

Questioning Environmental Security: A Political Ecology of Illicit Trading Networks

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Introduction: Questioning Environmental Security

This paper will examine the dynamics of illicit resource extraction in Ilakaka, Madagascar. It will examine the case of Ilakaka by utilising the environmental security literature and the political ecology literature in order to reflect back on the theoretical models to determine their usefulness for understanding the processes involved in extra legal natural resource extraction. The environmental security debate has been highly influential in terms of thinking about the relationships between environmental change and violent conflict, especially in the South. In particular, Homer-Dixon (1991; 1994; and 1999) has argued that there is a link between environmental scarcity, or ecoscarcity, and large scale conflict between and within countries. The argument have been subject to a great deal of criticism, on methodological grounds and on the basis of the cultural/political/theoretical assumptions that drive the research (see Gleditsch, 1998; Haas, 2002; Peluso and Watts 2001; and Litfin, 1999). Political ecologists have been particularly vocal critics of the environmental security framework for understanding environment-violence interactions. Robbins (2004) suggests that political ecology can provide a means of moving away from a view of the environment just in terms of the destruction of nature or the social construction of environments. Instead, for Robbins (2004) political ecology allows us to examine the ways that nature is 'produced' by human and non-human actors. Consequently, it is important to examine the activities of government ministries, scientists, international NGOs, local communities, private businesses and international financial institutions as 'producers of nature'.

This paper will examine this debate in relation to a specific case study: the dynamics of illicit natural resource extraction (in this case sapphires) in Ilakaka, Madagascar. In many ways Ilakaka appears to conform to the ways that ideas of environmental security explain the relationships between population, resource extraction and violence (Homer-Dixon, 1999; Homer-Dixon, 1994; and Homer-Dixon 1991). It displays the features of environmental degradation, social strife, poor health and sporadic outbreaks of localised violence. Homer-Dixon's work attempts to explain the relationship between environmental degradation and the propensity for violent/armed conflict. Armed conflict has occurred in gemstone areas before, and the cases of Sierra Leone, Democratic Republic of Congo and Angola are often used as prime examples of 'resource wars'. Ilakaka has thus far avoided large scale armed conflict but has experienced other forms of violence over access to and control of gemstone areas. Political ecologists have suggested that the focus on environmental scarcity as a source of violent conflict is misplaced; rather, they argue that it is abundance of resources that can be the trigger for violent conflict. Here again Ilakaka appears to conform to arguments made by political ecologists such as Fairhead (2001); in Ilakaka it is the abundance of sapphires which produces new forms of conflict over who has access to and control over the rights to extract lucrative minerals. This paper will examine the case of Ilakaka in order to reflect back on and critique the environmental security debate and criticisms of it. This paper will contend that despite their apparent differences, the environmental security and political ecology frameworks both focus too closely on the natural resource (abundance or scarcity) as *the cause* of conflict. It will focus on understanding the complex chains of connection between illicit natural resource extraction and patterns of global consumption and trade. In particular this paper will use the political ecology framework, but move that debate further one through an examination of the importance of current debates about the nature of African statehood to examine the complex dynamics associated with illicit resource extraction in Madagascar. IN

order to do this, this paper will firstly provide a brief overview of the environmental security debate, and secondly will engage with notions of political ecology and current debates about the nature of African statehood. It will then investigate the nature of gemstone extraction in Madagascar in order to reflect back on the question of how useful these debates are for understanding the dynamics and impacts of illicit resource extraction.

Environmental Security ‘Versus’ Political Ecology

The rationale behind environmental security is that with an increasing human population and continuing growth in the global economy, pressure on the world’s natural resources will increase. This pressure will result in more frequent and more acute conflicts within and between countries, especially in the developing world since it is deemed as more vulnerable to environmental change and scarcity. The idea of environmental security is closely associated with two research groups. The Swiss based Environmental Conflicts Project (ENCOP) and more commonly with a research group led by Thomas Homer-Dixon, at the University of Toronto (informally known as the Toronto Group). Their research on environmental security is based on information from a number of research projects around the globe that investigate the relationships between the environment and violence. The main conclusion of the research is that the world will face shortages of key natural resources: land for growing food, fresh water, oil, forests and so on, and as a result of such *ecoscarcities* the world will experience more and more violence in the form of rebellions, ethnic clashes and unrest especially in the developing world (Homer-Dixon, 1999; Homer-Dixon, 1994; and Homer-Dixon 1991). Although Homer-Dixon does acknowledge the influence of social, political and economic stresses as contributing factors to ‘ecoviolence’, they are not the primary causes. The work of Homer-Dixon’s research group suggests that developing countries will be more prone to environmental change than rich states, and will therefore be more likely to experience large scale violence and acute conflict. In particular, Homer-Dixon argues that the developing world experiences the four main pressures: reduced agricultural production, economic decline, population displacement and disruption of regularised social relations as a result of atmospheric, terrestrial and aquatic environmental pressures; and as human populations grow, governments will have less and less opportunity to intervene through the use of market based mechanisms to alleviate the effects of environmental change (Homer-Dixon, 1991: 78-79).

It is clear that along with Kaplan, the environmental security argument is heavily influenced by Malthusian ideas about the relationships between population growth, *ecoscarcity* and violence. In many ways environmental security intersects with the view of underdevelopment as ‘dangerous’, and has remained an important strand of thinking about approaches to development in Sub-Saharan Africa in particular. The environmental security outlook resonates so powerfully in academic and policy oriented literatures on Sub-Saharan Africa because of the continuing influence of Robert Kaplan’s new barbarism thesis. Kaplan argued that the environment was going to be *the* national security issue of the 21st century. He suggested that disease, overpopulation, crime, resource scarcity, refugees and the erosion of nation-states (amongst other things) was ensuring that that Africa was slipping into some kind of violent barbarism (Kaplan, 1994). In line with this Matthew, Halle and Switzer (2002: 5) suggest that the environment can be regarded as a security issue because resource scarcity is a significant cause of conflict; the implication of this is that better resource management practices might contribute to peace and stability (see Matthew, Halle and Switzer, 2002: 5; also see Homer-Dixon, 1999; Bannon and Collier, 2003).

