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Popular Power and Environmental Governance

**The Cuban approach to natural hazards and
disaster risk reduction**

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Popular Power and Environmental Governance
The Cuban approach to natural hazards and disaster risk reduction

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Declaration

I, Javier Sandoval Guzmán, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature:

Date:

*For Exequiel and Sonia, my beloved parents, who gave me all I needed to achieve
happiness.*

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LIST OF ABBREVIATIONS AND ACRONYMS

ACNU	Asociación Cubana de Naciones Unidas (<i>Cuban Association of the United Nations</i>)
ACPA	Asociación Cubana de Producción Animal (<i>Cuban Association of Animal Production</i>)
ACTAF	Asociación Cubana de Técnicos Agrícolas y Forestales (<i>Cuban Association of Agricultural and Forestry Technicians</i>)
AMA	Agencia del Medio Ambiente (<i>Environmental Agency</i>)
ANAP	Asociación Nacional de Agricultores Pequeños (<i>National Association of Small Farmers</i>)
ANPP	Asamblea Nacional del Poder Popular (<i>National Assembly of Popular Power</i>)
CAME	Consejo de Ayuda Mutua Económica (<i>Council for Mutual Economic Assistance, COMECON</i>)
CBDM	Community-Based Disaster Management (<i>Gestión de Desastres Con Base Comunitaria</i>)
CDRs	Comité(s) de Defensa de la Revolución (<i>Committees for the Defence of the Revolution</i>)
CEDEL	Centro de Desarrollo Local y Comunitario (<i>Centre for Local and Community Development</i>)
CEN	Comité Estatal de Normalización (<i>State Committee for Standardization</i>)
CENAIIS	Centro Nacional de Investigaciones Sismológicas (<i>National Seismological Research Centre</i>)
CGRRs	Centro(s) de Gestión para la Reducción del Riesgo (<i>Risk Reduction Management Centres</i>)
CIEM	Centro de Investigaciones de la Economía Mundial (<i>Research Centre of the World Economy</i>)
CITMA	Ministerio de Ciencia, Tecnología y Medio Ambiente (<i>Cuban Ministry of Science, Technology and Environment</i>)

CLAMED	Centro Latinoamericano de Medicina de Desastres (<i>Latin American Centre for Disaster Medicine</i>)
CMLK	Centro Martin Luther King (<i>Martin Luther King Centre</i>)
COMARNA	Comisión Nacional de Protección del Medio Ambiente y del Uso Racional de los Recursos Naturales (<i>National Commission for Environmental Protection and Rational Use of Natural Resources</i>)
CTC	Central de Trabajadores de Cuba (<i>Cuban Workers Federation</i>)
CUBAENERGÍA	Centro de Gestión de la Información y Desarrollo de la Energía (<i>Centre for Information Management and Energy Development</i>)
EAN	Estrategia Ambiental Nacional (<i>National Environmental Strategy</i>)
EMNDC	Estado Mayor Nacional de la Defensa Civil (<i>National Civil Defence Joint Staff</i>)
ENEA	Estrategia Nacional de Educación Ambiental (<i>National Environmental Education Strategy</i>)
EPA	<i>US Environmental Protection Agency</i>
FANJ	Fundación Antonio Núñez Jiménez de la Naturaleza y el Hombre (<i>Antonio Núñez Jiménez Foundation of Nature and Humanity</i>)
FEEM	Federación de Estudiantes de la Enseñanza Media (<i>Federation of High School Students</i>)
FEU	Federación Estudiantil Universitaria (<i>Federation of University Students</i>)
FMC	Federación de Mujeres Cubanas (<i>Federation of Cuban Women</i>)
GEF	<i>Global Environment Facility</i>
GTE-BH	Grupo de Trabajo Estatal Bahía de la Habana (<i>State Work Group of Havana Bay</i>)
IDNDR	<i>International Decade for Natural Disaster Reduction</i>
INSMET	Instituto de Meteorología de Cuba (<i>Cuban Institute of Meteorology</i>)
INV	Instituto Nacional de la Vivienda (<i>National Housing Institute</i>)
IPF	Instituto de Planificación Física (<i>Institute of Physical Planning</i>)
MINFAR	Ministerio de las Fuerzas Armadas Revolucionarias de Cuba (<i>Cuban Ministry of Revolutionary Armed Forces</i>)

MININT	Ministerio del Interior de Cuba (<i>Cuban Ministry of the Interior</i>)
NCD	<i>National Civil Defence</i> (Defensa Civil Nacional)
NHC	<i>US National Hurricane Centre</i>
OACEs	Organismo(s) de Administración Central del Estado (<i>Organs of Central State Administration</i>)
OLPP	Órganos Locales de Poder Popular (<i>Local Organs of Popular Power</i>)
ONEI	Oficina Nacional de Estadística e Información (<i>National Statistics and Information Office</i>)
OPP	Órganos del Poder Popular (<i>Organs of Popular Power</i>)
PAR	<i>Pressure and Release</i>
PAT	Puntos de Alerta Temprana (<i>Early Warning Points</i>)
PCC	Partido Comunista de Cuba (<i>Cuban Communist Party</i>)
PCMA	Patrimonio, Comunidad, y Medio Ambiente (<i>Heritage, Community, and Environment</i>)
SAT	Sistema(s) de Alerta Temprana (<i>Early Warning Systems</i>)
SDPE	Sistema de Dirección y Planificación de la Economía (<i>System of Economic Direction and Planning</i>)
SSN	Servicio Sismológico Nacional de Cuba (<i>National Seismological Service</i>)
UJC	Unión de Jóvenes Comunistas (<i>Union of Communist Youth</i>)
UNDP	<i>United Nations Development Programme</i>
UNEAC	Unión de Escritores y Artistas de Cuba (<i>Cuban Union of Writers and Artists</i>)
ZBREUP	Zonas Bajo Régimen Especial de Uso y Protección (<i>Areas Under Special-Use Regime and Protection</i>)

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ABSTRACT

This thesis explores factors that have endowed Cuba with an outstanding approach to natural hazards and disaster risk reduction (DRR). In addition, the research analyses the connection of these factors with the practice of environmental governance within the Cuban development model. Cuba's development model is embedded in its socialist project, which has been historically contested by hegemonic paradigms. Therefore, Cuba's socialist model is examined in relation to the concept of legitimacy. For this purpose, the concept of participatory or direct democracy is also analysed. This alternative democracy model emphasises representativeness and people's participation in decision-making (popular power). Legitimacy is here considered essential by a perspective that goes beyond strictly political. Its importance is rather based on a general goal of this research: to discuss factors that can be applied worldwide to improve disaster risk reduction strategies.

Natural hazards represent a worldwide threat and their effects are particularly devastating in poor countries (C. Field, 2012; Gencer, 2013; Mas Bermejo, 2006). These effects are not only evidenced in the short term by fatalities and material losses; they can also affect countries in the long term by hindering businesses and enterprises that may contribute to economic development (UNISDR, 2013). Finding solutions to cope with this problem is a matter of concern for countries in general, and particularly important to countries that show the worst results in these aspects. Cuba's example of *Community-Based Disaster Management* (CBDM, see Thompson & Gaviria, 2004) is noteworthy not only for providing solutions that can be worldly applied. Cuba's example demonstrates that successful approaches to natural hazards are not necessarily based on the income level of countries, nor to the degree of investment in disaster risk management. Cuba's remarkable results in disaster management could be better explained by the socio-political context in which its disaster risk reduction (DRR) strategy is immersed.

The research carried out for this thesis used a mixed-method approach (qualitative and quantitative) and was carried out in areas in Cuba that have been affected by natural hazards, according to available historical data of human and economic losses. The findings

obtained in the selected areas were analysed within the socio-political context of the country. The consistency of these findings with national policies and popular practices provides the basis of a discussion of particular aspects of environmental governance and legitimacy of alternative models of democracy.

1. Introduction

1.1. Studying Natural Hazards and Disaster Risk Reduction in Cuba

The solution cannot be to prevent development to those who need it most. The reality is that everything that contributes to underdevelopment and poverty constitutes a flagrant violation of ecology [...] When the alleged threats of communism are gone, and there are no excuses for Cold Wars, arms races and military expenditure. What prevents the immediate use of these resources to foster the development of the Third World and to fight the threat of the planet's ecological destruction? Let selfishness cease, let hegemonies cease, let callousness cease, and so the irresponsibility and deceit. Tomorrow it will be too late to do what we should have done long ago (F. Castro, "speech at the Rio de Janeiro Earth Summit," 1992).

Natural hazards represent worldwide threat and their effects are particularly devastating in poor countries (C. Field, 2012; Gencer, 2013; Mas Bermejo, 2006). These effects are not only evidenced in the short term by accounted fatalities and material losses; they can also affect countries in the long term by hindering businesses and enterprises that may contribute to economic development (UNISDR, 2013). The recognition of Cuba as a country that has developed a successful model of managing risks is accepted worldwide. The United Nations (UN), The Food and Agriculture Organisation (FAO), The International Federation of Red Cross and Red Crescent Societies (IFRC), and several international NGOs all recognise Cuba's performance in Disaster Risk Reduction (see, for example, FAO, 2008; IFRC, 2002; UN, 2004).

This thesis intends to contribute to the social science of disasters by providing a holistic perspective (see Levins & Lewontin, 1985) of the Cuban model of *disaster risk reduction* (henceforth, DRR) and the latent factors influencing it. Thereby, the research draws on new approaches that explore the relationships between data and theory that were not sufficiently analysed in previous studies. First of all, this thesis builds on earlier contributions within the sphere of political ecology that reveal the misleading concept of *natural disasters* (see,

for example, Lavell & Franco, 1996; Wisner et al., 2004). These contributions help to highlight that the *natural* aspect of this issue constitutes only the triggering element that transforms *vulnerabilities* into *disasters*. Particularly, the *Pressure and Release* (PAR) framework developed by Wisner et al. (2004) helps to characterise the relationship between hazards, vulnerabilities, and disasters. Authors applying this framework define the concept of *progression of vulnerability*, which characterises vulnerability as a condition developed through different levels. Vulnerability must be understood as emerging from *root causes*, a concept proposed by Beck (1992) and later applied by Wisner et al. (2004) to the problem of disasters. These latter authors describe how root causes interact with *dynamic pressures* and *unsafe conditions* to increase vulnerability to disasters (Wisner et al., 2004). Root causes are elements that have settled in longer periods and cover greater spatial extensions compared to dynamic pressures and unsafe conditions (López-Marrero & Wisner, 2012, pp.144-146). Root causes include social and economic structures, ideologies, history, and culture. Dynamic pressures include societal deficiencies and macro-forces. Examples of the latter are pressures from multilateral financial agencies, poor governance, and corruption. Unsafe conditions include lack of physical, natural, human, social, economic, and political resources (Wisner et al., 2012). Although these aspects will be addressed throughout this study, the research emphasises the importance of root causes and dynamic pressures as factors that increase vulnerabilities to disasters. In addition, Wisner et al. (2012) reorganise these concepts and their interactions to define what they refer to as “the triangle of vulnerability.” (p. 27-28). This triangle explains how root causes and dynamic pressures “marginalise” people by cutting their access to necessary resources for achieving sustainable livelihoods. These resources can be of all kinds, political, economic, social, human, physical, or natural. Therefore, marginalisation can refer to one or many of these resources. Additionally, marginalisation from resources does not only refer to actively obstructing people to access resources. It also refers to the passive obstruction to resources or, in other words, not helping people accessing necessary resources. Furthermore, Wisner et al. developed the concept of *capacity* and what they refer to as “the circle of capacities” (p. 28-29). In these terms, capacity can be understood as a subset of the concept of vulnerability, for it applies nearly the same elements of the latter to the particular case of local areas or communities. Therefore, although the semantics of both capacity and

vulnerability makes them to appear as opposing concepts, their treatment must be different. Fulfilment of all types of capacities (political, economic, social, human, physical, or natural) does not eliminate vulnerabilities, since the latter encompass macro-structures that capacities cannot change—at least in the short run (Wisner et al., 2012). As mentioned, capacities include not only tangible resources like technology or infrastructure, but also intangible aspects, like *social capital* and *human capital*. According to Gamarnikow (2003), social capital refers to aspects emerging from the interaction of individuals within a community and, as such, it is influenced by the human capital individuals have. However, social capital can also influence the development of human capital in a dialectical process of mutual influence. For example, the degree of solidarity evidenced in a community in hazardous situations can serve as an example for younger generations that start seeing these practices as a tradition. At the same time, individuals that have lost interest or enthusiasm in these values might start transmitting this lack of enthusiasm to others.

