

Environmental justice in Cuba

Abstract

'Environmental justice' refers to the human right to a healthy and safe environment, a fair share of natural resources, access to environmental information and participation in environmental decision-making. Some analysts have argued that environmental justice is undermined by the political economy of capitalism. This paper builds on this analysis by evaluating the environmental justice situation in Cuba, a country where there is little capitalist influence. Evidence is based on participant observation and interviews in Cuba, as well as secondary quantitative data. The research findings suggest that Cuba fares relatively well in terms of environmental justice, but still faces a number of challenges regarding the quality of its environment and some aspects of the environmental decision-making process. However, many of its ongoing problems can be attributed to global capitalist pressures.

Key words: capitalism, causes, environment, equality, participation

Most commentators agree that the term 'environmental justice' emerged in the 1980s, out of resistance to the siting of toxic facilities in black and other minority ethnic communities in the United States. A defining moment was the publication of research that showed that hazardous installations, such as toxic waste dumps, were often located in areas with higher percentages of 'people of color' (UCC, 1987). This study was followed by further investigations which confirmed that poor and minority ethnic communities in the US were disproportionately exposed to environmental hazards (Bryant and Mohai, 1992; Adeola, 1994; Cutter, 1995) and received unequal protection under environmental law (Lavelle and Coyle, 1992). Thus, the term was originally applied to the socio-spatial distribution of pollution within national borders and, in particular, environmental racism in facility

siting. However, influenced by social movement discourse and recent literature (e.g. Pellow, 2007; Schlosberg, 2007), I am using the term in a broader and more radical way to include the overall quality of the environment (substantive environmental justice); the extent of environmental equalities (distributive environmental justice); and the fairness and inclusiveness of environmental decision-making (procedural environmental justice).¹ At the same time, I am limiting the discussion to the current intra-national situation, rather than the inter-national or inter-generational dimensions.

Policy responses to environmental injustice, in both the US and the UK, seem to have made little, if any, difference to the problem (Sustainable Development Commission, 2003; Bullard et al., 2007). It is unlikely that the issue can be solved until the causes are better understood, yet there has been relatively little academic attention given to researching the underlying factors (Walker and Eames, 2006). Debates about causes have tended to be around the following themes: *discrimination* (Bullard, 1983, 1994; Center, 1996; PinderHughes, 1996; Bullard et al., 2007); *market efficiency* (Been, 1994; Lambert and Boerner, 1997); *industrialization* (Beck, 1992, 1995, 1999; Schnaiberg and Gould, 2000); *power inequalities* (Boyce, 2001; Pastor et al., 2001; Berry, 2003); and the *political economy of capitalism* (Faber and O'Conner, 1993; Harvey, 1996; Pellow, 2007).

The aim of this study was to build on this debate by focussing on the last, and most frequently overlooked of these, the political economy of capitalism. The few authors that do explicitly focus on capitalism allege that it fosters environmental injustice through producing intense ecological harm, as well as extensive social hierarchies, primarily those of race, class, gender and nation. This occurs, they maintain, as a direct result of capitalism's need for infinite economic growth, requiring incessant production and consumption. These consumption patterns can only be maintained through appropriation and destruction of the resources of the poorer nations and communities. In addition, under capitalism, there is a need for short-term profit, in order for businesses to survive. This encourages cost cutting, putting pressure on corporations to choose the cheapest, rather than the most sustainable, process so that there is a clear and direct conflict between environmental protection and corporate profits. Such economic 'efficiency' also creates social inequality by depressing wages and fostering unemployment whilst, at the same time, profits accrue to shareholders. Inequality is further reinforced as benefits are distributed according to purchasing

power. Thus, it is claimed 'The production of social inequalities by race, class, gender, and nation is not an aberration or the result of market failures. Rather, it is evidence of the normal, routine, functioning of capitalist economies' (Pellow, 2007: 17).

In order to contribute to this debate, it seemed useful to actually look at a non-capitalist state to see how it fares in terms of environmental justice (in its widest sense). Thus, I decided to look at a country which, after 50 years of socialism, I believed would be minimally impacted by capitalism – Cuba. The country was also of particular interest as it had recently been identified as the only country in the world to have achieved sustainable development by the World Wildlife Fund (2006).

