of imports and exports per unit of weight. It has been noted that peripheral countries often export high levels of resources for relatively less monetary value and import relatively less amounts of resources of high value. In contrast, core economies often export relatively lower amounts of resources for high value, and import relatively greater amounts of resources of lower value. In Tanzania in 1997 this trend was true, as the price per ton of exports was 852.50 USD, compared to an import price of 1020.62 USD. By 2011, however, this trend had

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104 At the time of writing this, suitable coefficients to calculate indirect flows for Tanzania were not available, otherwise indirect flows would have been included in this study. In email conversation with the Institute of Social Ecology, Vienna, some raw material equivalent coefficients have been derived, but are based upon European production standards. As such, I was advised not to apply such coefficients to Tanzania. (email correspondence with Nina Eisenmenger, May 3, 2013).
reversed, as price per ton of exports was 1351.51 USD, while imports were only 1178.94 USD. However, it is important to contrast these numbers with the EU-15, which in 2000 imported 3.4 times more materials than it exported, with an average price of 1,559 USD for an imported ton in 2000 and about 5,306 USD for an exported ton. The value of an EU-15 export in 2000, therefore, was still significantly higher than the value of Tanzanian exports in both 1997 and 2011, reflecting the position of the industrialized region in the upper value-added segment of the world market.

In the case of Tanzania, again, interpreting this indicator needs caution. Again, it should be noted that the contribution of precious stones and metals as percentage of exports in monetary value has increased from about 3.6 percent in 1997 to about 39 percent in 2011, a substantial increase. This trend reflects the growing importance of precious stones and metals such as gold in Tanzania’s exports. As discussed above, while higher manufactures have grown as a percentage of exports, the growth has been substantially slow, from only about 1.4 percent of total exports, to 4.7 percent of total exports. In contrast, overall metals, minerals and basic derived products have grown to 66 percent in 2011, of which 39 percent is attributable to precious stones and metals alone (Graph 11). Because precious stones and metals command high prices per unit of material, it is not surprising that the value of Tanzanian exports should increase. Further, standard trade data only measures the weight of traded commodities at point of entry and exit of country. For precious stones and metals this weight is nominal. Trade statistics do not capture ‘hidden’ flows- materials that are extracted or moved but do not enter the economy. According to the UNEP decoupling report, the biggest difference between direct trade flows and trade flows including indirect flows can be observed for countries
that extract large amounts of crude metals ores with low concentrations, but export highly concentrated ores. In the case of Chile, the world’s biggest exporter of copper, the physical trade balance in the year 2003 changes from net exports of 1 million tons in terms of direct flows to net exports of 634 million tons if calculated including indirect flows for the same year (UNEP, 2011). In the case of Tanzania, precious stones and metals as percentage of exports weigh relatively very little at the point of exit compared to the amount of mining overburden. Thus, it is possible that if indirect flows were accounted for, Tanzanian exports would not show an increase in the price commanded per unit ton. Therefore, it is highly dubious if the (relatively marginal) reversal, whereby Tanzanian exports command a somewhat higher price than its imports, reflects any substantial climb up the global value chain.

**Graph 11: Precious stones and metals as percentage of exports in monetary terms (US$), from 1997 to 2011**
Discussion and Conclusion

In many aspects, Tanzania’s socioeconomic profile fits the classic description of a peripheral economy; a dual economy whereby domestically the majority of citizens are employed in rural subsistence farming, and a ‘disarticulated’ national economy based largely upon export of extractives and low level manufactures. In 1997, Tanzania’s exports were dominated by the export of cash crops and basic derived agricultural products, and since then it has become increasingly dominated by the extractive sector, especially gold. To the extent that the sector of higher manufactures has grown, it has done so at a pronouncedly slower pace than the extractive sector, and the textiles sector has shown a marked decline in terms of its overall percentage of total exports. The majority of citizens, as subsistence farmers, remain alienated from the national economy, as well as most of the proceeds from it- except for the urban elite whose interests, as discussed in Chapter 4, often coincide with foreign investors over their rural counterparts.

Counter-intuitively, however, Tanzania’s socio-metabolic profile does not match the broader trend of peripheral countries, especially of the African continent which as discussed is, overall, a net exporter of resources, in particular metals and fossil fuels. Tanzania is a net importer across all material categories. This trend has increased- again counter-intuitively- during the neoliberal years. Its socio-metabolic profile therefore contrasts with the socio-metabolic profile of many peripheral economies in Latin America and Africa, as the empirical section of Chapter 1 overviewed. Additionally, it contrasts with ecologically unequal exchange theory in that increased economic integration has been met with an increasing physical trade surplus rather than deficit. These findings therefore necessitate some in-depth discussion.
Methodological issues and challenges of measuring EUE

Beginning with methodological issues, the EW-MFA has been useful in evaluating the trend of EUE (or lack of EUE) in certain ways, while in other ways the indicators used above are too limited to draw firm conclusions. In terms of usefulness, the EW-MFA has indicated, as well as the monetary data, that Tanzania is a net importer of biomass and this reflects an increasing reliance on imported foodstuffs. It has also indicated that Tanzania is a net importer of fossil fuels. Tanzania does not produce oil, and only in recent years has discovered and begun to produce natural gas. While subsistence farmers depend largely on wood and charcoal for their energy needs, the national economy is heavily reliant upon the import of fuels. In this material category, it can be said rather unambiguously that Tanzania is not subject EUE, and for this material category, its metabolic needs require a shifting of environmental burdens onto whatever oil exporting countries it is reliant upon for imports.

Such a finding is useful, as it points to an inevitable variation in socio-metabolic profiles across peripheral countries due to even geological factors alone. This is important, because an implicit assumption in EUE theory is that with increasing economic integration, peripheral economies should increasingly become net exporters of materials. But because of differences in geological endowments, this physically cannot be the case for all countries. Tanzania is reliant upon fossil fuel imports, because it does not produce oil, and increasing economic integration has apparently brought increased demand for fossil fuels.
Such variation also points to the need for ecologically unequal exchange theory to address a fundamental issue that it has yet to do so. That is, EUE may characterize the overall movement of resources at a global level, in terms of an overall asymmetrical transfer of resources from peripheral regions to core regions, but how do we assess whether individual countries are subject to EUE or not? Most individual peripheral countries are likely show significant variation in terms of their socio-metabolic profiles. Certain peripheral countries will most likely be net importers of particular material categories, but net exporters of other material categories.