Previous narrower approaches explain Cuba's performance in reducing disasters by focusing on specific concrete and objective conditions, such as the country's legislation (see, for example, Mas Bermejo, 2006; Sims & Vogelmann, 2002). Additionally, these narrower approaches disregard the influence of other important objective conditions, including the high involvement of socio-political organisations. In contrast, Thompson and Gaviria (2004) contend that a high level of participation in socio-political organisations has been fundamental in implementing a *community-based disaster management* (CBDM) approach in Cuba (see also Carby, 2011). Cuba's CBDM approach "focuses on strengthening capacity and building skills for risk reduction at the community level" (Thompson & Gaviria, 2004, p.4). On the other hand, the mentioned narrower approaches also neglect *subjective* elements in analysing the Cuban model. These elements correspond to what Thompson and Gaviria call "*intangible qualities*" (p.7). An *ideology* and *ethical principles* followed by a society can be examples of these intangible elements. These principles may represent an important source of success in procedures and practices adopted during extreme situations. Furthermore, rather than becoming evident only in such extreme conditions, these ethical principles might be embedded in the daily life of Cuban

society. As such, the thesis explores human or ethical values¹, behaviour, and practices and their relationship with ideological principles embedded in Cuban society. Consequently, it examines how these aspects affect Cuba's performance in dealing with natural hazards and reducing the risk of disasters.

Taking into consideration that natural hazards can be included within a general environmental framework, aspects dealing with environmental approaches, strategies, and policies are also examined in this study. In this regard, research such as that developed by Bell (2011) poses a connection of Cuba's positive performance in environmental issues with concepts like *environmental justice* and alternative models of democracy. It is an additional motivation of the present study to explore similar connections between these principles and natural hazards and disaster risk reduction (DRR) strategies.

1.2. Problem Statement

This research explores factors that have allowed Cuba to develop an outstanding approach to natural hazards and disaster risk reduction. It focuses on *root causes* and *dynamic pressures* of disaster risk as described by Wisner et al. (2012). Moreover, the study discusses the connection of these factors with the practice of environmental governance and alternative models of democracy.

1.3. Objectives and Research Questions (RQ's)

a) General Objectives: To find factors that can be applied globally to improve preparedness and response to extreme environmental events.

¹ The term *human value* will not be fixed in this study other than just giving examples of what is understood by it. Examples are: solidarity, humanism, unity, altruism, brotherhood, to mention but a few. I may also use adjectives such as *moral*, *ethical*, or *social* to refer to the same values.

b) Specific Objectives: To explore factors and aspects explaining the outstanding performance of Cuba to manage disasters in connection to root causes and dynamic pressures.

c) Research Questions: To achieve the objectives the following research questions have been formulated:

1. *What are the key factors that determine the performance of Cuba in Disaster Risk Reduction (DRR)?*
2. *How are these factors related to ideology, in the Cuban socio-political context, and particularly to popular participation in decision-making?*
3. *How are these factors connected with the practice of environmental governance and alternative models of democracy?*

The following chapter delves into different perspectives, theories, and concepts forming the background from which this study examines and discusses Cuba's strategy to face natural hazards. Each section within the following chapter could serve by itself as a starting point to approaching the Cuban model of disaster risk reduction (DRR). This research, however, intends to build upon all these perspectives in an intertwined and holistic way. It is expected that the analyses and conclusions emerging from this process complement, reinforce, and perhaps contradict each other. Thereby, potentially, a better understanding of the evolution of vulnerabilities to natural hazards will be achieved. Consequently, this understanding will allow for the development of alternative methods that improve global and local DRR methodologies.

2. Conceptual Framework and Theoretical Background

2.1. Cuba and its Exposure to Natural Hazards

At dawn on the 23rd [of October, 2005] rains and tornadoes are affecting *Pinar del Río* and *Isla de la Juventud*, and in the city of *Havana* the devastating swells begin, making the sea advance far away from the coast, overflowing the wall of the *Malecón* and jumping on the lighthouse of the *Castillo del Morro*. In Casablanca, a gust of 136 km/h was recorded, despite the distance from the centre of [hurricane] *Wilma*. The show, beyond human drama, is astonishing. (Ramos Guadalupe, 2011, p. 301, own translation)

Cuba is exposed to several kinds of hazards, including natural, technological, and sanitary hazards. In the case of natural hazards, these include hurricanes, tropical storms, tropical depressions, intense rainfall, floods, storm surges, wildfires, intense droughts, landslides, and earthquakes (Llanes-Guerra, 2010). Among natural hazards, hurricanes pose the highest threat to Cuba, in terms of frequency and intensity. Normally the annual hurricane season lasts six months from the 1st of June until the 30th of November. Evidence shows that the frequency and intensity of extreme hydro-meteorological phenomena is increasing in the Atlantic (Pielke et al., 2005). Thompson and Gaviria (2004) based on data from the *US National Hurricane Centre* (NHC) illustrate the increase of these phenomena in the region. From a total of 240 hurricanes registered in the two decades from 1983 to 2003, more than a half (129) occurred in the last half of the two decades (i.e., from 1993 to 2003). Goldenberg et al. (2001) contend that hurricanes affecting the Caribbean increased by five times from 1995 to 2000 compared to the previous 24 years (1971-1994). However, as mentioned earlier, Cuba has managed these extreme phenomena considerably better than neighbour countries—including the US—in terms of preventing deaths. Table 2-1 below provides indicative data of events taking place between 1996 and 2002. Furthermore, 2008 was particularly nefarious for Cuba. In this year three major hurricanes—Gustav, Ike, and Paloma— occurred in less than three months, and wreaked havoc in the country

(Brundenius, 2009). However, despite the high monetary costs caused by these extreme events², they claimed only 7 lives (Ramos Guadalupe, 2011).

Table 2-1: Death tolls due to hurricanes in different countries and their Saffir-Simpson categories^{3 4}.

HURRICANE AND YEAR	CATEGORY WHEN IT HIT CUBA	FATALITIES IN CUBA	CATEGORY WHEN IT HIT ELSEWHERE	FATALITIES ELSEWHERE	TOTAL OF FATALITIES
Lili 2002	2	1	Tropical Storm	Jamaica 4, Haiti 4, St. Vincent 4	13
Isidore 2002	2	0		US 4, Mexico 2	6
Michelle 2000	4	5	Tropical Depression	Honduras 6, Nicaragua 4, Jamaica 2	17
Irene 1999	1	4	1	US 8	12
Georges 1998	3-4	6	3-4	Antigua 2, St. Kitts & Nevis 4, Dom. Rep. 380, Haiti 209, Bahamas 1, US 1	603
Lili 1996	3	0		Honduras 5, Costa Rica 3, Great Britain 6	14
Total of fatalities	15-16	16		649	665

Additionally, other phenomena such as intense rainfall, floods, storm surges, and seawater intrusion frequently accompany hurricanes. Flooding is one of the main sources of vulnerabilities in Cuba, since approximately 3.4 million Cubans live in settlements along the coastline, most of them in rural areas (Pérez Hernández, 2005). Moreover, Cuba's geographic location makes it susceptible to tectonic movements. These movements can generate earthquakes and subsequent tsunamis. In the case of Cuba, the record shows relatively low magnitude earthquakes. Intense rainfall and earthquakes can also induce mass movements such as landslides and mudslides. However, mass movement events are also increased by *anthropogenic* conditions (i.e., developed by human activity), such as

² Direct and indirect costs caused by these three hurricanes are estimated in almost 10 billion dollars. 75 per cent of these costs were related to agriculture and housing (EMNDC, 2012). More than 530 thousands households were damaged (Rodríguez García, 2008).

³ Source: Thompson and Gviria (2004) based on data from the National Hurricane Centre's Hurricane Season's Tropical Cyclone Reports (1996-2002) and the Cuban Civil Defence.

⁴ On Saffir-Simpson categories see Schott et al. (2012)

deforestation. The effects of deforestation are emphasised by particular topographic conditions, which in other cases may also increase the occurrence of floods. Moreover, phenomena such as intense droughts and wildfires also exist as hazards in Cuba (Llanes-Guerra, 2010; López-Marrero & Wisner, 2012). All the mentioned phenomena have occurred in Cuba, hurricanes and floods being the most commonly reported (López-Marrero & Wisner, 2012).

The institution holding the highest responsibility of protecting the Cuban population and its economy is the *Cuban National Civil Defence* (henceforth, NCD). Its headquarters are located in the city of Havana (see Figure 2-1). The origin of the Cuban NCD can be traced back to July 31, 1962, when the *Cuban Popular Defence* was created. Later, in 1966 this institution evolves to what is nowadays the Cuban NCD system (EMNDC, 2012). The Cuban NCD system is defined in the Cuban *Law No. 75* enacted on December 21, 1994:

The civil defence is a system of defensive measures of state character, undertaken in peacetime and during exceptional situations, for the purpose of protecting the population and the national economy against the means of destruction of the enemy and in cases of natural disasters or other catastrophes, as well as the consequences of environmental degradation. It also includes carrying out of rescue works and urgent repair of breakdowns in foci of destruction or pollution. (Law No. 75 § 111, own translation)

The study presented here, draws upon substantial data, experiences, and literature regarding the Cuban NCD, as presented in the following chapters.



Figure 2-1: Cuban National Civil Defence Headquarters (EMNDC) (Source: EMNDC).

The following section presents the historical context of the Cuban revolution, to fully understand the principles that have guided the evolution of strategies dealing with hazards in Cuba. A historical analysis helps recognising historical difficulties and experiences affecting these strategies, as well as interpreting future paths to be adopted.

2.2. The Historical Context of the Cuban Revolution

The history of Latin America is to a great extent related to the development of global capitalism (Galeano, 2007; Harvey, 2010; Regalado, 2006). As such, to understand the history of Cuba it is fundamental to examine it as embedded in the process that most of Latin American countries have gone through (Wright, 2001). Cuba, the largest Caribbean island (or archipelago), is a nation that has been at the centre of different conflicts and debates throughout its history. Its territory has also been disputed since the Colonial period, within an uninterrupted process that has continued after the triumph of the revolution in 1959 (Galeano, 2007; Rodríguez, 2000). Since other revolutions took place earlier in Cuba during the struggle for independence, the 1959 revolution can be interpreted as a continuation of this process. The leaders of those struggles are considered undisputed heroes of Cuban history. Eloquently, Fidel Castro in his famous trial defence titled “*History*

will absolve me” (1953) asserted that the *26th of July movement* that assaulted the *Moncada barracks* in 1953 had *José Martí* as its “intellectual author” (F. Castro, 1993, p. 34). In addition, in a famous speech on October 10, 1968, Fidel Castro claims:

In Cuba there has been only one revolution, the one that began with Carlos Manuel de Céspedes on October 10, 1868; the one that our people carries on at this moment. (F. Castro, 1968)

The revolution of 1959 started a new process that changed drastically the social reality Cuba had experienced in its colonial past (Guerra-Vilaboy & Loyola-Vega, 2010). Internationally, the dominant paradigms of development and democracy (see Peet & Hartwick, 2009; Wright, 2001) were also contested. Thereby, the revolution began developing a socio-political and economical model that has been strongly criticised, questioned, or supported through different views and voices all over the world (López Segrera, 2011). The reforms that came with the revolution provoked immediate reactions. One of the most important of these reforms was the *Agrarian Reform Law* of May 1959. Additionally, the revolution nationalised foreign strategic companies after paying reparations to all countries affected. The US was the only one that refused these reparations and, consequently, began establishing the first measures of an embargo (and later blockade) against Cuba (Bolender, 2012). In this conflict, the US blockade is a factor that cannot be neglected in an academic analysis, because of its enormous influence on the recent socio-political and economic history of Cuba (Bolender, 2012; Cole, 1998; Lamrani, 2013). This influence accounts for permanent difficulties the revolution has passed through, including the *special period in times of peace* (henceforth, the *special period*), which started with the fall of the Soviet Union and the simultaneous tightening of the US blockade (Cole, 1998).