Methodology

Evaluating Cuba's performance in terms of environmental justice was challenging as it was hindered by the extreme positions that most commentators seem to take.² This is the result of the political context in which Cuba exists. Since the revolution in 1959, Cuba has been the recipient of relentless US efforts to overthrow the government. As well as an ongoing blockade,³ this has included proactive sponsorship of opposition groups; stated attempts to use academic work to destabilize the Cuban system; a crusade of disinformation; and a campaign of aggression, including sabotage, terrorism, an invasion, attempted assassinations of the leadership, biological attacks and hotel bombings (Saney, 2004; Kapcia, 2008).

The situation amounts to an undeclared war and, consequently, many Cubans are reluctant to admit any failings which could be used as justification for further attacks. Thus, any claim of objectivity or neutrality when researching Cuba appears nonsensical since, whatever is said about the country, can be used as ammunition by one side or the other. To increase reliability, therefore, I employed a complex range of data gathering techniques including participant observations, documentary analysis, literature reviews, semi-structured interviews and secondary quantitative material.

The fieldwork took place over 15 weeks, between mid December, 2008, and the end of March, 2009. I was based in Havana but also travelled fairly extensively, visiting 19 other towns, cities and villages on the island. I interviewed a total of 68 people: those representing state

institutions ($n = 21$); those representing civil society organizations ($n = 17$); experts ($n = 5$); workers ($n = 9$); and residents ($n = 16$). Participant observation involved visiting areas, projects and communities where there were potential environmental justice issues; taking part in activities that constitute the everyday lives of the people experiencing the environmental justice or injustice; and attending public meetings where environmental decisions were being made.

The study was necessarily exploratory, as there do not appear to have been any previous studies specifically looking at environmental justice within Cuba. It was, therefore, broad in scope, so it is only possible to highlight some of the main findings here. These will be discussed with regard to substantive, distributional and procedural environmental justice.

Substantive environmental justice in Cuba

Historically, Cuba has suffered hundreds of years of environmental degradation as a result of intensive exploitation of minerals and other natural resources, lack of environmental legislation, exhaustive export commodity production, and poor agricultural practices (see Diaz-Briquets and Pérez-López, 2000; Houck, 2003; Maldonado, 2003; Whittle and Rey Santos, 2006). These problems seem to have begun under colonial rule, first by Spain and then by the United States, during which time the main concern was exploitation of natural resources (Fernández, 2002; Funes Monzote, 2008). Even after the 1959 revolution, the degradation intensified when the country embraced the so-called 'green revolution', an era of intensive, industrialized agriculture and heavy use of chemical fertilizers and pesticides⁴ (Gonzalez, 2003).

However, in 1992, after a landmark speech at the Rio Earth Summit, the government initiated a series of reforms aimed at redressing past environmental harms and minimizing future degradation. This included establishing a new and powerful Ministry of Science, Technology, and Environment (CITMA); publishing the country's first environmental programme – 'The National Environmental Strategy'; and passing new framework environmental legislation, Law 81, 'The Law of the Environment'. The new law established the basis of an enforcement system that includes emissions monitoring, inspections, civil and criminal penalties, as well as opportunities for private citizens to seek

justice regarding environmental violations through the courts. The most important general principles of Law 81, from an environmental justice perspective, are that it establishes:

- the right to a healthy environment (Article 4(a))
- the precautionary principle⁵
- the right to environmental information (Article 4(e))
- the right to be consulted on environmental actions and decisions (Article 4(k))
- the necessity for community participation to achieve effective environmental decision-making (Article 4(m))
- the right to access to administrative and judicial bodies to demand compliance with the law (Article 4(l)).

These legislative reforms were accompanied by practical measures which made a dramatic difference to Cuban daily life. For example, industrialized agriculture, featuring large-scale irrigation schemes and considerable inputs of chemicals, was rejected in favour of organic food production (Rosset and Benjamin, 1995; Levins, 2005). Cuba also moved away from a transportation system that was dependent on oil (Diaz-Briquets and Perez-Lopez, 1995) and turned to renewable energy sources and energy conservation (see Guevara-Stone, 2009). In addition, reforestation schemes were stepped up and systems were established to ensure managed protection of ecologically, socially, historically, and culturally important areas.

It is frequently alleged (e.g. Kaufman, 1993; Diaz-Briquets and Perez-Lopez, 1993) that the environmental improvements made in the 1990s were not born of any genuine environmental commitment on the part of the government, but were rather an improvised emergency response to the 'Special Period'. However, I do not believe this to be the case as Cuba could have chosen other options, such as IMF-style cuts to basic services, in response to the crisis. Moreover, the environmental changes were consistent with ongoing developments and debates in the country. For example, there were a number of environmental programmes already in place, going back to the 1960s (Levins, 2005), and the pre-existing environmental law (Law 33, passed in 1981) had been widely considered to be pioneering for the region (Whittle and Rey Santos, 2006). The relative weight accorded to environmental concerns in Cuba in the first decades after the revolution, reflected the dominant thinking globally, though there were fierce debates between ecologists

and those who advocated 'modernization' (Levins, 2005). Levins argues that it is socialism that enabled the ecologists to win the debate in Cuba because 'Nobody was pushing pesticides or mechanization to make a profit . . . Socialism made ecological choices more likely' (2005: 14).