How do we evaluate which material category wins out? If a country net imports biomass, but net exports fossil fuels, is that a case of EUE? By what standard? Given the incommensurability of different materials in terms of environmental impact, global competition over, exergy, and so on, judging by weight alone seems too arbitrary. This is a real theoretical issue that needs to be addressed if further empirical work is to be done. A possible direction for future research of EUE would be to compile a set of core indicators that would capture various aspects of EUE, indicators that would capture the degradation of sink capacity, the draining of resources, various forms of pollution and waste, and so on. As a reminder, the definition of EUE is actually quite broad:

As stated in Chapter 1, Rice defines EUE as

….the environmentally damaging withdrawal of energy and other natural resource assets from the periphery and the addition or externalization of environmentally damaging production and disposal activities within the periphery of the world system. It constitutes ‘both the obtainment of natural capital or the stocks of natural resources that yield important goods and services and the usurpation of sink-capacity or waste assimilation properties of ecological systems in a manner enlarging the domestic carrying capacity of industrialized countries to the detriment of peripheral societies (Rice, 2009, p. 221).
Hornborg’s concept of EUE as an asymmetrical transfer of productive capacity highlights a more essential quality of EUE, but if translated into concrete examples, would cover no less a broad range of ecological goods and services.

A group of core EUE indicators, perhaps compiled from all the various studies of EUE including but not limited to material flow accounts, could then be applied to individual countries, which would give a more comprehensive picture of whether or not EUE is occurring. The EUE empirical research agenda could then move away from studies that apply singular indicators towards studies that begin to apply sets of core indicators. PTBs would remain important in such a set of indicators, as they help demonstrate when a country is reliant upon particular material categories—such as fossil fuels in Tanzania. They can also demonstrate whether countries are being drained of particular resources. They can therefore indicate whether EUE is occurring in certain categories, but for all the reasons discussed above, cannot determine if EUE is occurring overall. For example, in Chapter 3, I had overviewed in qualitative terms the ‘new scramble for African resources.’ This ‘new scramble’ had included foreign investment in a wide variety of resources, some of which are picked up by MFAs such as metals and fossil fuels. But many other important resources including land, water resources, African fisheries, either do not show up on MFAs, or like timber, are washed out by materials with higher weight. Yet obviously, for all the reasons described in Chapter 3, the new scramble for Africa very much concerns the issue of ecologically unequal exchange.

On a more specific note, another important methodological issue concerns the incompleteness of the indicators used in this study. In terms of identifying EUE, or lack thereof, the results of the metals category is inclusive given the particular indicators used.
The above study- and many other studies utilizing MFA- do not account for indirect flows embodied in trade. Indirect flows, or raw material equivalents (RMEs), are materials extracted or moved but do not enter the economy, such as overburden from mining. These flows are important in determining both domestic resource depletion as well as environmental impact. Tanzania’s export economy is increasingly dominated by trade in preciousities- precious stones and metals whose weight at the point of exit are miniscule (UNEP, 2011).

As discussed above, lack of accounting for indirect flows, especially for economies dominated by light-weight, high-value preciousities, may also greatly affect indicators that combine monetary and physical data, such as the indicators used for studying de-materialization trends, or the changing position of countries in the global economy. It may also greatly affect PTB, as such preciousities register nominal weight at the point of exit. Unfortunately, at the time of writing, the necessary coefficients for calculating such indirect flows for Tanzania were not available. However, theoretically, a full MFA would include all such indirect flows, associated with domestic extraction, exports, and imports (UNEP, 2011). The limiting factor is that this is a work in progress, and for this dissertation, beyond its scope. Overall, it seems that for economies dominated by trade in mining activities- and especially mining activities of preciousities- care must be taken not to draw hasty conclusions from aggregate MFA indicators.

Theoretical issues: ecological imperialism, EUE, and Tanzania

In Chapter 1, I had defined ecological imperialism, broadly, as the subjugation of the economic, political, and/or social institutions of a (generally peripheral) country for
the biophysical, metabolic needs of the (generally core or semi-periphery), and
inextricable from the purposes of making such resources accessible and amenable (in the
right quantities and for the right price) to the needs of capital accumulation. I found this
definition to be useful as it emphasizes the political economic dimension to global
environmental distributional issues and issues of environmental justice above and beyond
just resource flows. It embeds these issues in concrete historical context, and emphasizes
that the major mechanisms of transfer of resources from periphery to core are, in a global
capitalist economy, inextricable from the workings of capital accumulation. I had then
spent Chapters 1, 2, 3 and 4 in developing further this concept of ecological imperialism,
pulling from the works of others scholars, and exploring this concept in the case of FDI
in Africa, and more specifically, in Tanzania.

If the spirit of EUE is to bring the fields of ecology and social science together in
order to better understand issues of environmental distribution inequality, rather than to
simply replace the one by the other, then it remains important to examine history, policy,
case study analysis, local impact, and so on, and to avoid reductionist evaluations based
solely on aggregate indicators. It is especially important not to assume a peripheral
economy is not being exploited based on aggregate environmental indicators alone. For
these reasons, a theory of ecological imperialism is essential. Exploitation is a broad
term, but ecological imperialism, as defined in this dissertation, points towards
exploitation as *subjugation*, the subjugation of economic policies (like FDI taxation
regimes), political structures (such as support of peripheral elites in a manner that fosters
corruption), and social structures (such as the displacement and dispossession of village
land, despite social conflict and disruption). Such subjugation, as discussed, is linked to
the metabolic needs of core or emerging economies, as well as the accumulation of
capital. It operates, as discussed in all previous chapters, in a world-system of unequal
power imbalances, originating in the forcible integration of the periphery under
colonialism. For all such reasons, the study of ecological imperialism complements the
discussion on EUE and other theories that seek to address global environmental
distributional inequalities.

Whether ecological imperialism leads to ecologically unequal exchange,
however, is ultimately an empirical question. As discussed, even according to geological
endowment alone, variation will exist among individual countries. In this sense,
Tanzania being an anomaly is not too surprising, as a number of anomalies have already
been found to exist according to MFA studies. In the case of Tanzania, ecological
imperialism may not have resulted in EUE, but as Chapter 4 pointed out, this doesn’t
mean Tanzania isn’t being exploited for its natural resources, particularly as regards FDI
in its land and mining sectors. There is an undeniable ecological dimension to Tanzania’s
situation, and ecological indicators such as MFAs do not capture these complexities (nor,
of course, are they intended to). It does not capture the alienation, loss of control and loss
of access to resources experienced by villagers, as was discussed in-depth in Chapter 4.
Nor does an MFA capture profit flows, or power struggles between investors and
governments over levels of taxation. Such issues must be addressed more broadly by
ecological imperialism, and by even broader issues of dependency. Hence it is important
to examine the relation between EUE and ecological imperialism, but to keep the two
analytically distinct, particularly in empirical studies. Otherwise, one runs the risk of
conclusions based solely on aggregate indicators for resources without examining possible exploitations in the political economy dimension.
Chapter 6: Conclusion