Moreover, although the US physical presence almost disappeared after the first years of the revolution, an ancient agreement allowed holding its influence in Cuba. In the Cuban constitution of 1901 was included the so-called *Platt Amendment*, a covenant in which *The US Guantanamo Bay Naval-Base* was established in Cuba (Ratner & Ray, 2004). In this way, the US was leased a 45 square miles territory with complete control and jurisdiction, giving them “the right” to maintain a military base in perpetuity.

To analyse the Cuban model, the concepts of human rights, democracy, development, and governance play an essential role. These concepts have several interpretations and approaches that might differ substantially⁵. The approaches used in this study, are to be described and specified throughout these pages.

2.3. Human Rights and Geopolitics in the Cuban Development Model

A human-rights-based approach to development considers establishing a basis of human rights for development planning and implementation, focusing on the development process rather than only on its goals. This approach advocates people's access to mechanisms that ensure the respect of their rights, by demanding control and accountability of duties (Uvin, 2004). Nevertheless, Azcuy (1999) poses that it is impossible to ensure human rights without having assured two main principles: *self-determination* and *sovereignty*. These principles can also be considered as individual or collective rights whose importance depends on the geopolitical context.

Cuba, from a geopolitical perspective, constitutes an exceptional case. The country is in very close proximity to the current major superpower, the USA, whilst at the same time Cuba represents a paradigm that is probably the furthest from the one imposed by the USA worldwide. These aspects represent key factors explaining the historical relationship of both countries. On the other hand, Cuba's location has also been a key factor when examining geopolitics in Latin America (Dalby et al., 2003).

In turn, Cuba's location provides proximity to strategic partners such as Venezuela, and to extremely poor countries such as Haiti, which have benefited from Cuba's well-acknowledged international solidarity (see Cadena Montenegro, 2009; Lengyel et al. 2009). Moreover, Venezuela —since the arrival of Hugo Chávez onward—meant an immense support to survive the economic crisis of the *special period* (Bolender, 2012). Parallel to the special period, the US tightened its blockade on the island, issuing the Helm-Burtons

⁵ On the first three concepts, see Peet & Hartwick (2009); on governance see Evans (2012).

Act and the Torricelli law (see Lamrani, 2013). These actions meant an even higher violation of fundamental rights for Cuba and its people: its sovereignty and self-determination were curtailed. As Azcu (1999) explains, “any cession of sovereignty or the attribute of self-determination in favour of international organizations or instances is [...] a renunciation of rights in favour of the big powers” (p.45). Azcu argues that these political powers are the ones that definitely lead the decisions of multilateral organisations. The antagonism between what he calls the “two polarised viewpoints on human rights” (p.46) stems from misunderstanding the degree to which human rights in general are violated and how much they can be defended, depending on the socio-political context. This means that individual as well as collective rights are “enjoyed” individually, and they must be promoted before a specific state and its powers. These powers are the ones that ultimately enact and execute laws and thus “all rights are social and have, at least, a political background” (p.47). Azcu also explains the origin of the dichotomy between *individual liberties* and *basic rights* or *basic needs*. On the one hand, the adoption of *individual liberties* as culture occurs much earlier than the conception of *basic rights*. These *basic rights* emerged later as a response to the urgent needs of the *Third world*. On the other hand, individual liberties are linked directly to the concept of democracy defined by the US and Western Europe. Basic rights, conversely, evolved throughout history to something widely accepted but difficult to achieve. This would explain the convenience of separating these latter rights from the concepts of democracy and individual liberties, that is: two “achievable” concepts. Hence Azcu questions the role bestowed to civil and political rights, arguing that their existence has not helped solve the problems of poor countries. Cuba then arises with a completely different development model, where despite the enormous difficulties the country has gone through, social rights and basic needs have been satisfied. A respect for rights —Azcu claims— has provided the evident political stability that underpins the model.

Moreover, the Cuban development model and its approach to human rights may also be analysed through its political economy. This analysis is carried out in the following section.

2.4. The Political Economy of the Cuban Development Model

Proposals for changing or improving socio-political and economic systems worldwide cannot be analysed without linking them to certain development models. As Espina (2010) states, "the discussion on development is the touchstone of social thought" (p. 179). To analyse the evolution of Cuban society and its development model, we must first briefly present the concept of development and its evolution. The period in which the concept emerged can be traced back to the second half of the nineteenth century, a stage that Espina calls "universalization" (p.180). Sonntag (1994) explains that the first global theory of development was adopted after the World War II, within the framework of the UN and its economic commissions. On the other hand, Harry Truman (1884-1972), former President of the US, is recognised as having coined the term *underdevelopment* in a public speech. The famous *point four*⁶ of this speech exerted great influence in the dominating approach to development, giving rise to what is known as the *development age* (see Rist, 2008). Nevertheless, Sonntag (1994) emphasises the prominent role and influence of the *Economic Commission for Latin America and the Caribbean* (ECLAC)⁷, whose strategy influenced those of the rest of Third World countries. The doctrines of ECLAC were informed by the ideas of J. M. Keynes (1883-1946) among other intellectuals, and drew upon experiences of Latin American countries (Sonntag, 1994, p. 266). The initial strategy adopted by ECLAC, had as its primary objective the goal of raising the economic level of Third World⁸ countries up to that of industrialised ones. The strategy was based on explaining the world system through the so-called *centre-periphery* perspective. The latter name comes from considering developing countries the *periphery* within the *system of global accumulation*, which is dominated by the countries of the *centre* (*i.e. the industrialised countries*). The economies of the periphery were mono-productive, a situation that explained their

⁶ The other points referred to the US support to the UN, the continuation of the Marshall Plan to reconstruct European countries after WWII, and the creation of the North Atlantic Treaty Organisation (NATO) to oppose the Soviet Union (Rist, 2008, p. 70).

⁷ Its original name did not include *the Caribbean*, thus the acronym in English until 1984 was ECLA. In Spanish, the acronym has remained unchanged as CEPAL (<http://www.eclac.cl/>).

⁸ We use here the concept of *Third World countries* as a synonym of *developing countries*, thus omitting the later distinction introduced by Amin (2008), who refers to African countries as *Fourth World*.

underdevelopment, since it prevented them from achieving industrialisation and modernisation. Moreover, Sonntag (1994) argues that ECLAC's goals did not challenge paradigms existing before the 1930s. Within these, capitalism was considered the natural way of reaching the desired Western model of society. Although coming from an opposite political stance, the idea of a natural progression of capitalism resembles the *idea of progress* developed by Saint-Simon (1760-1825, see Saint-Simon & Markham, 1952). Moreover, ECLAC's first development strategy did not place responsibility on industrialised countries to solve the problems of the periphery. The responsibility of implementing measures was placed on the underdeveloped periphery, by means of a strong state intervention. Therefore, this development strategy was considered an "endogenous and self-centred" development (Sonntag, 1994, pp. 266-268). However, in the 1950s several problems linked to the development strategy became evident. These included deepening of inequalities, marginalisation, and unsatisfactory growth rates. Consequently, criticisms claiming for change in the strategy emerged. These debates brought about the incorporation of social aspects into the strategy and, ultimately, a complete change in ECLAC's doctrine. As a result, this institution adopted *modernization theory*. This theory contends an evolution from traditional societies and their values to rational and modern ones—as described by Weber (1978). According to Sonntag (1994), in this period ECLAC's doctrine created a new *collective consciousness* towards a "unique" idea of development where whole societies cooperated for accomplishing development promises. However, no debate existed regarding how possible and desirable this development strategy was for the countries involved (pp. 273-274). Furthermore, historical criticism to the evolving development doctrine came from both outside and inside ECLAC. Apart from criticism from the advocates of centre-country economies, external criticism came from Marxism. The organisations integrating the COMINTERN⁹ (1919-1943) criticised ECLAC for allegedly maintaining the structures of exploitation against Latin American countries (Sonntag, 1994). However, Sonntag argues that Marxist and ECLAC doctrines did not differ substantially, with the exception of their long-term objectives. In the 1960s, criticism came from within ECLAC, giving rise to the so-called *dependency theory*. Paul A. Baran (1926-2011) and André Gunder Frank (1929-2005) can be considered founders of this

⁹ Also known as the Third Communist International.

theory (see Baran, 1957; Frank, 1967; Rapley, 2013; see also Bell Lara, 2004). The dependency theory explains underdevelopment as the intertwining of internal and external structures of dependency of Third World countries, thus claiming for autonomous national-development strategies (Rapley, 2013, p. 20). Dependency theory had multiple nuanced threads between two extremes. On the one hand there was a bourgeois-nationalist perspective and, on the other, a more directly Marxist or radical dependency theory. These threads, respectively, varied their goals from only achieving an import-substitution industrialisation, to even building a new international economic order. Perhaps the most relevant example of the latter is represented by Salvador Allende's *Chilean road to socialism* (Harding, 2003; Kay, 2010). Moreover, Sonntag (1994) explains that in the 1970s a transition phase in the world system and its accumulation model started. This phase included cyclic periods of economic crises that affected its associated model of development. In addition, this phase worsened existing problems characteristic of the capitalist production. However, an awareness of these issues also rose. Thereby, the increasing ecological damage on the planet, growing global inequalities, and a generalised proliferation of individualism and loss of values within societies became more evident. In this regard, Hinkelammert explains:

[T]he environmental crisis reveals the implicit limits of any development through unlimited economic growth, no matter if equal or unequal development. The concept of unlimited development presupposes an infinite and boundless nature. (Hinkelammert, 1999, cited in Espina, 2010, p.184)

Consequently, in this period some intellectuals advocated the idea of achieving a *second independence* of Third World nations. Among these, Chile's former president, *Salvador Allende*, claimed for a necessity of *economic independence* and unity of underdeveloped countries as the only way to achieve their development (Allende, 1970; see also Pinedo, 2010). Later, similar views arose, like that of Samir Amin (1986) who claimed for the *decoupling (la déconnexion)* of Third World countries from the world system. Achieving these goals demanded radical changes in which the masses would become politically empowered. In contrast, the global development model and its evolution showed multiple failures not only in economic aspects, but also in expectancies of bringing social change,

democracy, and political stability to the countries of the Third world. This general context gave birth to the era of globalisation, with the predominance of transnational corporations to the detriment of nation-states. Besides, multilateral financial agencies and their policies fostering external indebtedness of the periphery became dominant. Within the periphery¹⁰ the increasing poverty and inequalities, the increasing social polarisation, the predominance of low salaries, and the trend to cut down and privatise social services are evidence of the model's failures. However, despite these failures, after the fall of the *Soviet bloc* no theory posed itself as a real alternative to the global development paradigm. Although some countries like Cuba remained true to an alternative model, as Sonntag asserts:

The collapse of the Soviet bloc, among other internal factors, has implied the destruction, at the level of collective consciousness, of the possibility of an alternative sometimes attempted in Africa and Asia and less in Latin America (except Cuba [which remained]) and therefore displayed as such [alternative]. (Sonntag, 1994, p.279)

Moreover, authors like Reinert (2007) criticise recent approaches like the Millennium Development Goals (MDG). These approaches would continue to focus on solving the symptoms more than the causes of global problems caused by the hegemonic model. Reinert interprets these goals as mechanisms through which industrialised countries alleviate but do not resolve the structure of underdevelopment.