Consequently, many people that I interviewed, or spoke to informally, in Cuba said they were happy with their environment and proud of the country's achievements in this respect. The most widely appreciated aspects included the provision of low-cost (or, sometimes, free) housing, food, public transport and utilities; successful energy efficiency programmes; care of the population during hurricanes;⁶ urban agriculture initiatives;⁷ improvement of public transport; and improvements in workplace safety. The 'Revolución Energética' (Energy Revolution), which began in 2006, is a particularly good example of an environmental policy, which also addresses environmental justice. This initiative endeavoured to save energy and use more sustainable sources. The programme included replacing household appliances with more efficient and safer equipment, supplied free or at low cost to the entire population. Cuba's transport policy is another example of a strategy which both improves the environment and increases social justice. The number of private cars has been kept in check by the state's car ownership policy where people cannot purchase cars just because they have the money to buy them. All cars are assigned according to the needs and responsibility that the person has and there is no encouragement to perceive cars as an individual item for consumption. There is now considerable investment in public transport (Taylor, 2009) and, in addition, planning policies have reduced the need for travel. Mixed-use developments are encouraged so that, where new housing is constructed, enough new facilities and jobs are provided locally. Furthermore, financial support enables people to exchange their job for one closer to their home, if they wish (Enoch et al., 2004; Taylor, 2009).

However, as well as praising the successes and improvements, many people complained about certain aspects of the environment. These were in regard to inadequate sanitation; shortcomings in the water supply; river and air pollution; deficiencies in waste collection services; damaged streets; and inadequate and insufficient housing. This fits with a previous government survey that showed extensive soil erosion, deforestation, inland and coastal water pollution, loss of biodiversity, and poor sanitation in cities and rural areas (CITMA, 1997). The 'Special Period' also increased some problems, including deforestation, illegal

hunting and fishing, the trade in wild species, habitat destruction and illegal dumping (CITMA, 1992, cited in Maal-Bared, 2006). Though some of this environmental harm has been committed by individuals, the most severe environmental destruction has resulted from major projects and industries owned by the state or international companies (Maal-Bared, 2006). This has usually been in relation to tourism and industrial production, in particular, there has been a report of serious pollution from the expanding nickel industry⁸ (Chavez, 2008). The environmental experts I spoke to in Cuba recognized that there was no cause for complacency and were keenly aware of the work to be done (e.g. interviews, Director of Environmental Policy, CITMA; Director of Centre for Environmental Studies, University of Havana).

Although there were clearly serious problems in particular areas, if we compare Cuba with other countries, however, it does seem to be doing relatively well in terms of substantial environmental justice. As Table 1 shows, Cuba uses much less energy and emits less CO₂ and other air particulates than the average Latin American country or country of a similar income bracket. In addition, it has much better sanitation coverage than these countries and a similar level of improved water source coverage. So, though substantive environmental justice in Cuba was unsatisfactory, and even seriously deficient for some people, it seems to be comparatively good.

Moreover, Cuba has to live with its own pollution because, unlike the developed capitalist countries, it is not exporting its waste to other parts of the world (see Pellow, 2007; Davis and Caldeira, 2010).

Distributional environmental justice

Cuba puts great emphasis on achieving social equality, and uses macro-economic and social policies based on universality and equitable access to achieve this (Rodríguez and Carrizo Moreno, 1987; Regueiro and Alonso, 2001, cited in Coyula and Hamberg, 2003). This includes measures to reduce wage inequality; keep prices for goods and services low; assure equal and affordable access to essential food and consumer goods through the 'libreta' ration system; and extend social security, welfare, sports and cultural activities to the entire population for free, or at very low cost. The introduction of these measures, in particular, the libreta (ration book) had the greatest benefit for the poor, while limiting the excesses of the rich, to some extent.