Much has been written on the subject of imperialism, and when writing a dissertation on such a topic contributing something novel is daunting. When the theorist of imperialism Harry Magdoff iterated the five conditions for a satisfactory theory of imperialism, to a great extent he already grasped the fundamentals of imperialism; the restless expansion of capital accumulation as the driving force of capitalism; the origin of capitalism as a world-system that strongly influences its entire course of its development; the grafting of the capitalist mode of production upon the rest of the world by the core countries; the emergence of the international division of labor and the creation of a hierarchy in which the overwhelming majority are dependent on a few centers of industry and banking; and the constant reproduction of the international division of labor and hierarchy. Yet with the alarming levels of global environmental distress increasing yearly and the glaring inequalities in environmental resource distribution among different social groups it becomes worthwhile to bring the ecological dimension into the discourse on imperialism more explicitly.

On the one hand, it becomes worthwhile as an addition to the increasing attempts of the social sciences and policy world to incorporate the environmental dimension. Mainstream discourses on sustainability often lack systematic discussions of the political and economic dimensions, and fail to address issues of power imbalance and inequities. Effort must be made to trace and uncover the sources of accumulation in one place, and
the political economy, policies, and ideologies that support it, while also examining the socio-ecological impacts that such accumulation may have in another place. But analysis also remains limited, even if it includes the political ecology component, if it does not name the current global mode of production - industrial capitalism. Otherwise the socio-economic system remains a black box, an economic system that intakes resources and processes them entropically, about which can be said only vague generalities, apparently driven by unknowable processes rather than any specific logic or pattern. Critical political ecology, Marxist ecology, and theories of ecologically unequal exchange and imperialism, and the study of specific aspects of the global political economy can contribute to bridge these gaps.

In addition, the study of ecological imperialism and ecologically unequal exchange also integrates many of the standard debates in political economy discussions with the pressing issues of the sustainability sciences, through the use of the latest socio-ecological indicators, localized studies, and within the broader theoretical framework of ecological economics. In contrast to earlier theories of imperialism that were created during a very different global ecology, the study of ecological imperialism and EUE now raises such questions as how can all countries be net importers of materials? If earlier attempts of socialism and import substitution required industrialization of the periphery, is such global industrialization now even ecologically possible given the limits of the Earth’s carrying capacity? If it isn’t possible, how does this change our concept of development? (And if it isn’t possible, why doesn’t it seem to be changing our standard concepts of development?) How does the mounting global ecological crisis change the nature of imperialism, as it expands the variety of ecosystem goods and services needed
by core and now the emerging economies? Further, it allows empirical investigation, such as to what extent are peripheral countries concretely being exploited? To what extent does ecological imperialism or EUE entail problems of sustainability in the periphery, with issues of environmental degradation or resource depletion? Such vital questions are often overlooked, or only briefly addressed, in the more orthodox discussion of imperialism and unequal exchange.

It is my hope that this dissertation on ecological imperialism, ecologically unequal exchange and foreign investment in Africa contributed to these trans-disciplinary efforts. Broadly, this dissertation aimed to contribute to the construction of a theory of ecological imperialism, a concept that is often used rhetorically but not always clearly defined. In many ways it was only a preliminary effort rather than a fully completed theory. But at the minimum it provides a working definition for future studies that seek to investigate the political economic dimension of global environmental distributional inequalities.

More specifically, this dissertation sought to contribute towards a greater understanding of the role of FDI in ecological imperialism, with a focus on Africa, a region of the world, if not the primary peripheral region, that is attracting global attention in a plethora of ecological goods and services, from its mining sectors, to its land, fisheries, forests, and even as a planetary sink with carbon sequestration strategies. To so do, the research took a mixed methodology approach, examining history, policy, utilizing Marxist ecological theories and other critical theories, as well as undertaking a case study analysis of Tanzania utilizing the empirical approach of material flows accounting and analysis.
The aim of the empirical research was to utilize one of the main empirical tools used to operationalize EUE to-date, an economy-wide MFA time series, and investigate if Tanzania was engaged in EUE, and if so, what the effects of neoliberalism were over time. Together with a chapter on ecological imperialism and FDI in Tanzania’s mining and land sectors, the empirical section sought to analyze if there is a link between EUE and ecological imperialism in the political economic realm. Finally, the empirical research sought to evaluate EW-MFAs as an adequate measure of EUE, and to contribute to the general discussion on the challenges and potentialities of quantitatively measuring EUE.

In terms of the EW-MFA, Tanzania was counter-intuitively a net importer across all material categories, in contrast to the broader trend of most African countries that are net exporters of resources. Further, this trend seems to have increased, not decreased, during the neoliberal years. On the one hand, these results point out that care must be taken to recognize considerable variation at the individual country level- not every extractive economy may be a net exporter of materials. Equally important, a peripheral country may be subject to ecological imperialism but not ecologically unequal exchange. The two concepts are interrelated, but should be kept analytically distinct as they are not synonymous. On the other hand, in terms of EUE, Chapter 5 also demonstrated the challenges with empirically measuring EUE. On a methodological level, the empirical results from the Tanzanian EW-MFA pointed towards the need a nuanced, complex, comprehensive view of EUE and ecological imperialism, and to caution over-reliance on single, aggregate indicators.
Recommendations for Further Study: A Call for Reviving and Greening Dependency Theory

Aside from the methodological limitations with the empirical work as discussed in Chapter 5, this dissertation has a number of other limitations worth discussing. From a theoretical standpoint, the study of FDI in Africa only touches upon the surface dynamics of ecological imperialism and makes at best a preliminary effort at an overall very complex issue. While foreign investment regimes and trade policies in the Global South are indeed important channels through which resources and profits are transferred from periphery to core or emerging economies, they are embedded in greater structures of global imbalances of power and dependency, as previous theories of imperialism and dependency have theorized. Understanding the more fundamental dynamics of ecological imperialism would involve delving into why peripheral countries become vulnerable to accepting grossly imbalanced FDI and trade policies in the first place, beyond the initial primitive accumulation that occurred under colonialism through the use of force. The following are some initial ideas on important directions for further study. In particular, the revival of concepts of dependency and Gramsci’s concept of hegemony could be very useful in conceptualizing the broader structures that ecological imperialism is embedded in.