The literature on environmental security emerged in the 1990s as part of the search for understanding the new context for global security in a Post Cold War world. It has remained deeply influential, especially in terms of foreign policy making towards the South, and Sub-Saharan Africa in particular. Litfin suggests, the work of Homer-Dixon and other environmental security analysts produces and reproduces a bias towards the view of ‘chaos in the periphery’ (Litfin, 1999). Over the last five years notions of environmental security have resonated with the increasing interest in the ‘development-security nexus’ especially in academic and policy circles. In turn it has been used to justify new and expanding forms of intervention in Sub-Saharan Africa under the banners of humanitarianism, peace keeping, enhancing development, and environmental protection. For example, Duffield argues that the redefinition of conflicts in Sub-Saharan Africa as ‘New Wars’ has fed into and heightened the importance of an emerging development-security complex in which underdevelopment is

regarded as a source of global danger and destabilisation: in short, underdevelopment constitutes a global security threat because it is assumed that places characterised by underdevelopment act as anarchic and uncontrolled 'black holes' where global security threats can grow. These threats range from warlordism and trafficking in drugs, weapons and lucrative natural resources to international terrorist networks (Duffield, 2001: 7). Therefore, one of the fundamental ideas which underlies the development-security debate is the notion that we need to radically alter our approach to development in order to ensure the security of the developed world. In turn, the development-security complex has become highly influential in policy terms and underpins the foreign policies and attitudes to development assistance of some of the world's major powers, including the US and Britain (Haas, 2002).

The environmental security argument has been criticised from a number of perspectives. For example, Gleditsch (1998), questioned the methodology used and suggested that the research of the Toronto Group fails to make it clear whether the issue is environmental degradation or environmental scarcity which causes conflict; and that the group does not sufficiently acknowledge the role of human ingenuity in coping with environmental change and scarcities. Furthermore, Haas (2002) argues that notions of environmental security are flawed and selectively invoked by the policy community and by inattentive academics to justify pre-existing state-oriented goals. Haas suggests that attractiveness of these doctrines is in their affinity to the values and beliefs invoked by the person making the argument and points to the importance of understanding discourses. Haas contends that resource scarcity and environmental security remain important ideas in international relations and security studies precisely because they justify US foreign policy (and the foreign policies of other states), especially in the form of intervention (Haas, 2002:1). Equally, Litfin (1999) points to the ambiguity in the phrase 'environmental security' and urges us to ask who and what are to be secured, does environmental security include questions about over consumption, uneven development or even about the notion of 'nature' itself? (Litfin, 1999: 360-364). For Litfin the environmental security framework has a troubling penchant for reification and false universalisation, by seeing environmental problems as the cause of conflict they are naturalised and this naturalisation of environmental problems obscures the extent to which problems can be socially constructed and encourages us to ignore the deeper social, political and economic roots of environmental change and conflict (Litfin, 1999: 359-361).

Political ecologists have critically engaged with the work on environmental security. Robbins (2004) suggests that political ecology can provide a means of moving away from a view of the environment just in terms of the destruction of nature or the social construction of environments. Instead, for Robbins (2004) political ecology allows us to examine the ways that nature is 'produced' by human and non-human actors (Robbins, 2004; also see Stott and Sullivan, 2000, and Forsyth 2003). Consequently, it is important to examine the activities of government ministries, scientists, international NGOs, local communities, private businesses and international financial institutions as 'producers of nature'. For political ecologists, it is useful to investigate the workings of complex networks of actors involved in managing environments, which in turn reveals that ecological systems are power laden rather than politically inert. This is because the multiple explanations and interpretations of how ecosystems work and what factors affects them are invested with political, social and economic meanings (Robbins, 2004: 5; Blaikie and Brookfield, 1987; Blaikie, 1994; Peet and Watts, 1996; Hempel, 1996: 6). Peluso and Watts (2001) argue that political ecology provides the tools for thinking about the conflicts and struggles as created by the forms of access to and control over resources. It is attentive to the power relations inherent in defining, controlling and managing nature; furthermore, it takes note of a multitude of actors and examines the impacts of their activities (also see Neumann, 1998, 2001; Richards 1996; Peet and Watts, 1996). Taking a political ecology approach, it is clear that the assumption that environmental scarcity produces conflict needs to be challenged. It is clear that an abundance of resources and not just scarcity also creates new forms of conflict over who has access to and control over them (see Gleditsch, 1998; Peluso and Watts, 2001; Fairhead, 2001; Richards, 1996 and 2001; Nordstrom, 2004).

My intention is not to rehearse or to repeat the conclusions of these important critiques. Rather, the purpose of this paper is to question the orthodoxies associated with environmental security and critiques of it through an analyses of the dynamics of resource extraction, environmental change and conflict evident in a particular case: sapphire mining in Madagascar. In particular, the environmental security literature fails to adequately capture the

nature of the illicit economy in terms of how and why it drives environmental change in the developing world. Equally critics of environmental security, including political ecologists, do not examine extra-legal economy in any great detail. Nevertheless the critiques provided by political ecology remain useful in terms of analysing the complex array of interest groups and stakeholders engaged in socially, politically and economically 'producing nature'. One way of doing this is to examine the case of sapphire extraction through an understanding of the relationships between Sub-Saharan Africa and the global economy. This paper will now turn to an analysis of illicit sapphire extraction in Madagascar.

Global Shadows: Linking Sub-Saharan Africa and the global economy

This paper focuses on the complexities of illicit networks, in order to understand the environmental dynamics produced by extra-legal resource extraction. This is an area that supporters and critics of environmental security have some difficulty explaining. It is especially hard to collect reliable information (quantitative or qualitative data) on extra legal resource extraction because by their very nature illicit activities are under recorded and informal; as such studies often fail to capture and explain these processes, instead they are ignored because very often they do not figure in large scale quantitative data sets on the environment and violent conflict. In addition, the environmental security debate also fails to adequately engage with how such processes of resource extraction are inter linked with the international economy, and especially the importance of consumer demand in wealthier states in the First World, and increasingly in Asia. Rather the environmental security debate seems to place the blame on the developing world for failing to manage their resources more effectively. Both environmental security and political ecology frameworks retain a focus on the natural resource itself as the cause of conflict; this paper will demonstrate how there needs to be a much more sophisticated understanding of the interactions between the global economy and particular locations of resource extraction and environmental change in the South. In particular it is important to move away from an understanding of environment-conflict dynamics as 'bounded' in specific geographical locations, be they states, localities or regions. This assumption leads to a temptation to simply examine the activities of actors at a single level (local, national etc) as 'the problem' in terms of producing resource scarcity, conflict or environmental degradation. This paper will examine the ways that places marked by natural resource extraction need to be simultaneously understood as global *and* local sites. Therefore, in order to understand the forms of environmental change produced by illicit extraction of valuable natural resources in Sub-Saharan Africa it is important to examine the long term processes and global dynamics that produce particular activities in specific locations.