Table 1 Comparison of environmental indicators

| <i>Indicator</i> | <i>Cuba</i> | <i>Other UMICs*</i> | <i>Other LACs**</i> |
|---|-------------|---------------------|---------------------|
| Energy use (kg of oil equivalent per capita) | 944 | 2109 | 1243 |
| Electric power consumption (kWh per capita) | 1231 | 2957 | 1812 |
| Electricity production from coal sources (% of total) | 0.0 | 26.4 | 5.2 |
| CO ₂ emissions (metric tons per capita) | 2.2 | 5.1 | 2.5 |
| PM10, country level (micrograms per cubic meter) [†] | 17 | 32 | 35 |
| Improved water source (% of population with access) | 91 | 94 | 91 |
| Improved water source, rural (% of rural pop. with access) | 78 | 82 | 73 |
| Improved water source, urban (% of urban pop. with access) | 95 | 98 | 97 |
| Improved sanitation facilities (% of pop. with access) | 98 | 82 | 78 |
| Improved sanitation facilities, rural (% of rural population) | 95 | 63 | 51 |
| Improved sanitation facilities, urban (% of urban population) | 99 | 89 | 86 |

*UMIC = Upper Middle Income Country; **LAC = Latin American Country.

[†]Particulate matter concentrations refer to fine suspended particulates less than 10 microns in diameter (PM10) that are capable of penetrating deep into the respiratory tract and causing significant health damage. The estimates represent the average annual exposure level of the average urban resident (Pandey et al., 2006).

Source: World Bank (2009) using most recent data (mainly 2007).

However, inequality began to increase in the 1990s as a result of measures brought in to survive an economic crisis (Hamilton, 2002; Uriarte-Gaston, 2004; Mesa-Lago, 2006; Blue, 2007; Morris, 2008). The blockade had pushed Cuba towards an economic dependency on the Soviet Union and the Eastern European 'Community for Economic Cooperation' (COMECON). Consequently, after COMECON collapsed in 1989 and the US blockade tightened, the country faced an economic disaster, with its GDP falling by more than 48% (Diaz-Briquets and Perez-Lopez, 1995). In Cuba, this era was referred to as the 'Special Period in Peacetime', implying the need for measures

that would normally apply in wartime, in order to cushion the effect of the crisis on the population. A high standard of free universal health care and education was maintained (Barbeira et al., 2004) and social programmes to sustain public welfare were stepped up. However, because of its history of colonialism, Cuba was dependent on external trade and, therefore, needed to pursue hard currency in order to interact with the capitalist world. Following extensive consultation with the population, this led to the use of market-based policies which some have called *concessions to capitalism* or an attempt to 'use capitalism to save socialism' (Taylor, 2009: 4). These policies included the development of tourism, legalization of the dollar, individual self-employment, joint ventures with foreign capital, intensifying exploitation of natural resources for export (especially nickel), and increasing the availability and promotion of consumer goods in order to capture dollars sent as remittances (Dello Buono, 1995; Mesa-Lago, 2005; Raby, 2006).

In this context, inequality emerged between those who had access to dollars and those who did not, as well as between those who were employed in the informal sector and those who worked in the formal economy (Morris, 2008). The dollar-based sector of the economy covers the tourist sector, foreign businesses in joint ventures, and some state enterprises that work in export markets (Hamilton, 2002). As in many countries, some of the variation in income inequality has a racial dimension (Blue, 2007). For example, the increase in self-employment, implying access to resources that can be drawn on for the initial investment, discriminated against black people who were less likely to have relatives abroad able to supply these start-up funds (Blue, 2007). However, although income inequality increased, once the value of subsidized housing, utilities and food, as well as free services, is factored in, the actual inequalities are much lower.

Distributional environmental injustice is built upon not only social inequality, but also residential segregation. In capitalist countries, social-spatial segregation by race and class has been identified as a major factor contributing to environmental injustice (Bullard, 1995; Pulido, 1996; Martinez-Alier, 2003). The classic pattern of spatial segregation also existed in Cuba before the revolution, but most analysts consider that this has been greatly alleviated by the general programmes designed to reduce poverty, as outlined above, as well as a number of specific housing laws and policies (Coyula and Hamberg, 2003; Oliveras and, Núñez, 2004; Ramirez, 2005; Sawyer,

2006; Taylor, 2009). These included the Law of Low Rents (1959) and the Law of Urban Reform (1960) which made housing affordable (or free) in any area of the city or country; as well as the redistribution of housing vacated by the wealthy who fled to the US (Taylor, 2009). Most importantly, the lack of a legal land or housing market, whilst allowing mobility through housing 'swaps', has largely prevented segregation according to income (Coyula and Hamberg, 2003). However, as Oliveras and, Núñez point out, though these policies have significantly mitigated against segregation, 'four decades have proven insufficient' to completely revert a 400 year old development pattern (2004: 21). Thus, although there are no areas officially recognized as poor,⁹ there are some districts where the population, though heterogeneous, is more likely to contain people on lower incomes (Ramirez, 2005).