To begin with, unpacking the links between technological dependency and peripheral resource exploitation is necessary, and one avenue would be a more in-depth study of the era of economic nationalism. Surprisingly, this era and its connection to ecological imperialism seems to have garnered little attention from critical political ecologists and Marxists ecologists, despite the fact that this time period was the overt
attempt by post-independent nations across the Global South to end neocolonial control over their resources, however limited or flawed the efforts. Given the extent to which the Global South was aware of these issues, as demonstrated by the NIEO, OPEC, nationalizations, commodity cartels, and so on, what made the South so vulnerable and in such a weak bargaining position that it had to essentially reverse its policies? Critics have long pointed out that such policies were enacted under the duress of economy-crippling debt, and FDI and trade policies were consequently part and parcel of neoliberal re-structuring. According to orthodox logic, such policies were necessary to reinvigorate the failed nationalized industries, rendered inefficient by state control and stifling socialist policies. Both stances rest on considerable evidence, but fail to answer a more fundamental question of why economic nationalist policies failed.

Undoubtedly, the answer is complex and varied, country-by-country, economic plan-by-economic plan, but the issue of technological dependency seems to be a key factor. In the case of many African countries, one major contributing factor is that African countries remained largely reliant upon Western technology and capital goods and were unable to break this dependency despite the ideological push for self-reliance and import substitution. As such, when African countries like Tanzania went into debt and BOP crisis they were unable to finance the capital goods imports needed for import substitution. In particular, what was so crippling about such debt was that it rendered Tanzania unable to continue the import of the capital goods upon which it depended for its development path, a development path which for all its stated purposes of African socialism and self-reliance nonetheless remained heavily reliant on external technology and foreign aid. As such, technological development was, and remains, dependent upon
technology from exogenous sources, and financing had to be met with export of biophysical resources, even if the eventual goal was self-reliance through import substitution. This dynamic begs a revival of dependency theory, one that unpacks the interconnections of technological dependency (or dependency of any other kind, be it external knowledge, norms and ideologies, social organization, aid, or whatever), debt, power imbalances, and resource exploitation that underlie ecological imperialism. The concepts of dependency, and dependent growth, remain highly important despite orthodox insistence that such concepts are dead. Dependency facilitates an imperialism that more often rules by consent and not direct force; without concepts such as dependency and dependent growth it becomes very difficult to understand continuing primitive accumulation and neocolonialism. Hopefully, the historical analysis of FDI regimes in Africa can offer a first step in this unpacking. Work by Marxist ecologists has been done to uncover the ecological drivers of capitalism’s expansion, it remains vital to understand why the Global South continually accepts policies that allow this expansion.

Along these lines, no less important is the need to more explicitly incorporate the political and social aspects, the ‘super-structure,’ into the issue of ecological imperialism. Class analysis has long been part of dependency/world-systems theory and theories of imperialism, and can be revived more specifically to address the issue of ecological aspect of imperialism, especially as they provide theories that help explain the overlapping interests of the peripheral elite and the capitalist class in the core countries. This dissertation had begun that discussion, in particular when looking at the issue of elite control over resources in Tanzania, but more work could be done. One such entry point would be to systematically investigate across a number of countries who the
primary actors are that facilitate the transfer of resources to foreign investors, whether they are governmental or private actors, and to understand the legislation that obstructs social control of resources. Different countries would vary, but most likely a broader pattern would emerge. Class analysis, as dependency and world-systems theorists realized, needs to be placed in the broader structural context of the world system to explain the ‘comprador characteristics’ of peripheral elites, and how such elites support extraction and predation of peripheral resources as the main sources of foreign exchange under the rhetoric of economic growth and development. Class analysis is also potentially important in understanding the failure of economic nationalism, and the transition to neoliberal structural adjustments. For example in Tanzania, as noted briefly in Chapter 3, radical scholars such as Rodney and Shivji argued that the bureaucratic bourgeoisie grew in economic power under the nationalizations of the Arusha Declaration. Further research for Tanzania could be aimed such following questions: what were the connections between the bureaucratic control of the state-economic apparatus and the failure of economic nationalism? Where there conflicting class interests in the adoption of neoliberal policies? Did the bureaucratic elite maintain dependence on the metropolitan bourgeoisie in the core countries, and did this dependency contribute to the adoption of neoliberal policies? What was the effect on class configuration during the neoliberal period, and how did this affect resource extraction? It is the internal political context in terms of the state or domestic capitalists, as Chapter 2 emphasized, that provide the amenable context for making resources widely and reliably available, and at the right price, for capital.
Finally, also beyond the scope of this dissertation but of equal importance to understanding the dynamics of ecological imperialism and dependency is the ideological aspect. This is an aspect which is difficult to perceive when relying upon empirical studies, or abstract theory, but becomes eminently apparent when living in-country or conducting field research. Here, combined with dependency theory, Gramsci’s concept of hegemony provides an important theoretical tool for understanding the ideology that justifies aspects of ecological imperialism. In essence, by hegemony Gramsci had meant that dominant groups in society maintain their dominance by securing the spontaneous consent of subordinate groups, including the working class. Not only through their economic power, but also through their intellectual and moral leadership, the ruling class is able to achieve political leadership based on the consent of the led. This consent is created when the ruling class successfully propagates an ideology that subordinate classes believe to be in the universal interest, while in actuality promulgating the class interests of the ruling class. This consent, though never fully secured, ensures that to the extent the ruling class attains ideological hegemony the necessity of force is lessened. Gramsci’s hegemony could be extended beyond the nation-state to include the dominant/subordinate positions of core/periphery.

The concept of development, with industrial capitalism as the primary, desirable mode of production to be supported by the relevant political and economic institutions as defined largely by Western countries, has been exported across the entire globe. Much has been written on the concept of development, and will not be repeated here, but one factor immediately apparent when doing field research is the extent to which both discourse and policy are defined (and funded) in peripheral countries like Tanzania by
First World donors, to the point where it seems almost every major institution, political or social, can be traced in its funding to outside agencies. Such funding often comes with strings attached, the most salient example in this case being the restructuring of FDI regimes. But when development is defined by another, always an exogenous source, it inevitably fosters an overall dependency, one that often translates into economic, psychological, and practical reliance on innumerable NGOs and foreign-funded projects that consistently shape the discourse on what the overall goals of a society should be rather than indigenous and grass roots solutions. Having both researched and worked in Tanzania as a volunteer for a number of years, these issues have come up on innumerable occasions, as many Tanzanians I have known have expressed their uneasiness over the undue foreign influence in the overall direction of their development.