The evolution of global development strategies may discourage any hope of arriving at a strategy that includes change of dependent structures. Particularly, hope withers if one considers how the experiences that were indeed marching in different ways were brutally uprooted, like Allende's *Chilean road to socialism*. However, authors like Espina (2010) believe in the possibility of fostering global change from local perspectives of development. Espina argues that territories must be highlighted as key elements in development and as sources of it. In the Cuban model, social—rather than economic—development is the goal. According to the overwhelming evidence in this country, it has

¹⁰ The Newly Industrialised Countries (NIC) like South Korea and Taiwan, which experienced a rapid growth in those decades constitute an exception (Sonntag, 1994).

been demonstrated that the economic parameters are not as essential as it is believed (Espina, 2010).

The Cuban development model has passed through clearly distinct stages since the outset of the revolution. However, these changes have also affected social, cultural, and political policies. In the 1960s, US economic and military hostilities toward the revolution had already begun. Consequently, Cuban authorities sought international support, which was found in the USSR and the Soviet bloc. This support was not free and Cuban authorities had to accept also the influence of these external models (López Segrera, 2011).

Cole (1998) describes a first stage in the model —from 1959 to 1963— as marked by spontaneity and with “no comprehensive development strategy” (p. 24). However, the aim was to achieve “import substitution” through industrial development (p. 24). Historically, Cuba’s economic model —in terms of dependency— was not so different from the models of other countries of the periphery. It was primarily based on mono-production and exportation of sugar, to the US before 1959, and increasingly to the Soviet bloc since 1959 onwards (A. Chomsky, 2010). This period witnessed a theoretical debate initiated by *Ernesto ‘Che’ Guevara* (1928-1967), who was mainly responsible for Cuba’s industrialisation in the first years of the revolution (see Guevara, 2006). Guevara argued for the need of creating and studying the political economy of the early stages of capitalism abandonment, which the Soviet bloc itself lacked. He was critical of the Soviet dogmatism and the capitalist features emerging from Lenin’s *New Economic Policy* (NEP) established since 1921. As Lenin emphasised, NEP was a “strategic retreat” toward capitalism to reorganise the Soviet economy (see Lenin, 1973, pp. 60-78). However, Guevara argued that NEP had so deeply penetrated Soviet society and its relations of production, that it indeed meant going back to capitalism. For Guevara, the transition to socialism required more than nationalising the economy, socialising benefits, and developing productive forces. Also essential was to abolish capitalist categories used to measure and define goals. Another important point advocated by Guevara was the importance of social incentives as the driving force of the revolution. Guevara believed in development based on these incentives rather than individual and material incentives. This was known as the Great Debate (*Gran*

Debate, see Guevara, 2005). Moreover, the revolutionary consciousness characteristic of a *new human* (or *new man*, as Guevara wrote) is necessary to appreciate social incentives. In Guevara's words: "To build communism, simultaneously with the material base, a new man has to be made" (Guevara, 1979, p. 7, own translation). Nowadays the socio-economic changes that the Cuban revolution has been forced to introduce to survive the crisis, recall the importance of these debates.

A later stage described by Cole (1998, pp. 26-31) is that of "centralised pragmatism" from 1963 to 1970. In those years intuitive methods were still used, and therefore the connection of Cuban leaders to people's reaction to the measures adopted was essential. This communication was facilitated by the existing mass organisations. On the other hand, the debate between social and material incentives to develop the economy was resolved toward Guevara's stance (i.e. prioritising the former over the latter). Consequently, a centrally planned economy relying on moral incentives was established. Nonetheless, some material incentives were still considered to solve immediate problems, like the inability to reach the planned levels of sugar harvest (*zafra*). The effect of moral incentives was to be maintained by continuously developing a socialist consciousness. However, not much attention was paid in how to develop this consciousness (Cole, 1998). Moreover, changes in Cuban economy became imminent when Che Guevara left the country. In 1965 he travelled to support Patrice Lumumba's struggle in the Congo (Castañeda, 1997). Later, in 1966, Guevara moved to Bolivia to lead a guerrilla movement to overthrow René Barrientos' military dictatorship. In an operation orchestrated by the *US Central Intelligence Agency* (CIA) Guevara was captured and subsequently executed on October 9, 1967 (Ustáriz Arze, 2007). In the absence of Guevara and with persisting economic problems in Cuba, the alternative stance of the *Great Debate* was followed in the period from 1970 to 1986. Thereby, a more structured decision-making process and material incentives to achieve economic goals marked this period. In 1972 Cuba joined the international *Council for Mutual Economic Assistance* (COMECON, or CAME, for its Spanish acronym). Subsequently, the *Cuban System of Economic Direction and Planning* (SDPE, for its Spanish acronym) was created to coordinate the functioning within the CAME. High sugar prices favoured diverting the economy from the dependency on sugar exports to countries

of the CAME. However, lack of economic coordination, indebtedness, and unstable sugar prices forced Cuba to remain dependent on the CAME. The adoption of market categories such as individual or company-localised-profits to stimulate the economy did not bring the expected results. Cole (1998) explains that profits achieved by some companies did not always favour the general social welfare. On the other hand, material incentives were distributed based on both work performance and personal needs. In measuring these parameters, trade unions organised under the CTC were highly relevant. The interaction between the government, enterprises, and workers was ruled by a “bureaucratic centralism” administered by the SDPE (p. 35). This centralism inherited authoritarian features from the Soviet model that pervaded the democratic centralism. In addition, this bureaucratic system brought about other vices. Idleness and lack of commitment of workers, together with disloyal competitive practices and corruption became evident to the leaders of the revolution (Cole, 1998). As Cole (1998) asserts, the creation of the Organs of Popular Power (*Órganos del Poder Popular*, OPP) in this period, could be considered a measure to revert these vices. The OPP institutionalised the Cuban direct democracy model and the channels of political participation (see section 2.6). The following period starting from 1986 was characterised by the *Process of Rectification of Mistakes and Negative Tendencies*,¹¹ also known as *the Rectification Process* (see Guerra & Gallardo, 2009). This process was an official recognition of the existing problems and failures that were to increase in the subsequent special period. These failures included corruption, speculation, a growing black market, and work absenteeism, among others (Cole, 1998, p.40). Cole explains that the *Rectification* put priority in solving national or local issues over large-scale investments. It was therefore a process of social change rather than economic policy (p. 45-46). The subsequent special period obliged to centralise even more the few available resources to rationalise and correctly allocate them. Therefore, broadening channels of participation became even more important to making people actors of the necessary and urgent solutions. According to Cole (1998, p. 40) the leadership was successful in implementing measures to cope with these problems and other kinds of “threats to the revolution”. As discussed in following sections, the leadership resisted threats of all kinds by increasing levels of security, which consequently affected participation channels. Cole

¹¹ Proceso de rectificación de errores y tendencias negativas

argues that despite these limitations, the degree of national consensus was maintained due to the level of equality. However, the increasing inequality produced by the new policies introduced by the special period decreased the level of consensus and popular support¹². The possibility of transforming these effects in social unrest is something that the US wanted when the blockade was tightened after the collapse of the Soviet bloc. According to Cole (1998):

The tightening of the US blockade under the 1992 Torricelli Bill and the 1996 Helms-Burton Act was intended, by making people's lives increasingly intolerable with reduced levels of consumption, to lead to hardship, unrest and, ultimately, open revolt. Attempts by the state to 'restore the order' would lead to repression, costing the government legitimacy and leading to the inevitable collapse of the Cuban 'totalitarian' state. (Cole, 1998, p. 6, emphasis in the original)

The concrete effects of the blockade were described by Bruno Rodríguez Parrilla, Cuba's Minister for Foreign Affairs, at the sixty-eighth General Assembly of the UN:

76 per cent of Cubans [are] living under its [the blockade's] devastating effects since the day they were born. The resulting economic damages accumulated after half a century amounted to more than \$1 trillion. The embargo was also the main obstacle to broader access to the Internet, the free circulation of persons, the exchange of ideas and the development of cultural, sport and scientific relations. (Rodríguez Parrilla, 2013)

The *UN General Assembly* demanded almost unanimously¹³ for the 22nd consecutive year to end the US blockade against Cuba. Rather than generating revolts, the blockade has succeeded in increasing the emigration of Cubans, particularly to the US. The special period and the tightening of the blockade added effects to those of the *Cuban Adjustment Act* enacted by the US in 1966. This law had already promoted Cuban emigration to the US, awarding legal residence to any Cuban arriving in the US.

¹² The degree of consensus in Cuban society and its connection to the legitimacy of the model is further discussed in Chapter 6.

¹³ 188 countries voted in favour of ending the blockade, two voted against (Israel and the United States), and three abstained (Marshall Islands, the Federated States of Micronesia, and Palau) see <http://www.un.org/apps/news/story.asp?NewsID=46371#.U-le6YB5M50>

Moreover, the rectification and particularly the special period brought about debates regarding the agricultural model in Cuba. The existing conventional agricultural model was complemented by an organic agenda, whose implementation began during the special period. In addition, the rectification put emphasis in developing the technology industry (particularly biotechnology) and the tourist industry. The latter sector became of particular importance for the Cuban economy since the special period onward.

On the other hand, the ideological aspects of these two periods had considerable relevance. As mentioned above, it became a priority to start broadening channels of political participation. However, the special period brought about some negative consequences to these intentions. The lack of resources prevented the OLPP to solve daily problems required by citizens. This generated apathy and disinterest since people did not feel their claims were considered¹⁴ (Cole, 1998).

As mentioned above, despite its longstanding economic crisis Cuba has kept the foundations of a model focused on satisfying basic needs. However, serious problems are still evident after long years of survival with a model designed for a different national and global context. For example, the necessary improvement of an inefficient and often insufficient infrastructure in the country has been precluded by Cuba's low national income (Torres Pérez, 2012). These problems have been addressed in all kinds of national debates, reports, research, and within a legal framework. The document called *Guidelines For The Economic and Social Policy of the Party and the Revolution* (see PCC, 2011; see also García & Hidalgo, 2013) describes the changes to be implemented from now onwards. This is an official document whose final version and approval was accomplished after an exhaustive process of participation throughout the country (see Lamrani, 2012; Ludlam, 2012). However, the acknowledged economic difficulties have not precluded prioritising environmental themes and following up multilateral agreements adopted to address these issues (Alonso, 2011; see also CITMA, 2010; ONEI, 2014b). Moreover, natural resources existing in the country do not provide a sufficient supply for its economy, which is now largely dependent on the exportation of medical services and tourism (De Miranda

¹⁴ This aspect is further examined in Chapter 6

Parrondo & Villanueva, 2012). An additional disadvantage is then posed by the vulnerability of the tourism industry to climate change and to the increasing frequency and intensity of natural hazards. As mentioned above, 2008 was particularly disastrous for Cuba in terms of economic losses following the destruction of three high intensity hurricanes (Puig González et al., 2010). The threat posed by these hazards confirms that *land use* is not only subject to the internal context of countries, but also to external circumstances (Lambin et al. 2001, cited in Moran 2008, p.138). Consequently, the Cuban resource-use strategy has been affected by the economic situation in conjunction with environmental issues.