If we examine the ways that demands for certain goods and resources in the developed world produce particular practices of extraction in the developing world it is clear that it requires us to rethink what is meant by global/local, legal/extra-legal and formal/informal. In general, these terms are used as binary opposites, but an examination of illicit networks engaged in natural resource extraction indicates that these are far from being distinct categories; rather they are indivisible and constitute a single, complex whole which produces enormous wealth coupled with high degrees of poverty and marginalisation in precisely the same locations. In turn this means that commonly used terms such as local/global, rural/urban, traditional/modern have lost much of their explanatory strength because Sub-Saharan Africa is characterised by numerous places and processes that produce a very diffuse sense of space (materially and mentally) (De Boeck 1998: 799; De Boeck 2001). In short – it is useful to examine how the global and local impact on and shape each other.

In the context of Sub-Saharan Africa it is important to understand the nature of engagement between the continent and external actors. In particular, the contemporary state in Africa is characterised by alliances between elite cliques and global economic interests, including private business, NGOs, donors and illicit trading networks. Bayart explains this through an analysis of the ways that the importation of a state system by European colonisers was resisted in various ways by African societies, which resulted in a complex mix, where African states resemble a rhizome rather than a root system. As a rhizome, the state is organised along patrimonial lines which stretch through society in a horizontal fashion, and has reappropriated the institutions that originated under colonial rule. State-society relations are then characterised by factional struggles, the rhizomatic nature of the state and patronage politics. Bayart calls this the 'politics of the belly', which refers to the way in which political

elites use informal and invisible networks to exercise political and economic power (Bayart 1993). Leading actors in Sub-Saharan Africa have compensated for a lack of autonomy by recourse to *strategies of extraversion*, and so the global economy has been turned into a major resource for political elites in Africa (Bayart 2000: 219; and Bayart 1993). For Bayart, the external environment is important in the structuration of African societies, and the strategies of extraversion are marked by the creation and capture of a rent generated by external dependency (Bayart 2000: 225; Nordstrom 2001; Nordstrom 2004; also see Clapham 1996).

Bayart's analysis demonstrates how Sub-Saharan Africa is inextricably interlinked with the global economy. The ways that Africa is integrated with the global system has resulted in the creation of a patchwork of areas and networks that are highly globalised which in turn produces real forms of exclusion and marginalisation. As Ferguson notes, large tracts of territory and rural populations have been abandoned by central governments in Africa in favour of linking more closely with the economic benefits and rents made available through international integration with donors, international financial institutions, NGOs and private businesses. This is particularly apparent in the ways that resource extraction (of minerals, especially oil) is organised and carried out by interlinked networks of private companies and elite cliques in African states (Ferguson 2006; also see Hibou 2004). The impact of such global networks is particularly important in terms of understanding the specific patterns of globalisation and how they are manifested in particular ways in Sub-Saharan Africa (see De Boeck, 1998).

In examining these kinds of global linkages it is clear that it is no longer useful to concentrate on understanding visible political and economic systems such as the state and the formal economy; instead it is more important to focus on an emergent set of shadow politico-economic systems (Reno 1998). As Ferguson argues a shadow is not a poor copy of the original (in this case the 'formal' neoliberal economies of the industrialised world); instead the shadow is an inter-related and *attached twin* of the original (Ferguson 2006). Reno's examination of the growth of informal markets suggests that they developed partially in response to the decay of central state authority, especially in Africa's weakest states. He argues that high-ranking politicians and businessmen constitute shadow states. Furthermore, they manage to exercise significant political authority through the private control of resources in informal and illicit markets (Reno 1995; Reno 1998; also see Nordstrom 2001; Nordstrom 2004; and Roitman 2001). It demonstrates that notions of some sort of locally produced and bounded 'chaos in the periphery' as assumed by the environmental security literature is not a useful way of thinking about manifestations of violence and environmental change in the South. Rather it is important to think in terms of porous boundaries between the global and local, legal and extra-legal.

Gemstones in Madagascar

This paper will now turn to an exploration of the impact of illicit sapphire mining and trading in Ilakaka to provide an analysis of the contours and dimensions of the ways in which Africa is integrated with the rest of the world economy in very specific ways. The results of this form of integration are often highly destructive, but they also produce highly beneficial outcomes for some individuals and networks (De Boeck 1998). At first glance illicit gem mining in Madagascar displays the features associated with the environmental security literature: rapid population growth, unsustainable resource use and extraction and an increase in violence. In many ways the areas of illicit gem extraction might conform to Kaplan's idea of the creation of unregulated and uncontrolled black holes that constitute global security threats: they do present a challenge and threaten to destabilise the Government of Madagascar which would produce a collapsed state; this in turn is identified as a global security threat because the international system cannot tolerate the potential of such collapsed states to produce large scale refugee migrations, a spill over of violence, or their potential to allow safe havens for international criminal and/or terrorist networks.

This research did not examine large scale quantitative data sets involved in supporting the environmental security literature, nor did it focus on the abundance of natural resources in a particular location as a source of conflict. Instead, in this research I was interested in examining the dynamics visible in a specific place, and how the activities were structured and perpetuated by linkages with the international economy. In order to do this it was important to obtain information on the reason for and impacts of illicit resource extraction;

undertaking social research in extra-legal contexts presents specific difficulties which means it is not possible to obtain large scale quantitative data; and in terms of collecting qualitative information researchers have to be extremely careful about what kinds of information they attempt to collect and decide to record in order to ensure the safety of themselves and informants (see Nordstrom, 2000). Due to the need to ensure that the research does not jeopardise the safety of informants, some of the information is anonymised; while this can be problematic in terms of allowing readers to judge the credibility of information, the ethical dimensions of sensitive research into illicit activities mean that promises of confidentiality take precedence.

Since the late 1990s Madagascar has become identified as a site of rich deposits of gemstones and semi-precious stones. It contains a wide variety of minerals including gold, nickel, bauxite, iron, chromite, titanium oxide, beryl and quartz amongst others. Amongst major investors in mining in Madagascar include Qit Minerals Madagascar (a division of Rio Tinto) engaged in titanium dioxide mining in southern Madagascar,¹ and Canadian company Dynatec which has invested in a nickel mine in Ambatovy Madagascar.² Until 2003 it was thought that Madagascar had no diamonds, but in that year a mining company with an exploration permit for areas in South-Central Madagascar found two diamonds of 23 carats and 9 carats each.³ Since then, one Canadian mining company, Majescor has been attracted to Madagascar because a number of diamonds of up to 23 carats having been recovered by sapphire miners engaged in artisanal alluvial diggings; as a result Majescor has joined with De Beers to begin diamond exploration in north Western Madagascar.⁴ This has sparked investment in exploration by two other Canadian companies, Pan African Mining and Diamond Fields International.⁵ However so far it is Madagascar's sapphires and rubies which have become the most important in terms of being major sources of revenue: the stones have been judged as the highest quality, and as global demand for coloured gemstones increases they could be a growing source of revenue to the government and private mining companies.