Not all NGOs necessarily disseminate a world that benefits the ruling class of core countries, obviously— even if they do inadvertently foster a psychological and economic dependency. The ideological bents and missions of the innumerable NGOs in the Third World are quite diverse, and some of them are at odds with hegemonic discourse. But certainly, there has been enough propagation of discourse and ideology by enough development institutions and NGOs to reiterate a worldview in which natural resources are commodities. That is, peripheral economies have been encouraged to view their resources as commodities to be utilized, as foreign exchange for foreign capital goods and manufactured goods, for their development. Further, the bias remains towards export-led growth. And this is now viewed as entirely natural, acceptable, and inevitable, though the origins of the subsumption of peripheral resources into the world-system as commodities had involved force, violence, and conflict. Such a discourse creates the
ideology by which peripheral resources justifiably become the natural capital in the means of production for first world and emerging economy capital. Effectively, such a discourse provides the ideological basis for ecological imperialism, and it is very much bound up with a concept of development emanating from the First World.

But when the dynamics of poverty, commodification of nature, and ecological imperialism are combined, sustainability suffers. The effects rebound from the top to bottom of a society- from major officials who sell off large portions of land to communities that acquiesce to selling off their land to investors for promises of economic growth and development. In peripheral economies that often lack developed industries, the commodification of nature and poverty interact and the primary trend is towards one of extraction, poaching and predation. The ideology, norms, and attitudes that identify nature as a resource to be commodified, while more difficult to measure empirically, is as important as official economic policies, and affects the decision-making of individuals from the ministry elites to rural villagers. A comprehensive study of ecological imperialism must address these issues as well.

Concerning further directions for the study of ecologically unequal exchange, as noted in Chapter 1, EUE theorists should begin, at minimum, to incorporate a semi-periphery into their theoretical model. As emerging economies develop along the industrial capitalist path their metabolic processes are beginning to outstrip their national carrying capacity, and many such as Brazil, China, South Africa and India are becoming net importers of resources with a strong presence in African countries. However, such countries are also plagued by degradation of their sink capacity, linked to the manufacture of goods often consumed in core countries. Emerging economies most
likely fit into the category of semi-periphery (some may even be rising towards ‘core’ status). As such, they occupy a more ambiguous role in the discussion on EUE as well as in world-systems theory in general. The systematic inclusion of a semi-periphery and its relation to both core and periphery into the discussion on EUE would create a more nuanced and realistic world-systems ecological model. Even better, EUE theory should endeavor to incorporate an international division of labor as it currently exists under globalization. This may require an even more nuanced set of categorizations above and beyond core, semiperiphery, and periphery.

In terms of the empirical aspect of this research, for the Tanzanian EW-MFA case study, the empirical work done was limited, with greater quantitative work beyond the time and scope of the dissertation. As noted in Chapter 5, the EW-MFA study would have benefited greatly if complemented with other environmental indicators that were able to assess the environmental impact of FDI and trade policies. As discussed, EW-MFA indicators only capture total resources flows into the economy; they do not assess the impact of those flows on the surrounding environment. Further, as suggested in Chapter 5, the addition of calculations of raw material equivalents would have given a more realistic picture of total material usage in Tanzanian exports. Along empirical lines, as discussed in Chapter 5, the EUE literature at large could benefit from applying a core set of empirical indicators to future studies.

Overall, I would argue that for the study of EUE to become increasingly accurate and nuanced, it must endeavor to fulfill two requirements. First, it must endeavor to incorporate a current and accurate international division of labor. Core versus periphery, developing versus developed- such categories are too rough and can easily lead to
confusion in interpreting empirical results. Second, based upon a more accurate division of labor, it must endeavor to apply environmental indicators that can appropriately assess the environmental degradations likely to occur with particular economic activities in particular positions within the international division of labor.

Recommendations for practice/policy

From an ecological Marxist perspective, industrial capitalism as a mode of production contains intractable internal contradictions between the endless drive for capital accumulation and the sustainability of the Earth’s ecosystems. This is compounded with capitalism’s tendency to generate an unequal distribution of environmental burdens among differing social groups. From this perspective any solution within the market framework would be at best partial, and any total solution would necessitate an entirely different means of production in terms of both social relations of production, as well as the technological nature of industrial capitalism. At a broad ideological level an ideal mode of production would be predicated upon development based on equity, social control of resources, whereby the internal needs of the people, in accordance with the cultural and developmental needs of the people, are the prime directive for all economic policies, and not dictated by the demands of capital. This would mean, in an ideological sense, much of what Nyerere meant by African socialism; self-reliance, equality, and dignity for the human being based on socialized means of production, with, this time a much heavier emphasis on environmental sustainability. In terms of EUE and ecologically imperialism, policy-wise it would entail the reversal of the current neoliberalization of nature.
Yet the broader structural dynamics of dependency are unlikely to change in the near future. Even if alternative forms of social organization can be brought about, the current conception of development and the dependency this engenders are deeply embedded, even if calls for greater internal redistribution of wealth succeed. The dynamics of this dependency were not solved during the era of economic nationalism, and, as discussed, were at least partially responsible for the debt crisis of the developing world. If this dynamic is not acknowledged and approached cautiously, in all likelihood it will continue. What this means is that it is unlikely that the dynamic of EUE is going to be overcome easily or quickly, with the general lack of other means of obtaining foreign exchange, or in lieu of an entirely different concept of development not based on technological growth and industrial capitalism. At least for the near future, African nations most likely will be caught as exporters of natural resources pending major technical advances and substantial movement up the value chain. And even if this were to happen, the issue of environmental sustainability would not necessarily be unsolved unless major technical advances utilized clean energy.

However, there are a number of interim policies that could potentially improve the situation. The first would involve changing the neocolonial character of natural resource exports through improving the terms of trade and making FDI policies less skewed towards benefiting foreign investors. There were numerous attempts to achieve this during the era of economic nationalism as discussed in Chapter 3, and such policies could provide a blueprint. This would entail substantial changes domestically, and also in terms of external relations. Internally, obviously corruption must be effectively addressed. But corruption cannot be addressed alone, and current development orthodox
tends to treat solving corruption as a panacea. For one, for corruption to end, state control over resources as elite control must end, which necessitates greater social control in actuality over resources. Top-down, bureaucratically run nationalizations alone would be ineffectual in increasing social control over resources, given existing unequal class configurations. They would risk the emergence of bureaucratic elites, as some had argued had happened in Tanzania during the era of economic nationalism. Instead, increased efforts at decentralizing power from executive or ministry control would be useful, and plans for this already occurring, for example, in Tanzania, with proposed changes in the constitution. Since resources are the sovereign property of the state, and the state is supposed to represent the people, all deals between investors and the state should be made public, as well as all profits made from investors and revenue given to the state. The public should have legal decision and oversight over national resources, and access to information concerning environmental, social, and economic costs and benefits. They should also have a say in what are acceptable terms through direct votes and referendum.