Combating environmental degradation in a socialist system should give (as evidenced at least in the case of Cuba) a huge advantage over capitalist systems governed by the laws of the market (Wisner, 2001). These benefits come from both domestic and foreign policy. In the first case the Cuban economy, with an absence of a clearly defined private sector, is not orientated toward the maximisation of business profits. Conversely, satisfying basic needs of its population —despite the circumstances— has remained a priority. In the case of foreign policy, the binding of free trade treaties or the pressure of structural adjustment policies hinder a responsible treatment of the environment (see Thompson & Gaviria, 2004, p.14). Moreover, the principles that guide the Cuban model can bring beneficial results for the use of natural resources, land use planning, and physical implementation of building codes. The *National Housing Institute*¹⁵ and the *Institute of Physical Planning*¹⁶ have played a key role in physical planning to reduce disaster risk (Coyula & Hamberg, 2003; Milanés-Batista & Rodríguez-Abad, 2012). These issues, not being subjected to the pressures of market forces, can be more easily guided to meet needs and reduce vulnerabilities —even if this does not involve economic profits (Thompson & Gaviria, 2004). The Cuban model has ultimately the advantage of incorporating elements of sustainable development more expeditiously than a free market system. Despite the crisis, Cuba did not unleash measures that may have been justifiable given the context, such as the

¹⁵ Instituto Nacional de la Vivienda (INV)

¹⁶ Instituto de Planificación Física (IPF)

burning of forests to increase agricultural areas, or finding cheap industrial methods that could increase environmental damage (see Bell, 2011).

2.5. Hegemony and Consensus

In the language of Giddens (1987) the Cuban NCD can be considered a "power system" that uses "institutional mediation of power" (Giddens, 1987, p. 8-9). The "reflexive monitoring" that each modern state performs (see Giddens, 1987, p.220), is globally criticised in the Cuban case. The criticisms against the alleged *monitoring* in Cuba should bear in mind the state of siege the country has been subjected to. Cuba and its population have suffered from terrorist attacks, multiple threats, and hostility of various kinds. The multiplicity and persistence of these events can be associated to a permanent state of war. The US has been greatly implicated in these issues. An example is given by the protection awarded to the internationally recognised terrorist, Luis Posada Carriles¹⁷, whose crimes have directly affected the Cuban population. Another recognised threat is the US Guantánamo-Base, which is not only infringing Cuban sovereignty since its establishment, but also perpetrating human rights violations¹⁸. Another example of hostility is given by the case of the *Cuban five*, which refers to the illegal imprisonment of five Cuban citizens who were trying to prevent terrorist attacks being planned in Miami (Bolender, 2012). Additionally, evidence of the high expenditure of institutions such as the *US Agency for International Development* (USAID) in subversive programmes in Cuba, continues to appear until now. These and other cases (see also N. Chomsky, 2003) together with the more than 50-year-old blockade have justified maintaining a high level of security in Cuba, which pervades several aspects of social life.

Moreover, to provide some contrast to these analyses, the Cuban NCD could be examined through frameworks that originate from opposing ideological principles, such those of Weber —a well-known advocate of capitalism (see, for example, Weber, 1978). For

¹⁷ Luis Posada Carriles, among other crimes, was recognised as the *mastermind* of the destruction of the flight 455 of Cubana Airlines, killing all 73 passengers (Bolender & Chomsky, 2010, p. 54).

¹⁸ On human rights violations in the US Guantánamo-Base see Ismail (2014).

instance, Weber's concepts of "authority" and "coercion" can be applied to the case of the Cuban NCD. As discussed in Chapter 6, the concept of authority seems more reflected in the Cuban NCD rather than the concept of coercion. Even though one may acknowledge that these concepts are manipulated depending on who defines them, Cuban society in general seems to recognise the authority of the Cuban NCD. On the other hand, an example of coercion may be found when authorities must threaten with fines those who do not obey when asked to leave their homes in hazardous situations. However, according to the people I interviewed, this is something that happens very seldom (see Chapter 6). Cuban people seem to obey by conviction or commitment rather than by fear of retaliation.

As explained earlier, legitimacy is also an important concept to address in this study. Unfortunately, the scope of this thesis does not allow a thorough debate regarding the legitimacy (or not) of single party systems, such as the Cuban. However, mentioning some remarkable things that characterise this system, as opposed to multi-party or liberal systems may be useful. For example, using Weber's terms, the absence of *extreme ideological divisions* in Cuban parliament and the OPP (see section 2.6) allows avoidance of the *negative politics* present in other systems. Moreover, we can also contrast some elements of the Cuban system with Weber's concepts of *legitimate power* and *ideal bureaucracy*.¹⁹ Included in Weber's concept of legitimate power is the concept of *charismatic authority*. Fidel Castro and the emblematic leaders of the revolution may be considered as displaying this type of authority. Weber's concept of *rational legal authority* (also considered a source of *legitimate power*) may be recognised in Cuba in processes where key political decisions were adopted. Examples of these are the recent approval of the labour code or the guidelines of the party resulting from long and extensive debates (see "Gaceta oficial publica," 2014; Lamrani, 2012; Ludlam, 2012;). These *democratic processes* may develop consensus and commitment to follow certain rules within the population (see Chapter 6). However, some Cuban citizens still question these processes. They claim, for example, that these debates were not broad enough or that changes introduced by ordinary citizens affected issues of low relevance in the country.

¹⁹ On "extreme ideological divisions," "negative politics," "legitimate power," and "ideal bureaucracy" see Weber (1978) and Best (2001).

Moreover, according to Weber's ideal bureaucracy, we may recognise that it differs from main principles that guide the Cuban system. Far from seeking to be separate from society, the Cuban state seeks to remain intertwined with civil society. Although one may argue that this is not what happens in reality, this intertwining is a key aspect in socialist or Marxist theory. In a socialist transition, each citizen has a duty and influence in the state (see Hobsbawm, 2011). In addition, one may find empiric evidence of this proximity of the Cuban state and its representatives to civil society. Examples can be found in the fact that political representatives remain —by law— as ordinary workers, i.e. they do not receive salary for their duty as representatives. Another example is given by the non-existence of political campaigns. This aspect gives all citizens the chance to become a representative based on social merits (Roman, 2003). The only role of the Communist Party in this state is that of providing the ideology and ensuring the prevalence and predominance of social values. This ideology and values are in opposition to the Weberian idea of subjectivity of values and the prevalence of technocracy in an ideal bureaucracy. Furthermore, drawing upon Foucault's terms, one may argue that the formation of *the self* in Cuban society uses a certain *disciplinary normalisation* based on values (see Foucault, 1980, pp. 78-108).

On the other hand, the concept of hegemony, as developed by Gramsci (1981), is present in all modern states. Gramsci's concept abandons earlier versions that considered it as working only through imposition and coercion (Acanda, 2002). Gramsci's theory describes a hegemony that finds support in the creation of "intellectual leadership" and "consensus" (Acanda, 2002, p.245). The effect of, for example, giving and promoting education to all can just help developing the necessary consciousness for building the counter-hegemony advocated by Gramsci. Thus it becomes logical to expect that well educated societies have better tools to advocate against injustice. This is evident in the case of Cuba, where mistakes are revealed and denounced by a well-educated society, as discussed in Chapter 6.

In this thesis I use the term *ideology* as that described by Acanda (2002), which includes not only conceiving an ideal and desired world, but also a way of understanding reality and practices in present life. In conceiving an ideal and desired world, the concept of

democracy is essential. It is also relevant to understand how this concept is connected to demands and practices of popular power through political participation.

2.6. Democracy, Popular Power, and Popular Participation

Frequently academic assessments of the Cuban system explain its success in risk reduction by emphasising its alleged “strong and authoritarian central government” (IFRC, 2002, p. 28; see also Sims & Vogelmann, 2002). However, some researchers convey a broader perspective that incorporates aspects of environmental governance and particularly civil society’s role in the achievement of these goals (see, for example, Thompson & Gaviria, 2004). This work intends to delve into these issues to understand how such governance is achieved and how it is possible to accomplish communities’ mobilisation. The latter gives rise to questions such as: Is a centralised government, which imposes people’s mobilisation and cooperation in these situations, enough to avoid disasters? Answering this question in connection with the research questions of this study will provide more complete explanations of Cuba’s success in DRR.

To fully understand the Cuban model of DRR, it becomes necessary to describe the socio-political model in which it is embedded and to examine the principles underlying it. Furthermore, we need to consider the extent to which these principles are related to the values the revolution has sown into all aspects of Cuban society. Herein it is acknowledged that different assessments of the Cuban revolution exist depending on ideological standing points (Cole, 1998; Martínez-Fernández, 2011). Thereby, these assessments may lead to different interpretations of Cuba’s DRR model and its performance in dealing with natural hazards. Roman (2003, 2007) presents an alternative perspective of the Cuban revolution to that frequently found in the literature (see, for example, Colomer, 2000; Sondrol, 1991). According to Roman (2007, p. 69) the Cuban model is based on “participation, consultation, consensus, and representation.” Below, I describe some of the main elements

that constitute the Cuban socio-political system and its type of democracy, which is based on the concept of *popular power*²⁰.

The Cuban system of government was established in 1976 in the *Constitution of the Republic of Cuba*²¹ (Roman, 2003). Herein, the *Superior Organs of Popular Power* (*Órganos del Poder Popular*, OPP) and the *Local Organs of Popular Power* (*Órganos Locales del Poder Popular*, OLPP) were inaugurated. Within the OPP the *National Assembly of Popular Power* (ANPP, for its Spanish acronym) is defined as: “the supreme organ of state power. It represents and expresses the sovereign will of people” (Cuban Const., art. 69). In addition, the *Cuban Constitution* defines the ANPP as “the only body with constituent and legislative powers” (Cuban Const., art. 70). The ANPP or the Cuban parliament, currently accounts for 612 deputies (elected every five years), where 48.9 per cent are women (Inter-Parliamentary Union [IPU], 2013). Hence, this parliament corresponds to one of the world’s broadest parliamentary representations in absolute terms, and even broader when compared to Cuba’s population (on parliaments worldwide, see Power & Shoot, 2012). The ANPP elects, among its deputies, the State Council and its president (Cuban Const., art. 74) to represent the ANPP between sessions (Cuban Const., art. 89). In this connection, the Constitution specifies that:

The President of the State Council is the head of the State and the head of the Government. The State Council is responsible before the National Assembly of Popular Power and is accountable [to the Assembly] for all its activities. (Cuban Const., art. 74, own translation)

The ANPP also designates the vice-president and the rest of the members of the Council of Ministers, after a proposal by the president of the State Council, who is also the president of the Council of Ministers (Cuban Const., art. 75). The Council of Ministers is the “highest executive and administrative body” (Cuban Const., art. 95). An executive-committee represents the Council of Ministers between each of its meetings (Cuban Const., art. 97). Moreover, the 169 municipalities and the 14 provinces in Cuba constitute the local organs of popular power (OLPP), which are elected every two and a half years. The assemblies at

²⁰ On the concept of popular power see also Arblaster (2002)

²¹ Hereafter abbreviated “*Cuban Constitution*” or “*Cuban Const.*”

each of the three levels —national, provincial, and municipal— create their permanent *working commissions* (Cuban Const., arts. 81, 105, 106, and 110). In addition, the provincial and municipal assemblies designate their respective *administrative councils*, which “direct economic, production, and service entities of local subordination” (Cuban Const., art. 103). These *administrative councils* substituted the *executive committees* existing in the previous Cuban Constitution. The reason for this substitution was to distinguish the executive labour of the assembly from the administrative role played by the administrative councils (Roman, 2003, p. 74). Furthermore, within each municipal assembly, the elected delegates of each *circumscription* constitute the *popular councils*. These delegates elect the popular council’s president and select other additional council members from local mass organisations and institutions (Cuban Const., art. 104). Figure 2-2 below summarises the main organs constituting the OPP and OLPP.