The Government of Madagascar, along with international actors such as the World Bank and USAID, have argued that if gem mining were properly regulated and carried out by international mining companies then the revenue could be used to invest in economic development for the benefit of Madagascar as a whole.⁶ However, Madagascar's sapphires and rubies are found in alluvial deposits, making them much more accessible so that organised and commercial mining operations are not necessary to extract the gems. Given this accessibility, gem mining and trading have proved especially difficult to control. It is clear that the gems in Madagascar constitute 'lootable' resources and, due to their geography, their extraction is very difficult to control. Nevertheless, the World Bank, in conjunction with the President of Madagascar, Marc Ravalomanana (elected in 2002) have embarked on an ambitious programme to attempt to gain control over gem mining. In 2003 the World Bank provided a US\$ 32 million loan to help the country manage its minerals more effectively, through the Mineral Resources Governance Project (administered through the Ministry of Energy and Mines). This is a five year project which runs from 2003 to 2008 and is funded primarily by the World Bank, with further financial support from USAID, the South African Government and the French Government. According to the World Bank the main objective of the project is to assist the Government of Madagascar in implementing its strategy to accelerate sustainable development and reduce poverty in Madagascar through the strengthening of governance and transparency in the management of mineral resources, with

¹ *Madagascar Titanium Dioxide Project Approved* <http://www.riotinto.com/media/media.aspx?id=896> (accessed 09.06.06).

² *Madagascar's Conservation Conundrum* BBC News 11.04.04, <http://news.bbc.co.uk/1/hi/world/africa/4433817.stm>; www.dynatec.com/ca (accessed 12.06.06); south African companies have also invested, including Impala Platinum, see www.implats.co.za (accessed 09.06.06)

³ Interview with Pomphile Rakotoarimanana, Directeur de Mines et Geologie, Ministere de Mines et Geologie, Antananarivo 16.03.04.

⁴ <http://www.majescor.com/e/properties/madagascar/> (accessed 10.06.06)

⁵ <http://www.diamondfields.com/s/Madagascar.asp> (accessed 10.06.06) Diamond Fields International also works in Liberia, Namibia and Greenland; <http://www.panafrican.com/home.htm> (accessed 10.06.06); <http://www.resourceinvestor.com/pebble.asp?relid=9639> (accessed 12.06.06)

⁶ Interview with Tom Cushman, Manager/Adviser, Institut de Gemmologie de Madagascar, Antananarivo 18.03.04; interview with Josoa Razafindretsa, Environmental Policy Specialist, USAID Madagascar, Antananarivo 22.03.04; and interview with Pomphile Rakotoarimanana, Directeur de Mines et Geologie, Ministere de Mines et Geologie, Antananarivo 16.03.04.

special emphasis on small-scale and artisanal mining.⁷ However this paper will now turn to an examination of how gems are extracted and what the impacts of that extraction are.

Despite recent attempts to gain control, the ways that the gems sector has developed in Madagascar since the late 1990s makes this an extremely difficult task. As a result, the major gem deposits are still extracted by miners who work outside the formal systems of government and private business. Instead the miners are interlinked with globalised alliances of international dealers and elite cliques who ensure that the stones can be illegally exported for personal financial gain (see Ferguson, 2006). Such networks engage in *strategies of extraversion* which produce the shadow economy which is what integrates Madagascar with the global economy (Bayart, 2000; Reno, 1998; Ferguson, 2006). The Director of Mines and Geology also suggested that partly because of the ways that the gem sector had developed under the previous government, in 2004 approximately 80% of stones were still being exported as rough stones, and only 20% as cut stones; the World Bank funded Mineral Resources Governance Project set a target that 80% should be cut stones and 20% rough stones and that these should be exported through legal and transparent channels.⁸ Of course it is understandable that the current minister might be critical of the practices of the previous regime, however it is clear that the patterns of corruption associated with the Ratsiraka years still structure the way the gem industry operates.

In order to understand this it is useful to examine the logic of 'gem rushes' and how the gem sector developed into its current form. In this regard the case of Ilakaka is instructive. It echoes the arguments made by Bayart (1993; 2000), Reno (1998), Hibou (2004) and Ferguson (2006) because Ilakaka as a 'locality' is a highly globalised place and thereby disrupts strict definitions of local and global, formal and informal, legal and illegal. Ilakaka town rapidly developed in the late 1990s, after the discovery of high quality sapphires. It was estimated that the population of Ilakaka town increased from 30 people to a population of 100,000 between 1998 and 2000.⁹ By 2004 the gem mining areas covered 4000 square kilometres.¹⁰ More recently, as Ilakaka has become a very large mining centre, new areas have been subject to exploration by more recent migrants to the area, especially around Sakahara and the WWF-funded Zombitse-Mahafaly National Park, just south of Ilakaka.¹¹

The sapphires are considered to be amongst the highest quality in the world and in general sapphire mining promises opportunities of instant wealth to Malagasy people living in poverty. Serge Rajaobelina, the Director of a Malagasy NGO, Fanamby, suggested that many of the 3000 artisanal gold miners from northern Madagascar migrated to the Ilakaka and Sakahara area when news of the gem fields reached them.¹² Since the gemstones can be extracted by individuals and teams of diggers using nothing more complex than a spade, the poorest sections of Malagasy society have been migrating to Ilakaka because of the promise, or hope, of instant riches. However, the money made by diggers is minor compared to the profits made by international gem dealers in Ilakaka town and global gem dealers in Europe and Asia. A World Bank Study in 1999 found that US\$ 100 million in gems was smuggled out of Madagascar in that year alone.¹³ One interviewee involved in the gem mining sector estimated that the value of illegal gemstone exports had remained at approximately US\$100 million per annum since then, but that this was a small amount compared with the profits that might be available to the Government from regulating the extraction of industrial minerals such as titanium dioxide by Qit Minerals Madagascar/Rio Tinto.¹⁴

⁷ http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20111634-menuPK:34470-pagePK:34370-piPK:34424-theSitePK:4607_00.html (accessed 02.06.06)

⁸ Interview with Pomphile Rakotoarimanana, Director of Mines and Geology, Ministry of Mines and Geology, Antananarivo, 16.03.04.