Even so, my fieldwork impressions were that there seemed to be a distinct lack of the separate communities based on income level, social status or race, that are so easily recognizable in capitalist countries. However, it was not possible to verify these findings quantitatively as socio-spatial data at a micro-level are not currently published in Cuba. At a provincial level, some difference in incomes can be seen between Cuba's provinces, with the eastern provinces worse off than the west (ONE, 2008). Some of this difference seems to be a result of tourism, which is more developed in the western provinces, particularly Havana, allowing greater opportunities for these residents to acquire dollars (Mesa-Lago, 2002; Oliveras and Núñez, 2004).

Distributional environmental injustice is built on inequality and social segregation, but defined by unequal access to healthy and safe environments. There was no qualitative evidence from this study of variations in environmental quality according to social category i.e. this was not a problem that I perceived or that was identified by interviewees. In terms of the quantitative evidence, the results were contradictory. When average provincial income levels were compared with variations in sanitation coverage, river pollution, and per-capita governmental spending on the environment, there was no apparent relationship between lower income and a poorer environment. However, there did seem to be a weak relationship between low income and a lack of access to improved water supply.

Thus, though there was evidence of social inequalities and a minimal level of segregation, according to income, there was very little evidence of a pattern of distributive environmental justice in Cuba.

Procedural environmental justice in Cuba

The final aspect of environmental justice to be discussed here is ‘procedural environmental justice’. There is no accepted definition of this term, but in its widest sense, it can be said to include open, honest and inclusive environmental decision-making processes; consistent application of rules; access to environmental information; and control over environmental justice outcomes (see Bell, 2011).

In the West, Cuba is generally portrayed as having few, if any, of these ingredients of procedural justice. It is alleged that there is minimal freedom of expression, access to information, democracy, or influence over decision-making of any kind. The most recent Economist Intelligence Unit democracy index, for example, places Cuba 125th out of 144 countries (2008). Also, a recent report states that, in Cuba, people cannot collaborate with each other in a meaningful way against authorities because it would be dangerous and so complaints are limited to what is deemed to be ‘acceptable to the party, the establishment and the institutions of communism in Cuba’ (Freedom House, 2008: 9).

However, many Cuba analysts contend that, though the country does not correspond to the capitalist brand of democracy, characterized by multi-party elections, it exhibits an alternative model based on direct popular democracy, participatory decision-making, election of representative delegates, a vibrant civil society, accountable government, an emphasis on equality and a willingness to respond to demands for change (see, for example, Cole, 1998; Roman, 2003; Saney, 2004; Raby, 2006; Kapcia, 2008; Yaffe, 2009).

There is not the space to debate these two vastly different views of Cuban society here, so I will focus only on the aspects of democracy that directly relate to environmental matters. There is a vast network of institutions and organizations that play a part in influencing environmental decisions in Cuba. As well as the legislative and executive bodies of government, the judiciary, the mass organizations, the Communist Party and environmental activist organizations, all participate. Proposals for serious reforms of general government policy are circulated widely and discussed extensively in local branches of mass organizations, schools, workplaces and universities, before being put to referendum or opinion channelled into National Assembly debates (Cole, 1998; Raby, 2006). The key to understanding the Cuban concept of democracy is the ‘*mandat impératif*’ (or the ‘instructed delegate model’) as developed by Rousseau and the Paris Commune. In Cuba this is organized through

the system of *Poder Popular* (Popular Power). The central idea is that representatives should be truly accountable and responsive to their constituents, attempting to resolve all matters presented to them. When I asked people how they would try to change an environmental situation or make a complaint about the environment, they almost always said that they would do this by approaching their *Poder Popular* delegate. They generally had great faith in their delegate as a representative, finding them to be reliable, hard-working and trustworthy. This confidence may be a result of the accountability of the system, in that an ineffective delegate would quickly lose their job, as explained here:

We meet with those that choose us four times a year. People are very demanding at these meetings. They can revoke us at any moment, and they do. We are not sacked by the National Assembly or anyone else, but by the people who elect us. They can do it whenever they want. They can say he's not what we thought, we made a mistake and that's it. (interview, Delegate, *Poder Popular*, Habana del Este)

Thus, people generally felt that they had been able to make their opinion known about environmental concerns, though the matter was not necessarily resolved in their favour, especially if additional resources were required. Contrary to those who claim that workers in Cuba are not free to make demands because there is no 'right to strike', there is, in fact, no legislation covering strikes, to prohibit or allow them (Ludlam, 2009), though trade unions can close down the workplace if the conditions are such that an imminent workplace accident is foreseen. Workers and union officials have exercised this right, for example, where there was not the necessary protective equipment (interview, Head of Social Labour, National Trade Union Council (CTC)).