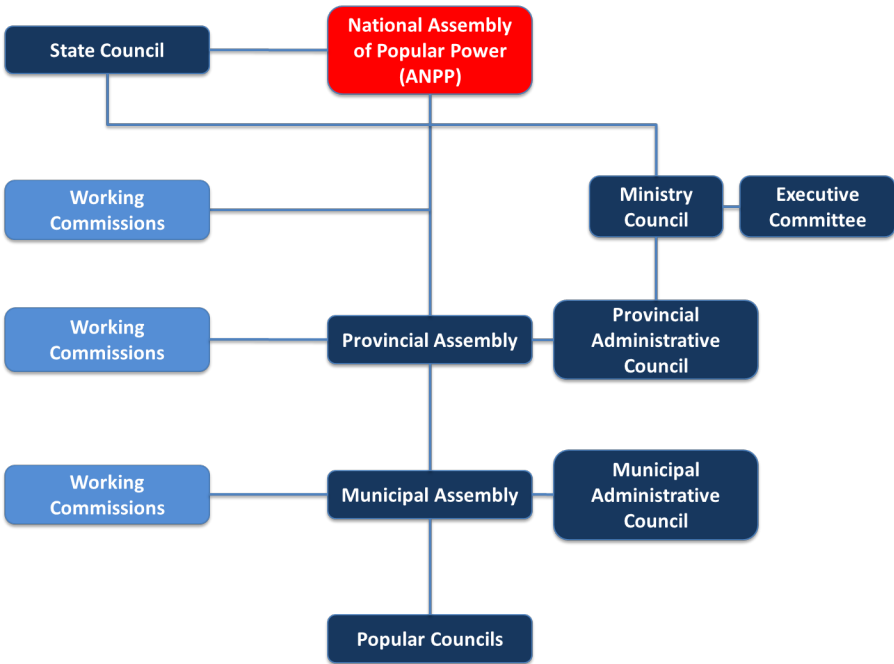


Figure 2-2: Government System of The Republic of Cuba: Organs of Popular Power (OPP) (Source: this author based on the Cuban Constitution)

Together with the OPP and the OLPP, the Cuban Constitution establishes the role of the *Communist Party of Cuba* (PCC, for its Spanish acronym) as the vanguard of society in the

process of building socialism. The PCC is defined as Marxist-Leninist and *martiano*²² and is the only party existing in Cuba (Cuban Const., art. 5). Furthermore, the Cuban Constitution defines the Union of Young Communists (UJC, for its Spanish acronym) as the vanguard of Cuban youth. As such, the UJC aims to establish consciousness in young generations and promoting their active participation in building socialism (Cuban Const., art. 6). Carranza (1990) explains the process between 1965 and 1967 that established a single party system in Cuba. Marx and Engels in their famous *Manifesto of the Communist Party (1848)*, and Lenin since 1900, advocated the idea of *one party* uniting the revolutionary struggle (see Lenin, 1904/1977b, 1900/1977c; Marx & Engels, 1848/2006). However, Carranza argues that in Cuba the single party system emanated more as a historical necessity of the revolution rather than as an ideological or doctrinal basis. Moreover, to explain how the OPP and OLPP are constituted Roman (2003) provides a thorough description of the Cuban election system of delegates. This system would be based on the concept of *mandat impératif* that can be deduced from J.J. Rousseau's famous work *The Social Contract (1762)*. Herein, Rousseau outlines the principles of what is known as *direct* or *participatory democracy* (Bachrach & Botwinik, 1992; Cohen, 1986; Cunningham, 2002) where deputies act as agents rather than representatives, thus carrying the mandate of the people. According to Rousseau, these agents are accountable and revocable for their actions at any time. In the same way, Marx would advocate these principles in his analysis of the Paris Commune (1871) as Lenin did in turn, in his theory of the revolutionary Soviet state (see, for example, Lenin 1917/1973). Direct popular participation in decision-making, as advocated by these intellectuals, would be ensured if the principles of direct democracy were applied in practice.

Popular consultation as means of empowering citizens in decision-making is another feature of the Cuban model. Examples vary from the new constitution and the family code in the mid-1970s, the labour code approved in 1984, and the debates providing resolutions to the Fourth Party Congress in 1991 (Roman, 2003, p. 64). These processes resorted to the principles of unity and consensus towards a common or general will that are advocated by the revolution.

²² Following the principles of José Martí.

The Cuban legislation and the OPP represent efforts to put into practice elements of a *direct* or *participatory democracy* (Roman, 2003). In addition, as Cole (1998) claims, the OPP revitalised the ethics of the revolution that were constrained by the bureaucracy of CAME and SDPE. The first decades of the revolution became a process full of deficiencies and mistakes that Cuban society has been completely aware of. The subsequent reforms to the constitution aimed to improve channels of participation and to prevent the creation of a *political class* separated from civil society —as advocated by Marx (Hobsbawm, 2011). Efforts in this direction are reflected in the subsequent changes introduced in the electoral processes. The Cuban Electoral Law (Law No. 72), amended for the last time in 1992, provides important elements for ensuring *popular power*. The amendment included the requirement that up to a half of elected delegates to the Cuban Parliament must be *de base* deputies. These *de base* deputies are those elected as delegates in both the municipal and national assembly, thus holding direct connection with their local territories (Roman, 2003). The nomination processes also intend to ensure popular power. This is noticed, for example, when considering that ordinary citizens can nominate candidates to municipal assemblies (Law No. 72, art. 81). These procedures occur before the public and within massive assemblies in each area (Law No. 72, art. 78-80). In addition, candidates can be nominated by *candidature commissions*, which must be constituted by members of the main mass organisations of the country (Law No. 72, art. 68). These organisations are²³: the Cuban Workers Federation (CTC), the Committees for the Defence of the Revolution (CDRs), the Federation of Cuban Women (FMC), the National Association of Small Farmers (ANAP), Federation of University Students (FEU), and Federation of High School Students (FEEM). After the 1992 amendment in the Cuban Constitution, the Cuban Communist Party (PCC) and Union of Young Communists (UJC) were excluded from candidature commissions (Roman, 2003). Moreover, regarding Cuban mass organisations, it is necessary to describe a few aspects of the largest and most relevant ones, namely, the CTC and the CDRs. The CTC is one of the oldest organisations existing in Cuba. Its name was adopted in the first congress in 1939, but its origin can be traced back to the second half the nineteenth century. The CTC and all the trade unions constituting it have been

²³ The Spanish acronym for each of these organisations is written between parentheses.

essential in ensuring participation of workers in policies and decision-making at local and national levels (see Ludlam, 2009). On the other hand, the CDRs have played a role in defending the revolution since their creation in 1960. Nowadays, more than 120,000 CDRs exist throughout the whole country (Gell Noa, 2013). Every street and block in Cuba has its own CDR. Their duty is to mobilise the Cuban population to achieve multiple goals aiming for the construction of socialism. Examples of goals where the CDRs have been fundamental are the literacy campaign, the multiple blood-donation campaigns, and the rehabilitation and reconstruction of areas destroyed by natural phenomena (Carballido Pupo & Ávila Ávila, 2008). Cuban mass-organisations have similar structures to that of the OPP and the PCC, i.e., from zone committees, to municipal, provincial, and national direction²⁴. In decision-making, these organisations follow the principles of *democratic centralism* and *unity of action* as developed by Lenin from 1903 onwards (see, for example Lenin, 1904/1977b, 1900/1977c, 1906/1978). Herein, broad debates lead to adopting the decisions based on the views of the majority. After decisions are adopted, the structures from top to bottom agree in following them with discipline and unity. A key aspect of democratic centralism and of unity of action is the necessity of broad participation of the masses, namely, popular participation in decision-making. Therefore, it becomes necessary to delve into the concept of participation itself.

Guzón et al. (2002) take an overview of different authors to elaborate a broad concept of popular participation. In short, this concept makes direct reference to the transfer of power of any kind to the community. Thereby, it assumes that people, individually or jointly, could make decisions directly related to community's development in its different stages. According to Rebellato (2000) popular participation should include the ability to completely change the mechanisms and levels of participation previously established. To exercise this power, universal access to information and tools of all kinds need to be provided. Thus, full participation is not conceived without education or access to information. This process can ultimately generate commitment and bestow duties and responsibilities (Arenas & Candelé, 2001, cited in Guzón et al., 2002).

²⁴ See <http://revolucioncubana.cip.cu/logros/modelo-social-socialista/democracia-socialista/organizaciones-de-masa-politicas-y-sociales/>

The deepening and broadening of participation in Cuba has gone slower than the revolutionary process itself has required. In fact, Valdés Paz (2009) explains:

The Cuban Revolution managed to create a set of institutions and participatory procedures that have given its population an unprecedented historical level of political participation and a leading role, which is absent in any of the contemporary societies. However, several constraints to its development and restrictions to its exercise have underused the participatory potential accumulated in the political system. (Valdés Paz, 2009, p.30)

As explained above by Valdés Paz (2009) and other authors such as D'Angelo Hernández (2005) and Martínez (2014), many of the deficiencies of people's participation mechanisms originate in multiple external factors. These factors are related to the geopolitical context of the Cuban revolutionary process. Therein, one must consider the constant attacks perpetrated by the US administrations in turn and their institutions against the revolution, which have entailed applying extreme security measures. These measures started creating a *culture of security* that precluded distinguishing the acceptable limits that this security should have reached. Consequently, the profound level of participation the revolution was able to create started then to be "under-used" (Valdés Paz, 2009, p. 30). Moreover, the siege state created by the US blockade since the outset of the revolution required the expansion of the economic centralism of a socialist-planning system. Consequently, this centralism was extended to other areas of society (Bolender, 2012; Cole, 1998; D'Angelo Hernández, 2005; Valdés Paz, 2009). Additionally, the *real socialism* of the Soviet bloc countries inevitably transferred vices and power logics that curtailed popular participation (Martínez, 2014). D'Angelo Hernández (2005) adds that these deficiencies forced social institutions to set objectives drawn from a central court without enough feedback from popular needs and demands. The extent to which the Soviet bloc influenced the Cuban model remains a source of debate among Cubans (see also Chapter 6). As presented later, institutions related to environmental and natural hazard issues have somehow reverted deficiencies in participation. Methodologies adopted in formal and extra-curricular

programmes such as the *interest circles*²⁵ or those adopted by environmental NGOs as a systematic and daily practice represent a substantial advance. For example, the methodology of *popular education*²⁶ aims to create or deepen existing channels of socio-political participation. The challenge is that these practices are expanded to other institutions reaching all sectors of society. An even greater challenge is that these methodologies are ever incorporated into formal education in Cuba. Participatory methodologies are also advocated within the fields of political ecology and environmental justice, which are discussed in the next section.

2.7. Political Ecology and Environmental Justice

Strategies to face environmental problems with responsibility are recommended by Liu et al. (2008, cited in Moran, 2008). These authors propose to effectively integrate science and environmental decision-making through procedures considered transparent by all the involved actors. Moreover an overview of the literature shows that already in the 1970s some scholars took broader views to better explain the causes of disasters (see, for example, Baird et al., 1975; Maskrey, 1989; Oliver-Smith, 1999; Wisner et al., 2004). Their innovative approaches included analysing aspects embedded in development strategies that were overlooked until then. As Wisner et al. (2012, p. 11) claim, “[S]ustainable DRR requires significant changes in the structure of societies, not short-term band-aid solutions, especially not those focused on only hazards.” In addition, the same authors introduce new variables within a more general context to the disaster risk reduction approaches. Although these variables might not seem easily related to the topic of natural hazards and disasters, they would indeed influence how countries face these issues. Thereby, variables such as the economic and social structure; ideologies, history, and culture should acquire relevance as “root factors” in the final progression of vulnerability (p. 20).

²⁵ For further descriptions and examples of *interest circles* (círculos de interés) see, for example, Bowles (1971) and González Cabrera et al. (2003).

²⁶ See the following section.

In connection to these broader approaches, political ecology and later environmental justice and climate justice, were gradually developed as other important approaches to study complex issues that were hitherto analysed with more reductionist views. These approaches stepped away from the tradition of considering natural and social sciences separately; they emerged from incorporating complex, holistic, and multidisciplinary models to analyse environmental problems. In this way, the relation between these problems and socio-political issues becomes more evident (Espina, 2013; see also Levins & Lewontin, 1985). These later approaches allow understanding multiple variables that produce and reproduce poverty, inequality, and vulnerabilities; and how these variables are connected to nature and climate change. At the same time, they propose emancipating alternatives of change, instead of “techno-bureaucratic” reductions—common in earlier approaches (Espina, 2013, p. 63).