For the issue of land, this would necessitate greater regulation and clarity in terms of customary versus state law. Of especial importance, it should be restricted for any government officials to individually profit from resources, as resources are national property and the proceeds from them are supposed to benefit the citizens at large. For example, in Nyerere’s time, ministry officials in the mining and energy sector were prohibited from having shares in mining industries, and as mentioned in Chapter 4, the change under neoliberal reforms has been linked with corruption. However, such greater social control over resources is unlikely to happen without greater collective action from grassroots and civil society organizations. Such organizations seem restricted in
countries like Tanzania, but potentially have very important roles to play in disseminating knowledge and organizing. Finally, and significantly, foreign investor complicity in corruption must be addressed.

In terms of external relations, the FDI regimes brought under neoliberal policies must be largely reversed. This would mean several things. First, at a minimum, African countries need to renegotiate for better terms to keep profit from flowing outward. This may translate as nationalizations as a necessary, but not sufficient, condition. Where this is impractical, the state may own the majority share, as the 2010 Mining Act seems to be moving towards, and as the Bolivarian nations have attempted to undertake. Obtaining greater proceeds from their natural resources, however, may take peripheral economies reviving concepts of period of NIEO, such as commodity cartels, nationalizations (with social control), and other forms of collective action to prevent capital strikes against individual nations.

In terms of collecting more money for natural resources, countries could also engage in the more recent, helpful recommendations of UNCTAD’s Economic Report on Africa 2012 to give monetary valuation of ‘underpaid’ ecosystem goods and services. Such valuation, based on informed, technical knowledge, would give peripheral economies leverage in demanding higher prices for their resources, for example, by giving monetary valuation to the environmental degradation associated with mining, and to charge higher for those degradations. Valuation of environmental goods and services are potentially helpful, though in practice if relied upon solely, can raise a number of problematic issues. For one, such valuations encourages putting a dollar price on the environment, which in itself is based on logic that ecosystem goods and services are
seamlessly exchangeable with money or man-made goods and services. This concept is highly debatable, and remains a major debate within ecological economics. Further, with current levels of inequality and poverty, the money may end up just going to elites. Like the issue of nationalization, such monetary valuation of environmental burdens would be useless without greater democratic control over resources and public scrutiny of funds. Further, an issue that would have to be addressed would be how to value the resources. One common way of valuing resources is in terms of economic services lost- but if this is the case, invariably peripheral incomes are much lower than incomes in core economies. As such, the valuation of peripheral ‘underpaid or unpaid’ peripheral resources would be lower, thereby helping to replicate the very inequality this method would seek to reduce.

On a final note, from a political perspective, such changes will be difficult to make without an organized progressive political organization, one normatively committed to the ideals of equality, justice, and rights for workers and peasants- and, importantly, committed to ecological sustainability. Such a party must supply the ‘counter-hegemonic’ ideology, in Gramscian terms, as well as leadership and representation in the political process. Again in the case of Tanzania, environmental issues, women’s issues, workers’ and peasants issues, the problem of foreign investment, and so on, are often dealt with separately, in a piece-meal fashion. More importantly, there is no coherent ideology that illuminates how these issues are connected to capitalism or imperialism, as there is in Latin America- a surprising finding from the field research conducted. Additionally, through leadership and organization a political party can provide some ethical stance as well, an issue not commonly addressed in the political
sciences but of importance nonetheless. Civil society is unarguably important, but it can only bring about so much change without political representation—unless protests grow so large and violent that they topple the state. Even then, without a progressive political party to offer a coherent alternative, in-fighting and chaos is a highly likely outcome. A progressive political party, with regional solidarity as in the case of Latin America, would be a necessary actor in facilitating change.

In terms of the ecological dimension, the concept of sustainability must be rigorously applied to peripheral countries as much as in core economies. The concern of sustainability must direct economic policy. Ecological economists have offered helpful notions of sustainability, as discussed in Chapter 1. Overall, sustainability requires society maintaining intact its natural capital to ensure that future generations have the same production and consumption possibilities that are available to the current generation. Such notions of sustainability need to be translated into concrete policies, and where potential conflict exists between existing economic policies and sustainability, such policies should be reversed or replaced. To date many of the activities involved in international trade and foreign investment cannot be seriously regarded as sustainable.

From a structural standpoint, to address the issue of sustainability, peripheral countries must systematically diversify their trade structures away from the export of non-renewable and non-sustainable use of resources, and this would necessitate finding

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105 Many Tanzanians I interviewed felt that though Nyerere made a lot of practical mistakes, nonetheless he provided a moral backbone to the country. Indeed, Nyerere is respected as one of the most morally upright leaders post-independence, one whose personal philosophy stressed higher ideals of community and altruism over individual gain. In contrast, from field research, many Tanzanians seem to hold cynical and bitter views over the corruption of the political elite.

106 In fact, with the pressures of poverty, population growth, and corruption, discontent is bubbling in Tanzania, and not in the most healthy way—religious tensions between the Christians and Muslims have grown, and urban centers are becoming increasingly dangerous in terms of crime.
other sources of foreign exchange. This is especially true for vital resources like land where livelihoods, national security, food security, and so on, depend. Land, in general, should not be commodified, unless there is strong evidence that such land is being clearly unused, and even then, the issues of use by future generations and shared resource use with surrounding communities, and environmental degradation, must be addressed. Even still, the extremely low price of land in the periphery, in comparison to the price of land in core economies, underscores an inequality that merely perpetuates EUE, along with the host of economic, social, environmental and political conflicts associated with large scale land investments. In general, policy makers must address the central schism that currently exists in regards to peripheral economies and their environments, that is, on one hand repeating the rhetoric of sustainability, while on the other hand promoting the cheap, easy, and unsustainable access to peripheral ecosystem goods and resources.
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Appendix I: Taxation definitions for mining sector

**Royalties** (Sturmer, 2011)

- The most common and widely-used instrument for taxing the extractive sector
- Royalties tax the fiscal dues on the basis of either the volume (unit royalty) or the value (ad valorem royalty) of production or exports
- Royalties have the advantage of being easy to assess and apply even though calculation can be complicated if value is adjusted to omit cost of transport, handling, and so on
- Royalties ensure a relatively stable revenue stream to the government, since production and sales normally vary much less than profits
- For producers, royalties constitute additional costs that have to be paid irrespective of profit levels
- Very high royalties are major deterrent to investment, especially in the case of minerals from low-quality resource endowments and of minerals whose world market prices are highly cyclical