⁹ 'Big Hopes for Madagascan Sapphires', *Financial Times* (18 August 2000); also see Laurs, B.M (2003) 'Featured Gem News International: Update on Sapphires, Pezzottaite, and Other Gems from Madagascar' *Gems and Gemology: The Quarterly Journal of the Gemmological Institute of America* Volume 39, Issue 3, http://www.gia.edu/gemsandgemology/18578/18175/1969/back_issue_article_detail.cfm

¹⁰ Interview with Tom Cushman, Manager/Adviser, Institut de Gemmologie de Madagascar, Antananarivo 18.03.04.

¹¹ Interview with Joanna Durbin, Director of the Madagascar Programme, Durrell Wildlife Conservation Trust, 31.03.04; Joanna Durbin previously worked for WWF-Madagascar in the Zombitse-Mahafaly Park.

¹² Interview with Serge Rajaobelina, Director of Fanamby, Antananarivo, 26.03.04.

¹³ 'Sapphires in the Sand', *Focus* (August 2000). For further information on the World Bank reports on Madagascar and the sapphire sector see: <http://www.worldbank.org/afr/wps/wp19/1.pdf>; and <http://www4.worldbank.org/afr/poverty/pdf/docnav/03298.pdf>. (accessed 5 September 2002).

¹⁴ Anonymous Interviewee; also see www.riotinto.com.

In general, the migrant miners have little ability to judge the quality of the stones they bring into Ilakaka town to sell. This puts the foreign gem dealers into a very powerful position: they are able, for instance, to claim that a stone has imperfections that will make it hard to cut. In general, the diggers get a very low price for the stones they find, but because they are cash-poor even a small amount of money is worth working for.¹⁵ Since the mining and trade in gems are largely illegal, the diggers have no recourse to appeal to if they believe they are getting an unfair price for their stones.¹⁶ The buyers are able to make large profits from working in Ilakaka because they are able to set the price for stones, and the buyers tend to cooperate to ensure that the prices paid to diggers are low, while the final polished version will sell for the highest price once it has been taken out of Madagascar. The Director of Conservation for WWF-Madagascar, which works in an area adjacent to the Ilakaka gem fields, Isalo National Park, suggested that the buyers co-operate over setting prices to ensure that diggers cannot go from buyer to buyer looking for a good price; instead, he claimed, that buyers who 'broke ranks' and started to offer higher prices to diggers would be in personal danger.¹⁷ Again this indicates that the networks involved in gem extraction in Madagascar have gained control over the local economy and are able to use symbolic or actual violence to enforce that control (Ferguson, 2006; Reno, 1998; Nordstrom, 2004).

It is clear that the mining is not disorganised and haphazard. Rather the mining that is undertaken by seemingly disorganised and unconnected individuals is structured and supported by the alliances between key members of the Malagasy elites and the international gem dealers who have established gem buying centres and stalls in the Ilakaka area.

Global Networks and Parallel Economies

It is useful to use Bayart's notion of *pays réel* to examine the workings of illicit mining and gem trafficking (Bayart, 2000). Although it might look anarchic and chaotic from one perspective, it clearly has a logic and organisational form that operates through networks of miners, gem traders, state officials and international business. Furthermore, an analysis of the nature of these networks indicates that it is not useful to think of Ilakaka as a bounded 'locality', it is at once a local site and a global site characterised by a high degree of integration into the global economy alongside its attached twin of poverty, marginalisation and exclusion. While at first glance it appears to be the dangerous and underdeveloped 'black hole' assumed by the environmental security argument, Ilakaka is in fact much more complex than that. An understanding of the dynamics that produce Ilakaka as a site of gem mining, population growth, and environmental change calls for a more sophisticated understanding than the environmental security debate would suggest.

The organisation of illicit sapphire mining is complex and spans global and local networks: it conforms to Reno's notion of the shadow state as constituted by high-ranking politicians and businessmen linked to global networks which in turn underwrite their power and authority within a particular location. One interviewee who preferred to remain anonymous suggested that under Ratsiraka Government, his family had organised groups of impoverished diggers as cheap labour to dig big holes searching for rubies in Vatomaniry in eastern Madagascar and sapphires in south-central Madagascar; and then the Ratsiraka family sold the gems on the international market for personal profit.¹⁸ One interviewee claimed that especially under the Ratsiraka Government, prominent members of the ruling elite and the president's family were able to exploit ruby deposits in particular with the knowledge and co-operation of foreign companies that were willing to exploit corruption and lack of regulation in the gem sector.¹⁹ In Ilakaka economically impoverished Malagasy men travel to the gem areas to seek employment; they either work alone or are organised through clandestine networks headed by individuals within the Malagasy elite. The diggers then sell their unpolished stones to gem dealers (usually Thai, Sri Lankan or Indian, but also African, European and North America) who have established a gem buying business in the sapphire areas. Finally, the gem buyers traffic the stones out of Madagascar through airports or by sea, with assistance from key individuals within relevant customs departments, government agencies and local businesses.

¹⁵ Interview with Joseph Ramamaonjisoa, Director of Conservation, WWF-Madagascar, Antananarivo, 29.08.01.

¹⁶ 'Prospectors and Poverty Mar an Island Paradise', *Financial Times* (3 February 2001); also Interview with Beatrice Olga Randrianarison, STD and AIDS Unit Head, Catholic Relief Services – Madagascar, Antananarivo, 30.03.04.

¹⁷ Interview with Joseph Ramamaonjisoa, Director of Conservation, WWF-Madagascar, Antananarivo, 29.08.01.

¹⁸ Anonymous interviewee.

¹⁹ Anonymous interviewee.