However, there are some limitations on the forms of resistance that Cubans are prepared to utilize. Street protest, for example, though not illegal, is not seen as an effective strategy, as explained by an environmental campaigner:

It will not be efficient [to protest] and it can be manipulated by dissidents and outside sources, because there is a huge magnifying glass on Cuba and it can be misinterpreted . . . For us, it does not make sense to chain yourselves to trees and things like that . . . (interview, Environmental Educator, Antonio Núñez Jiménez Foundation for Nature and Humanity (FANJ))

In terms of access to information, according to the informal conversations and interviews I carried out, people in Cuba had a number of ways that they found out about their local environment: through *Poder Popular*, the media, the mass organizations, informal contacts, CITMA, other relevant ministries, health and safety representatives at work, the internet, the library and even their local GPs.¹⁰ Though some environmental information is published in Cuba, the more detailed and specific information was not readily available, however. Even so, information could be obtained upon request, as indicated by this comment from an environmental activist:

There are many factories upstream and a lot of the pollution from them goes into the rivers that pass through the protected area . . . In our proposal [to make improvements to the protected area] we have listed all the names of the pollutants . . . CITMA passed this information to us . . . they gave us all the information and also the permission to use the information in the presentations . . . The only thing that we really have in abundance in Cuba is knowledge. We don't hide what we know, nor do the institutions. (interview, Representative, Abra del Rio, Environmental Project, Cojimar)

In terms of control over outcomes, the fieldwork interviews and conversations revealed numerous situations which demonstrated that the environmental decision-making processes worked well for citizens. For example, I was told about reductions in the amount of polluting emissions from production plants as a result of citizen or worker complaints in Guanabo, Matanzas, the Bay of Havana and Holguín (interviews, Protected Area Team, Habana del Este; Coordinator of the Network of Political Ecology in Latin America and the Caribbean; Director of Social Work, Holguín). I was also given examples of development proposals which had been abandoned or relocated as a result of public pressure, for example a dam in Baracoa (interview, Resident, Baracoa), and a micro-generator in Regla, Havana (interview, Coordinator of the Network of Political Ecology in Latin America and the Caribbean).

However, there was also contradictory evidence, with numerous examples of a lack of citizen power. For example, leaking water pipes which had not been fixed despite local people complaining for more than 30 years (interview, Resident, San Miguel del Padrón); ongoing air pollution from a local hospital (interview, Resident, Cayo Hueso, Centro Habana); and oil exploration projects begun without prior

consultation (interview, Protected Area Team, Habana del Este). I was also told that the compulsory requirements to organize public hearings and other consultations were sometimes bypassed. An environmental NGO worker, for instance, said:

When the electrical generation was decentralised all over the country, they tried to proceed very, very fast and sometimes they did not follow the protocol with the environmental impact assessment and the licence . . . It can be when there is an interest of the central Government things happen very fast and sometimes they push and jump some of the stages. Then after, when the problem happens, they realise they have to be corrective because they didn't think enough of the environmental consequences. (interview, Environmental Educator, Antonio Nuñez Jiménez Foundation for Nature and Humanity (FANJ))

Another example of this concerns transgenic production. Despite the government commitment to the precautionary principle, GMOs (genetically modified organisms) have recently been released into the atmosphere for the first time in Cuba, without public consultation. In April 2010, scientists at the Center for Genetic Engineering and Biotechnology (CIGB) began 'field tests' with a corn transgenic. Field tests are probably an irreversible step because of the danger of cross-contamination through pollen drift¹¹ and, therefore, not to be undertaken lightly. Agro-ecologists in Cuba are now opposing the cultivation of this crop and asking for a moratorium until there has been a public debate on the issue (interview, Agro-Ecologist, University of Matanzas).

Thus, procedural environmental justice in Cuba was strong in terms of the network of organizations involved, the legislation and the participatory culture, but there were some deficiencies in terms of discouragement of protest, a lack of easily available information and inconsistencies, or omissions, with regard to consultation processes.