**Corporate income taxes** (Sturmer, 2011)

- Corporate income tax is based on profits, due only when annual revenues exceed some measure of costs and allowances
- In general, corporate income tax avoids problem associated with royalties of companies having to pay taxes even when they make losses
- For governments, corporate income tax is much more difficult to compute because profits have to be assessed; further, yield from corporate income tax
fluctuates far more than yield from royalties since profits fluctuate far more than
volume or output or sales

**Windfall profit taxes** (Sturmer, 2011)

- Windfall profit taxes cream off an above normal supposed level of profit by
taxing gross revenues
- As a rule, the tax is levied only when a certain threshold, such as a given world
market price, is reached. Some countries also apply a progressive tax regime,
using stepped tax rates linked to world market prices

**Government participation** (Sturmer, 2011)

- Another means of extraction is government participation free of charge or on
concessional terms; government acquires a carried interest and pays for its share
out of future earnings from the project, or it demands a minority equity share free
of charge at time of original investment decision
- Dividends from government participation do not play an important role in
government revenues
- Various other taxes and charges can include concession charges, duties on
imported equipment, payroll taxes, VA taxes and environmental taxes
## Appendix II: Land investment deals in Tanzania (source Land Matrix database)

<table>
<thead>
<tr>
<th>Location (Tanzania)</th>
<th>Investor Name</th>
<th>Country</th>
<th>Use</th>
<th>Neg. Status</th>
<th>Current Status</th>
<th>Hectares</th>
<th>Crop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>Chongqing Seed Corp</td>
<td>China</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>unknown</td>
<td>300</td>
<td>Rice (hybrid)</td>
</tr>
<tr>
<td>Kilimanjaro</td>
<td>DWS GALOF</td>
<td>Germany</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>Current Status</td>
<td>500</td>
<td>Barley, Wheat</td>
</tr>
<tr>
<td>Mngeta, Kilombero</td>
<td>Agrica, Rufiji Basin Development Authority (RUBADA)</td>
<td>UK, Tanzania</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>In operation (production)</td>
<td>8</td>
<td>Rice</td>
</tr>
<tr>
<td>Pwani</td>
<td>Lion’s Head</td>
<td>UK</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>Project abandoned</td>
<td>0</td>
<td>Jatropha</td>
</tr>
<tr>
<td>Rufiji River</td>
<td>Egyptian African Company (EAC)</td>
<td>Egypt</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>Project not started</td>
<td>689</td>
<td>Sugar Cane, Vegetables</td>
</tr>
<tr>
<td>Lewiti, Mavuji,</td>
<td>Bioshape Holding</td>
<td>Netherland</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>abandoned</td>
<td>0</td>
<td>Jatropha</td>
</tr>
<tr>
<td>Migeregere, Nainokwe</td>
<td>FELISA, Unnamed investor</td>
<td>Belgium, Tanzania</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>Project not started</td>
<td>425</td>
<td>Oil Palm</td>
</tr>
<tr>
<td>Kigoma</td>
<td>African Green Oils</td>
<td>unknown</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>abandoned</td>
<td>860</td>
<td>Oil Palm</td>
</tr>
<tr>
<td>Kihesa Kilolo</td>
<td>New Forests Company</td>
<td>UK</td>
<td>Agr.</td>
<td>Contract phase (no production)</td>
<td>597</td>
<td>5</td>
<td>Pine, Trees</td>
</tr>
<tr>
<td>Bwawani, Iringa</td>
<td>Holdings</td>
<td>UK</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>Production)</td>
<td>5</td>
<td>Pine, Trees</td>
</tr>
<tr>
<td>Bagamoyo</td>
<td>Tanzania</td>
<td>unknown</td>
<td>Agr.</td>
<td>Contract signed</td>
<td>unknown</td>
<td>250</td>
<td>Sorghum</td>
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</table>

295
<table>
<thead>
<tr>
<th>Location</th>
<th>Company</th>
<th>Country</th>
<th>Agreement</th>
<th>Start Date</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moshi</td>
<td>Kilimanjaro aloe vera plantation Ltd (British)</td>
<td>UK</td>
<td>Contract</td>
<td>[2008] Startup phase (no production)</td>
<td>Aloe Vera, Jatropha</td>
</tr>
</tbody>
</table>
Appendix III: Data and Sources

Production statistics, for which calculation of domestic extraction and corresponding indicators such as domestic material consumption and domestic material input depended, were taken from the following sources:

1. Biomass production statistics were compiled using FAOSTAT production statistics Tanzania for agricultural products, ForesSTAT (a subdivision of FAOSTAT) for timber products, and FAOSTAT’s fisheries statistics for fish and other aquatic animals. While national biomass production statistics were available, upon advice of the Tanzania National Bureau of Statistics agricultural officer, FAOSTAT statistics were used instead. (FAOSTAT statistics are already based upon national statistics, but compiled in such a manner online as to be more readily accessible).

2. Mineral production statistics were compiled using US Geological Survey (USGS) production statistics for Tanzania, British Geological Survey (BGS) production statistics for Tanzania, and national sources from the Tanzania Bureau of Statistics. All three sources had gaps in years for various minerals, and comparison of all three sources revealed certain levels of discrepancies between all three sources. In choosing which data source to use, the following criteria were applied: a.) consistency, that is, which data source consistently covered the longest span of years, b.) consistency between data sources, that is, the data source was selected that included the most consistent number of years as well as most consistently matched the other data sources. Limestone, cement, and sand
estimates were compiled using statistics from the World Statistical Review *World Cement Market in figures 1913/1995*.

3. Metal production statistics, in the same manner as mineral production statistics, utilized USGS data, BGS data, and national data from the Tanzania Bureau of Statistics.


Physical trade statistics were compiled from UNCOMTRADE export and import trade data in weight, SITC 1, third level aggregation, world as partner, based upon all years available. Where gaps existed between certain years, data for the net physical trade balance was used from [www.materialflows.net](http://www.materialflows.net), the online portal for material flows data. (Data from this website was used only in a limited manner. For one, PTB data disaggregated according to material category was not available from this website, only the aggregate PTB indicator. Also, data from the 1970s is not available from this website). For purposes of convenient categorization and data availability, monetary trade statistics were compiled from UNCOMTRADE export and import trade data in monetary value, HS 92, second level aggregation, world as partner, based upon all years available.