Within a framework of political ecology, multiple organisations and specialists define environmental justice. In particular the *US Environmental Protection Agency* (EPA) describes it as an equal or “fair trade” among humans regarding environment and its effects (EPA, 1998, p. 7). According to Espina (2013), this places environmental justice in direct relation with respect to human rights. The particular case of climate justice is an application of environmental justice to the negative effects of climate change. By speaking of climate change and its impacts on society, one inevitably makes reference to social inequality. It is precisely the world’s poor and marginal populations who are most negatively affected. Therefore, they are recognised as the most vulnerable ones (IPCC, 1997, 2007; Mendelsohn et al., 2006). Paradoxically, these marginalised groups²⁷ are also the ones that have perceived less satisfaction from the modernisation processes that have induced global ecological damage (Shanmugaratnam, 1989). On top of all, the world’s poor have the lowest contribution to greenhouse gases, which in turn are the main contributors to climate change (Tol, 2009).

²⁷ Shanmugaratnam refers to them as “The South”.

The previously mentioned approaches are directly related to the concept of *sustainable development*, which has induced longstanding debates since the Brundtland report²⁸ was published in 1987 (Shanmugaratnam, 2011). Authors such as Piñeiro et al. (2013) skip these debates to go further. They claim that future strategies to stop damaging our ecosystems will be closely linked to our ability to generate a shift in consciousness. This shift does not only include governments and institutions, but humans in general. In this sense, one may hope that systems that encourage human or moral values (such as solidarity and altruism) as essential elements for development will succeed over those based on competition and consumption.

Moreover, although signs of an ecological path seem to have been present in earlier socialist transitions, their later distorted-evolution discarded these paths (Foster, 2000; Levins, 2005). In Cuba, the special period motivated a change of policies in a desperate search for the guarantee of subsistence. Since those years, Cuba adopted successful paths regarding the relation between its society and the environment (Bell, 2011; Whittle & Rey-Santos, 2006). However, evidence demonstrates that Cuba's choice of implementing ecological and sustainable methods was adopted since the outset of the revolution in 1959 (Levins, 2005; Suárez et al., 2012). Antonio Núñez Jiménez states that Cuba took —since the first years of the revolution— important steps to establish a “culture of nature” (Núñez Jiménez, 2010, p.175). This occurred thanks to the creation of institutions such as the National *Commission for Environmental Protection and Rational Use of Natural Resources* (COMARNA, for its Spanish acronym), which later evolved into the *Environmental Agency* (AMA, for its Spanish acronym). This latter institution is part of the *Cuban Ministry of Science, Technology, and Environment* (CITMA, for its Spanish acronym). Additionally, since 1980 many laws that prioritise environmental issues were approved. Núñez Jiménez rejects the economic assessment of nature, arguing that this approach does not take into account its vital importance to human existence. A fair assessment of nature should emerge from deeper and multidisciplinary views, addressing ethical and holistic conceptions (Núñez Jiménez, 2010, p.175). An example of a multidisciplinary and holistic

²⁸ Alternative name given to the final report “Our common future” of the World Commission on Environment and Development (WCED) (see Kiernan, 2008; WCED, 1987).

approach to nature is presented by Cuba's preparedness and response to natural hazards. This approach may have contributed to Cuba's extraordinary performance in risk reduction compared to other countries that suffer the same kind of threats (Mas Bermejo, 2006; Sims & Vogelmann, 2002).

2.8. Environmental Governance and the Cuban System of Disaster Risk Reduction

Additional efforts to develop a *participatory democracy* in Cuba are also found in the sphere of *environmental governance*. Herein, different actors of society have been included in discussions and processes to solve environmental problems. These processes coincide with a global trend of increasing participation of stakeholders in environmental governance (see Bulkeley & Mol, 2003). To accomplish a better interaction between actors addressing environmental issues, one of the methodologies being put into practice in Cuba is known as *popular education*.

Although in the case of Cuba the concept of *popular education* was introduced only in recent decades, evidence shows aspects of this type of methodology existing since the eighteenth century (Delgado Granados, 2009; Pineau, 1994). A more elaborated, complex, and significant concept of popular education emerged in the second half of the twentieth century (Brito Lorenzo, 2008). The main exponent of this new concept of popular education was *Paulo Freire* (1921-1997). Freire defines popular education as a libertarian education that breaks up the educator–learner relationship that exists in traditional or *banking education* —as Freire calls it (see Freire, 2005). The latter term resembles the effect of depositing in containers (like in a bank) immobile and inert contents. Those in charge of depositing these contents would be the educators, who represent the authority and the owners of knowledge. On the other hand, the learners are those who save the content-deposits and who suffer from “the absolutism of ignorance” (p.79). In popular education, the contradiction between educator and learner held by traditional education no longer exists. The educator is at the same time a knowledge-receiver from the learner, who at the same time realises about her/his educating power. Hence, together they start creating and

reinventing the educational contents that reflect a dynamic reality. This process allows them to develop a critical awareness of society and thus form themselves as subjects instead of objects within it. The learnt concepts are the tools with which these subjects can influence society to change its historical oppressing logic (Freire, 2005). Freire defines “banking education” as functional to the systems that maintain the oppressed societies as such. This explains the need for popular education as a source of liberation and transformation, thus emphasising its political role. Popular education would then enable closer face-to-face communication based on trust developed between actors. These interaction processes may, according to Newig and Fritsch (2009), favour sustainable environmental-decisions.

Establishing an adequate approach to environmental governance in Cuba requires defining the role of institutions. In this country, due to the absence of a fully private industry, the system cannot be analysed with approaches where the private industry has a substantial role. Consequently, incentives applied in other systems to control the agency of this sector, like EMSs, NPM, or NEPIs²⁹ (see, for example, Evans, 2012; Jordan et al., 2003; McCarthy & Zen, 2010), differ quantitatively and qualitatively from the social incentives applied in Cuba (see Estrategia Ambiental Nacional [EAN], 2007). Moreover, Ostrom (1990) emphasises the role of trust in improving governance mechanisms. Trust between actors is an essential element in the strategy known as *network governance* (Evans, 2012). How trust operates in network governance, resembles aspects of the Cuban approach. In the same direction, *adaptive governance*, as described by Evans (2012), is based on network models where the stakeholders should be willing to learn from each other. This latter approach may recall the methodologies of *popular education* explained above, thus understanding the synergy of this education methodology and adaptive governance. Furthermore, Lemos and Agrawal (2006) describe *hybrid strategies* of environmental governance, in which neither the state nor the market have the central role. Although the market is almost absent in the Cuban model, its role can be replaced by the role played by NGOs. Therefore Cuban governance can be compared to *hybrid governance strategies*. Although the Cuban state

²⁹ Environmental Manage Systems (EMSs), New Public Management (NPM), and New Environmental Policy Instruments (NEPIs).

still plays a central role in environmental issues, NGOs are adopting an increasingly prominent position (see Thompson & Gaviria, 2004).

Consequently, the described approaches help explain how environmental governance has evolved in Cuba prioritising the integrated work of different actors. This integration has included organisations that seem not having any relationship with environmental issues, such as the National Union of Writers and Artists, or UNEAC, for its Spanish acronym (see CITMA, 2010). The interaction of different disciplines to find solutions is promoted in the adaptive governance strategy, as described by Evans (2012). Moreover, Moran (2008) emphasises the importance of understanding social and ecological history to find sources and solutions of environmental problems.

Cuba's recent history illustrates substantial social investment in spite of years of crisis. A long-term approach has been adopted in matters of environmental protection as well as in reducing the impacts of climate events. The Cuban *National Environmental Strategy* (EAN, for its Spanish acronym) acknowledges successes and failures regarding environmental issues in Cuba (EAN, 2007). Furthermore, the strategy describes sources of failures and their symptoms in environmental problems. Among the sources of errors or failures, the strategy enumerates (p. 1):

- Lack of environmental education and environmental consciousness
- Low standards of management
- Low input from scientific studies
- Insufficient environmental input in policies and development programmes
- Absence of a sufficiently inclusive and coherent juridical system
- Lack of material and financial resources

Moreover, the EAN describes the main environmental problems that Cuba is facing. These problems (see below) are to some extent symptoms of the above-mentioned environmental failures (EAN, 2007, p. 9-11):

- *Soil degradation*: specialists acknowledge that although having a natural and anthropogenic origin, the latter is the main source of this kind of degradation. Some figures illustrating its magnitude state that the erosional processes are affecting more than 4 million ha of Cuban soil. These and other processes account for 60 per cent of the country's surface, and all of them contribute to desertification processes.
- *Deterioration of sanitation and environmental conditions in human settlements*: this deterioration is closely related to the lack of resources, infrastructure, maintenance, and monitoring, together with the non-compliance of environmental legislation. Evidence of this problem is found in the quality and quantity of water supply, the proliferation of unhygienic landfills, and the multiple zones with poor air quality.
- *Pollution of inland and marine waters*: this increasing problem is also induced by lack of resources, maintenance, and monitoring. This pollution is evidenced, for example, in the poor sewage networks existing throughout the country.
- *Deforestation*: this problem is also increasing due to the indiscriminate use of native and artificial forests as energy resources. Deforestation has produced, in addition, erosion of soils and loss of forest flora, among other negative effects.
- *Loss of biological diversity*: this problem has been fostered by the lack of environmental management, sustainable development programmes, control of illicit practices, and environmental education and consciousness. The predominance of an intensive agriculture with the excessive use of resources and low crop rotation has contributed to this problem.

On the other hand, the EAN proposes pathways to overcome these failures. The problem of insufficient environmental education is addressed by the *National Strategy of Environmental Education* (ENEA, for its Spanish acronym), which was established in 1992. ENEA's task is that of building environmental consciousness within Cuban population. After 12 years of its creation a broad consultation process encompassing public institutions and social organisations gave rise to the new strategy for the period 2010-2015 (CITMA, 2010). The portal "www.medioambiente.cu" was a result of the measures included in the ENEA. The portal gathers environmental data to make it easily accessible.

In addition, it provides access to environmental legislation to the different institutions involved.

Regarding the better use of resources and energy, the *energy revolution* was undertaken from 2006 onward. This process aimed at solving the long-standing failures and shortages of energy the country as a whole suffers, which began during the special period. In addition, it aimed to develop a sustainable energy system throughout the country. Measures encompassed different areas, from households to the local and national level. All this required popular mobilisation to achieve its successful implementation. At the household levels, changes in their electrical equipment were introduced. These included energy-saving bulbs and modern refrigerators and washing machines that replaced the old ones. At the national level, electricity generators were built to form a national self-sustainable network (see A. Chomsky, 2010; Suárez et al., 2012).