Causes of environmental injustice in Cuba

A number of factors seem to explain Cuba's current environmental justice problems. To begin with, colonialism in Cuba permanently altered the island economically, environmentally and socially, orientating the country toward primary export production, stifling indigenous

industry and tying Cuba to a dependency on external trade (Fernández, 2002; Funes Monzote, 2008; Kapcia, 2008).¹²

Secondly, the blockade (which could hit hard as a result of this dependency) has affected the country in terms of the availability and cost of technology, as well as a general shortage of resources. For example, problems with water supply have been linked to a shortage of replacement parts for the distribution network, originally built using US components (American Association for World Health, 1997).¹³ The resulting lack of resources has also reduced the capacity of CITMA to carry out monitoring, to replace and modify polluting facilities, and to adopt consistent standards, as explained by CITMA's Director of the Environment:

The new industry, since 1990, complies with international standards and norms . . . but the old industries, say, the cement factory in Camaguey, do emit pollution . . . The chimneys are very old . . . If we close the factory it will improve the environment. But the state can't afford that. They don't want to close the factory because it is a source of income and because it is the workplace. Every case is particular and there are many factors involved – political, economic, environmental – and they all have to be balanced . . . If you apply strict environmental standards today you would have a list where you would have to close sixty or seventy factories now but if you closed these factories it would be a problem for us. It is complicated. (interview, Director, Directorate of Environmental Policy, CITMA)

In addition, the US blockade seems to have conditioned and limited Cuba's possibilities to achieve procedural justice. Much of the restrictions can be related to the fact that Cuba has had to operate in an international situation where the dominant world power is intent on its destruction (Lievesley, 2004; Kapcia, 2008). This has given Cuba a sense of siege, and justified a war footing and control of expression and political action (Kapcia, 2008). Kapcia states that it is possible to correlate the amount of control with 'the level of threat posed or perceived' (Kapcia, 2008: 133), so that moments of greater external pressure are associated with greater expectations for the population to conform.

Thirdly, the economic crisis (which would almost certainly not have happened were it not for the context of both the blockade and the history of colonialism) led to the initiation of a number of policies, generally associated with capitalism. These measures, especially tourism, self-employment and the intensive exploitation of natural

resources, have had a negative influence on Cuba's environment and society. For example, consumerism has increased as certain foods and experiences enjoyed by tourists have come to symbolize the good life and people come to gain status and identity from material, rather than social, achievements (Taylor, 2009). This may be linked to increased inequality, as there is now mounting evidence that inequality drives higher consumerism (Wilkinson and Pickett, 2009).

Conclusion

Cuba's environmental justice successes seemed to be linked to policies based on meeting basic needs, prioritizing equality of outcomes, innovative programmes, participatory democracy, re-localizing production and consumption, and sharing more. Thus, the study shows us the importance of a commitment to political and social equality, as well as a healthy environment, in order to achieve environmental justice.

The causes of the injustices that occurred in Cuba seemed to be a result of a complex interplay between a range of factors, such as a history of colonialism; a shortage of resources; the economic blockade; US political hostility; development patterns; industrialization; the need to acquire hard currency; as well as management issues and it is important not to be too simplistic about this. However, most of these factors seem to be underpinned by global capitalist pressures, impacting via colonialism, the blockade and the need for hard currency.

Discrimination, market efficiency, industrialization and power inequalities can also be seen to influence the situation in Cuba, but generally are more problematic as a result of the context of capitalism. For example, past discrimination against black people enables enduring inequalities in the new private enterprise context and market 'efficiency' means that Cuba intensively extracts nickel as required by global capitalism. Thus, it does seem that, even in Cuba, capitalism seems to undermine its efforts to achieve social and environmental equality and well-being. This seems to reinforce the idea that capitalism is a fundamental factor that should not be ignored in any analysis of environmental justice.

However, socialism has also been associated with environmental problems. Though socialism has always contained an ecological perspective (Burkett, 1999; Bellamy Foster, 2000, 2008), some developments in socialist countries have, clearly, also been environmentally

damaging. The Soviet Union, for example, succumbed to an extreme version of the productivism, and its associated environmental destruction, that characterized early twentieth-century modernity, in general (Bellamy Foster, 2008). As Cuba's Director of the Environment emphasized, any economic system, socialist, or otherwise, needs to be driven by an environmental ethos:

It does not mean that, with socialism, the environment automatically improves. For example, what happened in Europe, with the countries of Eastern Europe, there were a thousand disasters. That is to say socialism creates a better opportunity but this opportunity has to be built upon and materialised but I think yes, that socialism is an advantage . . . But I emphasise, it is not automatic, you have to try to create a socialist system where the environmental agenda is driven well, otherwise you will still have environmental problems. Nothing is given, it has to be achieved. (interview, Director, Directorate of Environmental Policy, CITMA)