The Institute of Social Ecology in Vienna had calculated DMC for the specific years of 1950, 1960, 1970, 1980, 1990, 2000, and 2005. When compared with my own DMC calculations for those years, the results were within 10 percent range of difference. After communication with Nina Eisenmenger from Vienna, I postulate this margin of difference to be relatively small, especially given the use of national level data.
It is worthwhile to make a comment on data reliability. All data used was national level data, or international data compiled from national data. There are reasons why national level data is not wholly reliable. For one, in conversation with the Tanzania National Bureau of Statistics (TNBS), I was informed that trade statistics, before the year 2000, were recorded by hand and not computer. According to the TNBS, this undermines trade statistics reliability. Perhaps even more troubling, Tanzania has been plagued with accusations of illegal exports of certain commodities, for example timber. According to a National Geographic Report, in 2007 Tanzania’s government failed to effectively regulate customs officials, who were accused of bribery and allowing the use of invalid export documentation. Illegal export of timber has led to profound destruction of Tanzanian forests, estimated to be up to 98,000 hectares annually (National Geographic, 2007).
### Appendix IV: Forest Area and Depletion in Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Forest area in 2010 (Km²)</th>
<th>Percentage change between 1990 and 2010</th>
<th>Percentage of land area covered by forests in 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>14,920</td>
<td>-10.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Angola</td>
<td>584,800</td>
<td>-4.1</td>
<td>47.0</td>
</tr>
<tr>
<td>Benin</td>
<td>45,610</td>
<td>-20.8</td>
<td>41.0</td>
</tr>
<tr>
<td>Botswana</td>
<td>113,510</td>
<td>-17.3</td>
<td>20.0</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>56,490</td>
<td>-17.5</td>
<td>21.0</td>
</tr>
<tr>
<td>Burundi</td>
<td>1,720</td>
<td>-40.5</td>
<td>7.0</td>
</tr>
<tr>
<td>Cameroon</td>
<td>190,160</td>
<td>-16.1</td>
<td>42.0</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>850</td>
<td>46.6</td>
<td>21.0</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>226,050</td>
<td>-2.6</td>
<td>36.0</td>
</tr>
<tr>
<td>Chad</td>
<td>115,250</td>
<td>-12.1</td>
<td>6.0</td>
</tr>
<tr>
<td>Comoros</td>
<td>430</td>
<td>-75.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Congo</td>
<td>224,110</td>
<td>-1.4</td>
<td>65.0</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>104,030</td>
<td>1.8</td>
<td>33.0</td>
</tr>
<tr>
<td>Dem. Rep. of the Congo</td>
<td>1,541,350</td>
<td>-5.0</td>
<td>88.0</td>
</tr>
<tr>
<td>Djibouti</td>
<td>60</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Egypt</td>
<td>700</td>
<td>50.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Equatorial Guinea</td>
<td>18,260</td>
<td>-12.6</td>
<td>56.0</td>
</tr>
<tr>
<td>Eritrea</td>
<td>15,320</td>
<td>-5.5</td>
<td>15.0</td>
</tr>
<tr>
<td>Ethiopia</td>
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<td>11.0</td>
</tr>
<tr>
<td>Gabon</td>
<td>220,000</td>
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<td>85.0</td>
</tr>
<tr>
<td>Gambia</td>
<td>4,800</td>
<td>8.6</td>
<td>48.0</td>
</tr>
<tr>
<td>Ghana</td>
<td>49,400</td>
<td>-35.7</td>
<td>22.0</td>
</tr>
<tr>
<td>Guinea</td>
<td>65,440</td>
<td>-6.9</td>
<td>27.0</td>
</tr>
<tr>
<td>Guinea-Bissau</td>
<td>20,220</td>
<td>-8.8</td>
<td>72.0</td>
</tr>
<tr>
<td>Kenya</td>
<td>34,670</td>
<td>-5.5</td>
<td>6.0</td>
</tr>
<tr>
<td>Lesotho</td>
<td>440</td>
<td>10.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Liberia</td>
<td>43,200</td>
<td>-12.2</td>
<td>45.0</td>
</tr>
<tr>
<td>Libya</td>
<td>2,170</td>
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<td>0.0</td>
</tr>
<tr>
<td>Madagascar</td>
<td>125,530</td>
<td>-8.3</td>
<td>22.0</td>
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<td>Malawi</td>
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<td>-16.9</td>
<td>34.0</td>
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<tr>
<td>Mali</td>
<td>124,900</td>
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<td>10.0</td>
</tr>
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<td>Mauritania</td>
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<td>Mauritius</td>
<td>350</td>
<td>-10.3</td>
<td>17.0</td>
</tr>
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<td>Morocco</td>
<td>51,910</td>
<td>16.6</td>
<td>11.0</td>
</tr>
<tr>
<td>Mozambique</td>
<td>360,220</td>
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<td>50.0</td>
</tr>
<tr>
<td>Namibia</td>
<td>72,800</td>
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<td>9.0</td>
</tr>
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<td>Niger</td>
<td>12,040</td>
<td>-36.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Nigeria</td>
<td>90,410</td>
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<td>10.0</td>
</tr>
<tr>
<td>Rwanda</td>
<td>4,350</td>
<td>36.8</td>
<td>18.0</td>
</tr>
<tr>
<td>Sao Tome and Principe</td>
<td>270</td>
<td>0.0</td>
<td>26.0</td>
</tr>
<tr>
<td>Senegal</td>
<td>84,730</td>
<td>-9.4</td>
<td>44.0</td>
</tr>
<tr>
<td>Seychelles</td>
<td>410</td>
<td>0.0</td>
<td>88.0</td>
</tr>
<tr>
<td>Sierra Leone</td>
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<td>36.0</td>
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<td>Somalia</td>
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<td>11.0</td>
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<td>Swaziland</td>
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<tr>
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<td>6.0</td>
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<td>Uganda</td>
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<td>Zambia</td>
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<tr>
<td>Zimbabwe</td>
<td>156,240</td>
<td>-26.5</td>
<td>40.0</td>
</tr>
</tbody>
</table>
Appendix V: Tanzania Demographic Trends and Resource Use

Tanzania Demographic Trends and Resource Use

Population growth over time

Fertility rates over time

Life expectancy over time
Tanzania’s total domestic material consumption has grown in absolute terms from about 64,103,000 tons in 1977 to 144,549,000 in 2010, reflecting a dramatic increase in population over time. Though from a world-systems perspective, Tanzania appears to be developing into an extractive economy, this is still a form of industrialization. Tanzania’s demographic indicators such as increasing population and life expectancy over time, in contrast to decreasing infant mortality and fertility rates over time, are also typical of demographic transitions that occur from pre-industrial to an industrialized economic system. However, as is also normal in the early stages of industrialization, in Tanzania’s case, population growth has outpaced consumption, so DMC per capita has actually decreased slightly, from 3.77 tons per capita in 1977 to 3.21 tons per capita in 2010.