Illicit sapphire mining is thus highly dependent upon these complex clandestine or shadow networks that include international actors and local Malagasy from all sections of society. However, it is clear that despite the illegal export of the stones, there were individuals and sections of society within Madagascar which did (and still do) profit from the trade. One interviewee who worked in the mining sector claimed that 500,000 people were making money in some way from the extra-legal mining industry, which made it the second largest employer in the country behind agriculture. That revenue had an impact on the direction and pace of other developments in Madagascar, particularly in urban areas where new found wealth from the parallel economy in gems was funnelled into purchasing luxury imported goods and property development, including the establishment of new casinos and hotels.²⁰ These networks have proved to be highly resilient, flexible and adaptable. They have managed to evade attempts at control under the Mineral Resources Governance Project partly because they are embedded within globalised networks that cross-cut and challenge the agendas of the formal state apparatus, donors, NGOs and international financial institutions. Sapphire mining in Ilakaka is linked with global networks of gem dealers and smugglers that stretch into sub-Saharan Africa (Rwanda, Mauritania, South Africa and the Democratic Republic of Congo), Asia (Sri Lanka, Laos, Thailand and Burma)²¹ and on to Europe. These global networks rely heavily on invisible economic and political networks of elites within Madagascar that intersect with, and are almost indistinguishable from, the formal apparatus of the state (Bayart, 2000; Reno, 1998; Hibou, 2004; Bayart, Ellis and Hibou, 1999).

The confusion and lack of regulation of Ilakaka provides perfect conditions for a shadow state to thrive. The pre-2002 Ratsiraka government failed to determine how many sapphires were in the area, what their value was, or how they were being mined. This allowed for wildcat illegal mining to develop and for criminal networks to flourish.²² Tom Cushman of the Institut de Gemmologie in Madagascar stated that Thai and Sri Lankan buyers have a very clear presence in Ilakaka but that traders were drawn from all over the world.²³ This is evident from the physical characteristics of Ilakaka town itself: shops in Ilakaka town have names such as Thai-Mada Cooperation, Congo Gems, Colombo Gems and Sri Lanka Saphir. The names of the shops bear witness to Ilakaka's close links with transnational trading routes and broader processes of globalisation. Furthermore, Thailand and Sri Lanka have developed a global reputation for specific expertise in grading, polishing and selling rubies and sapphires in particular (Macfarlane, Tallontire and Martin (2003: 58-71).

It is impossible to place a precise value on the stones that are traded in Ilakaka each day, but one rough estimate was that US\$ 4 million worth of stones changed hands each day in 2001 when trading in Ilakaka was at its height.²⁴ Despite this massive cash flow in southern Madagascar, the value of the Malagasy franc continued to fall against the US dollar. Rather than feeding into the formal economy, the income generated from the gem sector remains locked in an informal and illegal economy which is populated by gem dealers, criminal organisations, protection racketeers, miners and individuals in the Malagasy elite. While the biggest traders are foreigners, rumours have abounded that top Malagasy officials and members of Ratsiraka's family have been able to siphon off large profits from the illegal gem sector as well.²⁵ In sum, the illicit economy surrounding Ilakaka and the development of the shadow state in Madagascar are intimately linked with the global economy (see Reno, 1998; Ferguson 2006).

The Social and Environmental Impacts of Illicit Gemstone Mining

In terms of social and environmental impacts, Ilakaka appears to conform to notions of environmental security; it displays violence, disease, overuse of natural resources (especially water) and poverty. But it is important to understand how these impacts are produced and why they are manifested in highly uneven ways as demonstrated by the appearance of

²⁰ Anonymous interviewee.

²¹ <http://www.thaigem.com/email/gemscoop/gemscoop135.html> (accessed 02.06.06). Also see Duffy (2005).

²² For further discussion, see 'Prospectors and Poverty Mar an Island Paradise', *Financial Times* (3 February 2001).

²³ Interview with Tom Cushman, Manager/Adviser, Institut de Gemmologie de Madagascar, Antananarivo 18.03.04; <http://www.thaigem.com/email/gemscoop/gemscoop135.html> (accessed 02.06.06).

²⁴ Interview with Tom Cushman, Manager/Adviser, Institut de Gemmologie de Madagascar, Antananarivo 18.03.04; interview with Josoa Razafindretsa, Environmental Policy Specialist, USAID Madagascar, Antananarivo 22.03.04; and see 'Sapphires in the Sand', *Focus* (August 2000).

²⁵ Anonymous interviewee; also see 'Blue Dreams in a World of Red Clay', *Financial Times* (18 August 2001).

enormous wealth and obvious poverty in the same places. As Ferguson (2006) notes globalisation in Africa produces benefits for some networks and groups, but its *attached twin* is characterised by marginalisation, violence and exclusion. These forms of globalisation produce locally specific problems in Ilakaka in particular, and in Madagascar more generally. The current structure of the gem mining and trading sectors has created numerous economic and social problems. This is in line with Ferguson's (2006) argument that capital hops and skips across Sub-Saharan Africa so that it produces exclusion, marginalisation and social problems within specific locations. For example, when miners get a good price for their finds, sale of the stones gives them instant access to cash, which even in small amounts makes a big difference to individuals. Beatrice Olga Randrianarison of Catholic Relief Services which has worked in Ilakaka since it experienced its first gem rushes, suggested that the cultures surrounding the mining areas means that few people really value money because one day they have nothing and after a good sale they suddenly feel rich and spend the money very quickly.²⁶ Rumours of sapphires the size of footballs and of fortunes made in a single day have made Ilakaka irresistible. This is also evident in Ilakaka, because the income tends to go on conspicuous consumption: prostitutes, alcohol and gambling (see Walsh 2002; Walsh 2003). In Ilakaka this is called *mepoka*, which denotes a desire to get rich quickly.²⁷

The growing number of male diggers and dealers with large amounts of disposable income has created a demand for prostitutes. While many of the women working in the Ilakaka brothels and bars have migrated there from elsewhere in Madagascar, because of the promise of easy earnings, local Bara women and girls have begun to be drawn into the town. This has created serious social problems within the Bara communities as girls have begun to leave school in order to become prostitutes. In addition, rates of HIV/AIDS and other sexually transmitted diseases are increasing. Consequently, in 2002 the Ministry of Health designated Ilakaka a 'red zone', a term reserved for 'emergency areas'.²⁸ Since Ilakaka is located on the main Route National 7, there were fears that truck drivers could become infected with HIV/AIDs and spread it throughout Madagascar.²⁹

The sapphire boom has also created significant public health problems. In the initial years of the sapphire rush, the mining area suffered from a serious cholera outbreak in 1998 due to lack of adequate sanitation and contaminated water supplies. The only visible organisation in Ilakaka, the Catholic Relief Services, originally became involved in the area to run a project aimed at preventing cholera. However, by 2001 cholera was under control, even if it was not eradicated. Spurred on by this success, the Catholic Relief Services has now turned its attention to curbing sexually transmitted diseases, including HIV/AIDS.³⁰

The water supply in Ilakaka has also become contaminated. Prior to the discovery of sapphires the river in the areas was a key resource for the local community as a source of drinking water, source of irrigation, and for washing.³¹ The impact on the water supply is an example of the social and health problems produced in a context of massive flows of capital through the town; it indicates the ways that the profits made from gem mining and extraction are not used for the benefit of local communities. In Ilakaka, the already poverty stricken miners have to bear the social and environmental costs of mining where profits are extracted for the benefit of global and national elite cliques. For example, since the area is one of porous sandstone, the local water supply has become polluted with the chemicals that the miners use to wash their stones, in preparation for selling them to the gem dealers. The sandstone had ensured that Ilakaka had very pure water, because it acted as a filter, but since the discovery of sapphires people in Ilakaka have started to buy water from the next

²⁶ Interview with Beatrice Olga Randrianarison, STD and AIDS Unit Head, Catholic Relief Services – Madagascar, Antananarivo, 30.03.04.