However, the question that is being considered here is, not whether we need socialism, but whether we need an alternative to capitalism. Some argue that new or reformed types of capitalism are, or can be, less environmentally or socially damaging (e.g. Porritt, 2005). These, and several ecological economists and social justice analysts (e.g. Daly and Farley, 2004; Wilkinson and Pickett, 2009), do not urge the demolition and rebuilding of the whole economy, but rather advocate the reform and improvement of existing institutions. They propose policies that can be carried out by governments such as improved regulation; environmental taxes and subsidies; high and low income limits; and workers' co-operatives. However, though these policies may help, they may not be enough in themselves, because capitalism depends on economic growth which does not seem to be compatible with a healthy environment. As the Copenhagen Climate Summit in 2009 showed, capitalist economies tend to promote profitable environmental solutions such as carbon trading, agro-fuels and nuclear power, all of which will probably be devastating in terms of environmental justice. Thus, Copenhagen's parallel conference, the 'Klimaforum', formulated a people's declaration calling for 'system change – not climate change!'

Whether or not we might wish to emulate some of Cuba's environmental and social policies, the country is a living reminder that there are radically different ways that we could organize our world. As we in the West now struggle with our own 'Special Period', it may be time to

grasp the opportunities inherent in this situation and initiate the kind of radical transformation that will achieve social and environmental justice for all.

Notes

1. A study that only considers distributional justice is severely limiting, since it implies that the solution to environmental injustice would be to share environmental burdens evenly (Heiman, 1996; Faber, 1998; Schlosberg, 2004; Walker and Bulkeley, 2006; Stanley, 2009).
2. In particular, the English language literature on Cuba is dominated by 'Cubanologists', academics who are engaged in an ideological struggle against Cuba (Rodríguez, 1983).
3. Following other authors, such as Lievesley (2004), I will be using the word 'blockade' rather than 'embargo' throughout this paper because the US does not just refuse to trade with Cuba but actively intervenes in Cuba's relations with other countries. The US blockade began in 1963, but was reinforced in 1992 by the 'Torricelli Law' and, in 1996, by the 'Helms-Burton Act'. The 1992 act prohibited foreign-based subsidiaries of US companies from trading with Cuba, travel to Cuba by US citizens, and family remittances to Cuba. Under the 1996 law, any non-US company that deals economically with Cuba can be subjected to legal action. The Obama administration has recently eased some of the travel and remittance restrictions on Cuban Americans (see Eckstein, 2009).
4. The projects within the green revolution spread technologies that had already existed, but had not been widely used outside of industrialized nations, including pesticides and synthetic fertilizers. In Cuba, as in much of the world, these practices resulted in extensive water pollution, soil erosion and loss of natural areas (Diaz-Briquets and Perez-Lopez, 1993; Gonzalez, 2003).
5. The Rio Declaration, where a globally accepted definition of the precautionary principle was developed, states: '... the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation' (UNEP, 1992: Principle 15).
6. Cuba had experienced three devastating hurricanes in 2008, the year preceding my arrival, named Gustav, Ike and Paloma. The government had taken precautionary measures so that there was minimum loss of life. Only 7 people had died, whereas 700 were killed in the neighbouring island of Haiti.

7. Many of the mini-dumps in Havana have been cleaned up in the last ten years as a result of the government policy to allow unused land to be leased rent- and tax-free to small farmers on a usufruct basis (interview, Worker, Organopónico, Centro Habana).
8. The Cuban nickel industry surpassed tourism as the country's top foreign exchange earner in 2007.
9. Poverty is seen to be a structural problem of capitalist societies so that the sector of the population that are living on low incomes in Cuba is usually defined as a ' . . . population at risk of not being able to meet some basic needs' (Ferriol Muruaga, 1997: 370).
10. All Cuban GPs are trained in environmental issues and how health is affected by the environment.
11. Once released from the anthers into the atmosphere, pollen grains can travel as far as half a mile with a 15 mph wind in a couple of minutes (Nielsen, 2003).
12. This phenomenon is not unique to Cuba, as colonialism has created much ecological and social damage throughout the South (see, for example, Goldsmith, 1993).
13. Though the trading relationship with COMECON helped with resources and technology, since the loss of these economic partners, Cuba has not been able to replace much of the technology that was supplied through COMECON from the 1960s to the 1980s (interview, 28 January 2009; Dr Allan Pierra-Conde, Director, ISMM).

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