²⁷ Interview with Beatrice Olga Randrianarison, STD and AIDS Unit Head, Catholic Relief Services – Madagascar, Antananarivo, 30.03.04.

²⁸ Interview with Beatrice Olga Randrianarison, STD and AIDS Unit Head, Catholic Relief Services – Madagascar, Antananarivo, 30.03.04; also see http://www.catholicrelief.org/our_work/where_we_work/overseas/africa/madagascar/index.cfm (accessed 15 August 2004).

²⁹ Currently Madagascar has a very low rate of infection, UNAIDs estimates that 0.2-1.2% of the population are living with HIV. See <http://www.unaids.org/en/> (accessed 25.05.06)

³⁰ Interview with Beatrice Olga Randrianarison, STD and AIDS Unit Head, Catholic Relief Services – Madagascar, Antananarivo, 30.03.04.

³¹ Interview with Beatrice Olga Randrianarison, STD and AIDS Unit Head, Catholic Relief Services – Madagascar, Antananarivo, 30.03.04.

village, Ranohira. The water trucks come into the town to sell drinking water to those who can afford it.³²

Mining has also impacted on the water supply for agricultural areas. The diggers have diverted the river to areas where they wash the stones, significantly reducing the amount of water running downstream to rice-growing areas, so that large volumes of sand are washed downstream onto the rice fields. As a result, people in Ilakaka are dependent on buying in rice at inflated prices.³³ This again indicates the importance of shadow networks in Madagascar, not only in terms of their challenge to formal systems of governance, such as the Mineral Resources Governance Project, but also in terms of meeting the daily needs of people living in Ilakaka (see Nordstrom, 2001; Nordstrom, 2004).

As a result of the lack of formal controls over Ilakaka, miners have faced significant hazards and threats to their safety and health. Numerous diggers have been buried as the holes and tunnels they were working in have collapsed; since the digging is unregulated, the majority of deaths amongst the miners go unrecorded and unnoticed.³⁴ According to Dominique Rakotomanga of the International Programme For Elimination of Child Labour, children are often used to mine narrow tunnels where there are regular accidents and children are killed by landslides or collapsing tunnels; the programme has collected some data from ruby mining areas in Antsiranana and Vatomaniry in northern and eastern Madagascar but have as yet not collected any data on children working in the Ilakaka area.³⁵

In line with this Ferguson notes that the Africa as characterised by global shadows is also reliant on the symbolic value and actual value of violence (Ferguson, 2006; also see Reno, 1998). One of the key arguments of the environmental security debate is that environmental scarcity and degradation are linked to the prevalence of intra and inter state conflict. As yet in Ilakaka there is no large scale violent conflict, but this does not mean that the area is violence-free. It is interesting to note that in the environmental security literature there is a focus on cases where resources (such as diamonds) are a factor in causing and supporting warfare. The Ilakaka case displays some of the same feature as the diamond areas of Sierra Leone, Angola and the Democratic Republic of Congo but the violence is small scale and contained. For example, the illegal nature of gem mining and trading has created an industry centred on protection and extortion: it is common for dealers to have hired armed protection. The brothels and bars are sites of violence, and are identified as extremely dangerous at night-time, and the violence can easily erupt into shoot-outs between rival gem dealers and their bodyguards.³⁶ One interview claimed that during 2000 there were numerous incidences of violence in Ilakaka, and the skirmishes had resulted in more police being deployed to the area and the need to ask the army to intervene. He said 'it is like this every day, shooting, like Texas'.³⁷ This confirms Reno's (1998) argument that players within shadow networks organise their own forms of private protection: a key feature of the shadow state is the development of privatised security that is an alternative to the formal security systems, which are usually the preserve of the state apparatus (also see Nordstrom, 2004; Ferguson, 2006).

Apart from the political, economic and social impacts of the kind of globalisation evident in the gem sector, there have also been environmental consequences. The Wildlife Conservation Society has become concerned about the potential impact of gem stone mining on forested areas. As a result they have been part of a lobbying campaign directed at the Government of Madagascar, to identify and designate 'no-go' areas for mining. The campaign has been articulated in terms of the economic value of forested areas as potential sites of

³² Interview with Parfait Randriamampianina, Director of Parks, ANGAP, Antananarivo, 21.08.01; see also 'Blue Dreams in a World of Red Clay', *Financial Times* (18 August 2001).

³³ Interview with Parfait Randriamampianina, Director of Parks, ANGAP, Antananarivo, 21.08.01; see also 'Sapphires in the Sand', *Focus* (August 2000).

³⁴ Interview with Parfait Randriamampianina, Director of Parks, ANGAP, Antananarivo, 21.08.01; see also 'Blue Dreams in a World of Red Clay', *Financial Times* (18 August 2001); and 'Sapphires in the Sand', *Focus* (August 2000).

³⁵ Interview with Dominique Rakotomanga, International Programme for Elimination of Child Labour, Antananarivo, 16.03.04.

³⁶ Interview with Beatrice Olga Randrianarison, STD and AIDS Unit Head, Catholic Relief Services – Madagascar, Antananarivo, 30.03.04; interview with Parfait Randriamampianina, Director of Parks, ANGAP, Antananarivo, 21.08.01; pers. comm. Emison Jose, ANGAP guide, Isalo National Park, 25.08.01. Also see, 'Prospectors and Poverty Mar an Island Paradise', *Financial Times* (3 February 2001).

³⁷ Anonymous interviewee. On my fieldwork visit to Ilakaka in 2004, I witnessed a violent clash involving hundreds of people on the main road; the single police officer sent to deal with it flagged down our vehicle and asked us and take him back to his police station on the grounds that he could not cope and was afraid.

ecotourism development. Helen Crowley of the Wildlife Conservation Society (Madagascar) stated that it was important to demonstrate that the forests could be more economically valuable to the people and Government of Madagascar in the long term through their development as protected areas that could become major sources of revenue from tourism. Environmental NGOs in Madagascar have decided that it was best to talk in terms that the mining companies understood, and since they understood the language of the market the best way to persuade the private sector and the Government of Madagascar to conserve biodiverse forest areas is to argue that the forests will be more profitable in the long term if they are conserved.³⁸

Conservation International and Wildlife Conservation Society both have 'local chapters' of their organisation based in Madagascar and they are extremely important international NGOs within Madagascar. This is because both NGOs hold seats on the 'Donor Consortium' in Madagascar which includes the World Bank, the Government of Madagascar, World Wide Fund for Nature (WWF), and bilateral donors including Cooperation Suisse, Cooperation Francaise, the German development agency GTZ and the Japanese Government (see Duffy, 2006). This means that they can exercise a great deal of political power within the Donor Consortium, especially when the three international environmental NGOs within the Donor Consortium are able to agree and act in concert. So far it has meant that the Ministry of Water and Forests, the Ministry of Environment and the Ministry of Mining have begun to collaborate together to tackle the problem of unregulated gemstone mining.³⁹

The map of potential gemstone areas which was produced by USAID in 2004 has been a serious cause for concern amongst the conservation community in Madagascar because it clearly shows that gem areas are contiguous with protected areas and tropical rainforests with high levels of biodiversity. For many conservation NGOs the challenge is to demonstrate to the Malagasy government, donors and private business that ecotourism and the creation of more national parks is financially more sustainable in the long term than exploiting the areas for gems.⁴⁰ Furthermore, since new gemstone areas have been identified in key sites of tropical forest in Madagascar, USAID has lobbied hard for the creation of a Joint Committee on Forests and Mining to guide and determine policy towards potential mining areas.⁴¹

However, the plans to designate no-go areas for mining companies still fails to cover the areas where illicit mining is carried out in areas of high biodiversity, rainforest areas and mining in the vicinity of national parks. It is clear that illicit gem mining continues to benefit a narrow section of society in Madagascar, mostly clustered around sections of the political and economic elite (for further discussion see Reno, 1998; Ferguson, 2006). While a few individual gem diggers may derive some economic benefit from the sale of stones within Ilakaka itself, the main beneficiaries are the political and economic elite linked to global networks that trade gems in the international system.

In environmental terms, the geographical position of Ilakaka is significant because it is close to Isalo National Park, a key protected area in Madagascar's conservation estate. The park covers 81,000 hectares and is the country's most important in terms of tourism revenue. It contains numerous different species of lemurs, but a particular attraction is the *verreaux sifaka*, endemic to southern Madagascar. The Parks Department (ANGAP) and other donors involved in the area became concerned about the impact of illegal, unregulated mining and its rapid expansion into the park. One concern is about the damage that the mining will inflict on the area: the ANGAP park managers are worried that once the area is exhausted of gems, the landscape will be left with highly visible and unappealing scars from the mining, which could adversely affect the development of tourism in the park and surrounding area.⁴²

The confusion and the rumours surrounding the size and quality of the sapphire deposits provided an ideal environment for a shadow state to flourish. Indeed the rumours — which are almost impossible to control at the global level, national level or through initiatives

³⁸ Interview with Dr. Helen Crowley, Country Director, Madagascar Programme, Wildlife Conservation Society, Antananarivo 25.03.04.

³⁹ Interview with Josoa Razafindretsa, Environmental Policy Specialist, USAID Madagascar, Antananarivo 22.03.04.

⁴⁰ Interview with Dr. Helen Crowley, Country Director, Madagascar Programme, Wildlife Conservation Society, Antananarivo 25.03.04; interview with Josoa Razafindretsa, Environmental Policy Specialist, USAID Madagascar, Antananarivo 22.03.04.

⁴¹ Interview with Josoa Razafindretsa, Environmental Policy Specialist, USAID Madagascar, Antananarivo 22.03.04.

⁴² Interview with Jose Ravelonandro, Chef de Volet Ecotourisme, Isalo National Park, Ranohira, 29.08.01.

from international financial institutions— have an impact beyond mere gossip amongst Ilakaka's inhabitants. As a result of rumours, the belief spread that the area immediately around Ilakaka had been exhausted of the best sapphires, and that the National Park itself contained bigger stones of even higher quality. Parfait Randriamampianina, the former Director of Isalo National Park, also suggested that the diggers and gem dealers believed that the government knew this, and that was why the area had been gazetted as a National Park in the first place. The illegal miners also believed that he, as the Park Director, knew the location of the biggest and best sapphire deposits. Consequently, his life had been threatened on a number of occasions, and he was transferred to the ANGAP office in the capital as a precaution. Nor were the Malagasy sapphire miners the only problem: as rumours of big deposits spread, foreign tourists were also entering the park with spades and starting to dig for gems. ANGAP responded with a stipulation that all visitors to the park had to be accompanied by a licensed ANGAP guide.⁴³ This is indicative of the power of invisible networks that resist attempts to control their activities: the threats and intimidation directed at ANGAP staff demonstrate the confidence with which these shadow networks regard their own power and influence in the local area and even beyond.

Conclusion

To conclude, this paper has argued that the environmental security debate is highly influential in terms of thinking about how environmental change might produce violence as a result of environmental scarcity. This in turn is related to the increasing fashion for thinking about underdevelopment as a source of danger for the North, which informs foreign policy making towards Sub-Saharan Africa. However, while some environmental processes might well appear to conform to the environmental security model, it is important to more carefully examine the complex processes that produce particular forms of environmental stress, poverty, violence and resource extraction. Furthermore, one of the literatures which critiques environmental security, namely political ecology also focuses on the resource itself (in terms of its abundance) as a cause of violence in the South. The case of Ilakaka demonstrates that it is useful to examine the complex chains that link specific localities to the global; economy through illicit trading networks, which are by and large ignored by the literatures centred on environmental security and on political ecology. It is clear that illicit gemstone mining to meet the demand for jewellery in Europe, North America and South Asia produces wealth, but it also creates and sustains its attached twin of poverty, exclusion and marginalisation. This approach helps us to understand the ways that specific locations in the South are linked to the global economy and how different actors involved in illicit gemstone mining might act as producers of nature and environmental change provides a more sophisticated explanation for the dynamics we can see in Ilakaka.

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