Other methodologies to improve adaptation and reduce vulnerability to climate change have been addressed in Cuba by following two main directions (Muñoz, 2013, p.6). One of them has been to increase the resilience of ecosystems. The other is to promote the application of *cost-effective* natural solutions to adapt to the effects of climate change, such as the sea-level rise and salinization of aquifers. As an example of the former, Muñoz summarizes some of the measures undertaken in the *Sabana-Camagüey* ecosystem. These measures resulted from collaboration between the CITMA, the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF). Some of these measures include (Muñoz, 2013, pp. 4-8):

- Integrated Coastal Management: integrating all stakeholders in decision making
- Promotion of sustainable fisheries
- Growing of natural “sponges”
- Growing mangrove-swamp oysters to avoid mangrove cutting
- Sustainable planning of infrastructure for tourism
- Integrated management of watersheds
- Reforestation of northern coastal forests of the *Sabana-Camagüey* ecosystem

- Sustainable management of *water buffaloes* (whose breeding has caused contamination of aquifers among other negative effects)
- Use of biogas for wastewater treatment
- Organic Fertilisation

Examples of solutions to adapt to climate change described by Muñoz (2013, pp. 4-8) are:

- Substantial increase of protected areas in the south of Cuba: from two areas in 2001 to two hundred areas nowadays
- Emphasis on the protection and rehabilitation of mangroves, coral reefs and *sea grass* beds.
- Creation of *Areas Under Special-Use Regime and Protection* (ZBREUP, for its Spanish acronym)

Although mitigation and adaptation to climate change exert important effects on reducing vulnerabilities to disasters, the Cuban system of *National Civil Defence* (NCD) directly addresses the issue. The precursor of this system was the Cuban *Popular Defence* founded on July 31, 1962 (EMNDC, 2012). Some of its history and milestones are summarised by Castellanos (2002):

- Hurricane Flora decimated Cuba in 1963: over 1200 deaths
- In 1966: adoption of Law No. 1194 that creates Cuban *Civil Defence* (NCD) system.
- In 1976: Improvement of the NCD system with Law No. 1316, in force until 1994.
- In 1994: the Cuban parliament (ANPP) issues the *Law No. 75 of the National Defence* (Law No. 75)
- In May 1997: complementing law no.75 the State Council issued the *Decree Law No. 170 on the System of Measures of the Civil Defence* (DL No. 170): It defines duties and tasks within the phases of disaster risk reduction, namely, prevention, preparedness, response and recovery (rehabilitation and reconstruction). It also distributes the responsibilities of the system's constituent elements.

The Decree Law No. 170 (DL No. 170) also establishes responsibilities for the evacuation of vulnerable population in extreme situations, together with the protection of animals, plants and the economy of the country. Evacuated institutions and residential areas remain guarded by *brigades of security*, which are constituted by authorities and ordinary citizens (see Navarro Machado, 2007).

Based on the literature cited in this study, I developed the chart presented in Figure 2-3, which intends to describe the interconnections, roles, and hierarchies of the Cuban NCD System.

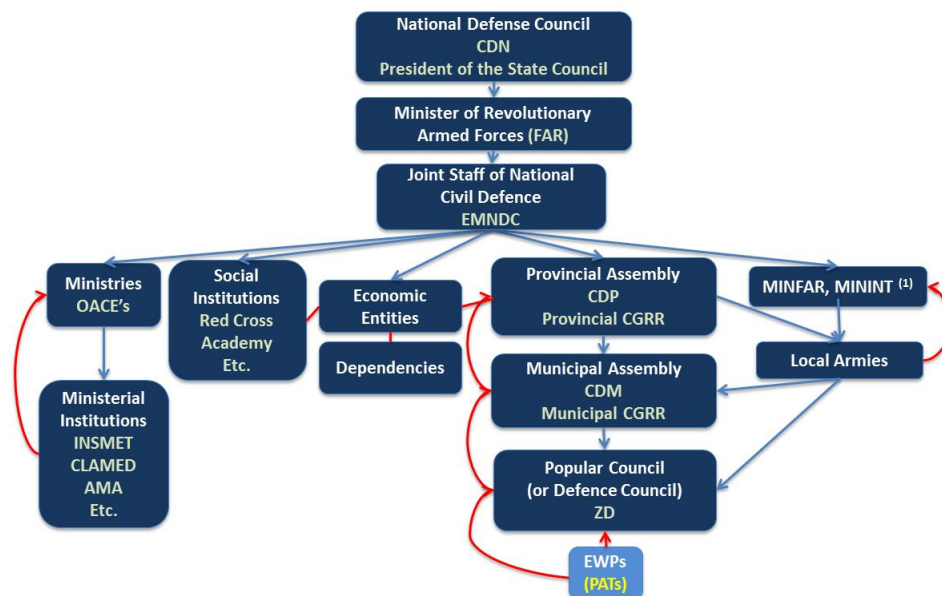


Figure 2-3: Elements of the Cuban Civil Defence System in times of peace, war, and disaster situations. Source: this author based on the available literature (see, for example, Castellanos, 2002; DL No. 170; EMNDC, 2012).

- Notes: ⁽¹⁾ MINFAR and MININT are the Spanish acronyms for the Ministry of Revolutionary Armed Forces and the Ministry of the Interior, respectively. These are included within the Ministries or the State Central Administration Organs (OACEs, for their Spanish acronym). However, I separated MINFAR and MININT from the rest of ministries only to emphasise their role in disaster situations.
- ⁽²⁾ CGRR is the Spanish acronym for Risk Reduction Management Centre. These centres at both the provincial and municipal level work within their respective government levels.
- ⁽³⁾ Popular Councils are transformed in Defence Councils during extreme situations, thus having more power to make decisions.
- ⁽⁴⁾ Early Warning Points, EWPs (PATs, for their Spanish acronym)

Castellanos (2002) also emphasises some underlying aspects of the Cuban NCD system:

- The system is based on the *organised forces of the people*. The joint staff of the NCD (EMNDC, for its Spanish acronym) also coordinates international cooperation in cases of disasters.
- Presidents of Provincial and Municipal Assemblies are the heads of the civil defence at their respective levels, who can activate “command posts” (*puestos de dirección o de mando*) when the situation requires it.
- The NCD’s measures are planned, organised and implemented by various agencies, of governmental and non-governmental origin
- Measures are mandatory by law
- The measures make use of existing resources in each place
- The systems considers prevention as the most economical way to fight disasters
- A first order task of the EMNDC is to approve the programmes, projects and plans for disaster-reduction network

Vice ministers coordinate and control NCD’s activities in their related areas, keeping the respective Minister abreast. Some of the most important and key agencies have specific professional staff to perform this task. Of particular importance is the ability of creating “command posts” at the local level when the situation requires it. This allows decentralising the implementation of emergency decisions. In addition, the fact that the heads of local governments are the heads of the civil defence in their respective levels favours the existence of trust between citizens and those giving orders in extreme situations (Thompson & Gaviria, 2004, p. 34).

Regarding the use of resources, Law No. 75 specifies the obligation to put all resources available to prevent disasters:

All the resources and activities of the country, regardless of their nature, may be seized by the Government of the Republic in order to satisfy the needs of the national defence during exceptional situations. (Law No. 75, art. 5, own translation)

On the other hand, especially in the case of hurricane hazards, the measures for risk reduction are met gradually, following the *information, alert, alarm* and *recovery* phases of emergency mobilisation (DL No. 170; Puig González et al., 2010; Thompson & Gaviria, 2004). In addition, the law establishes that each state agency, economic entity or social institution conducting investments, if required, should perform their studies of risk reduction, to harmonise economic development with protection of the population, and the economy and infrastructure in general (DL 170, art. 18).

In relation to financing ways to implement the measures, the DL No.170 states:

The expenses caused by the actions of the enemy in the event of armed aggression or by natural disasters or other catastrophes, provided they have met the preventive measures of civil defence, will be funded under the provisions dictated in this area by ministries of Finance and Prices, and Economy and Planning. (art. 19, own translation)

Cuba has also followed the international efforts to reduce disasters very closely. A clear example is illustrated during the *International Decade for Natural Disaster Reduction* (IDNDR) declared by the UN. Cuban authorities strongly committed to contribute to this joint effort. Among many other steps, they established the *Cuban National Committee of the Disaster Reduction Decade* (EMNDC, 1999). Other examples of Cuba's commitment are the yearly celebration of the *International Day for Disaster Reduction* and the performance of the *Popular Exercise of the Actions in Case of Disasters*³⁰, also known as "*Meteoro*" (*meteor*) mock drill, from 1986 onwards. In the beginning, the *Meteoro* mock drill was performed yearly during one day before de cyclonic season (June 1 to November 30). From 1998 onwards, the drill it has been carried out during a weekend in May. Saturdays are aimed at preparing authorities and clarification of plans for disaster reduction. Sundays are aimed for preparing the population at schools, workplaces, communities, and neighbourhoods to reduce vulnerability to natural disasters. In addition, other activities such as sanitation work, tree pruning, debris removal, and sewer cleaning are performed ("*Meteoro*," n.d., para. 3-4). Moreover, to fully understand the Cuban DRR

³⁰ Ejercicio Popular de las Acciones en Caso de desastres.

strategy and the factors influencing it, it becomes necessary to describe the elements of the pseudo-equation³¹ of disaster risk (Wisner et al., 2004, p.45):

$$\textit{Risk} = \textit{Hazard} \times \textit{Vulnerability}$$

Although multiple variations of this pseudo-equation exist in the literature (see, for example, FAO, 2008; Shaw et al., 2010), the one presented here is the only one considered in this study.

As seen above, the Cuban model of risk reduction is formally based on laws, decrees, and regulations framed within the environmental sphere. These documents give form to the Joint Staff of National Civil Defence (EMNDC) and the various hierarchical levels of the NCD as an institution and a system. Thus the roles of authority and power-delegation mechanisms in the population at different levels are defined. Other key elements of the system are the Risk Reduction Management Centres (CGRRs, for its Spanish acronym) and the Early Warning System (SAT, for its Spanish acronym). The latter makes even the household a participant of the system, functioning through the Early Warning Points (PAT, for their Spanish acronym). This is possible by providing households or any other social location with tools and knowledge to deal with early warning tasks (see Llanes-Guerra, 2010). Another key aspect is the contribution of a solid scientific basis as well as the financial planning of the system. This planning includes short, medium, and long-term issues. The system is then embedded in society, giving roles to each discipline and each actor in civil society. This distribution of roles encourages the mobilization of the whole society in this area (Batista, 2006; Hernández, 2013). Moreover, the system relies on value-based foundations that the Cuban development model has created, which are legitimized through equity, fulfilment of basic rights and needs, and the protection provided by the state to every citizen in extreme situations (Brundenius, 2009). The government tries to control socio-economic disparities through policies that in many cases are unpopular. The case of car sales to extraordinary prices is illustrative of an unpopular measure. Reasons

³¹ It must not be understood as a mathematical equation, but as a representation of the factors involved and how they interact.

lying behind this reality may be the high costs of importation and additional taxes applied to distribute wealth. According to the Decree No. 320 (Decreto No. 320), these taxes will be used to improve the public transport system (art. 27). In addition, the system has taken advantage of the multiple social organisations, most of them created by the revolution, such as the CDRs (Thompson & Gaviria, 2004). On the other hand, authors such as Pichler and Striessnig (2013) emphasise the important role of formal education to enhance preparedness and response to natural hazards. They argue that formal education positively influences the functioning of social networks. Although this is correct, it is not clear that high levels of formal education will necessarily make social networks succeed in extreme situations. In this study I try to understand the implicit conditions that help these networks work. I want to find out, for example, why grassroots organisations can guarantee cooperation in extreme situations.

3. Trying to Live Like a Cuban

I added this chapter to convey some of my feelings and impressions during my time in Cuba. It is therefore the most subjective and personal chapter of the thesis. The aspects I describe here are based only on my opinion and experiences and, therefore, I do not refer to them as “accepted truths.” Furthermore, the reader might even think that this is an unnecessary chapter. If someday I happen to write a book about Cuba, a chapter like this could probably be one of the most intriguing ones. However, in this case, it is for the reader to judge.

I chose the title for this chapter as “trying to live like a Cuban” because the phrase reflects my attitude from the first day I arrived in Cuba. I was aware, though, that these intentions could only be fulfilled to a certain point, since there are aspects and circumstances which foreigners cannot be subjected to in the same way as Cubans are. For instance, housing for foreigners (students or tourists in general) differs from rooms that Cubans can rent. The law establishes rules for renting rooms to foreigners, but I will not delve into this.

Cubans in general live for a great part of their days in close contact with other citizens, both at work, at school, or out in the streets of their neighbourhoods in their spare time. Thereby, on every block people get familiarised with each other. This interaction is perhaps due both to Cuba’s weather and the culture and idiosyncrasy of its society. One reason making people decide to stay in the streets could be the warmth inside their homes. However, many have fans or air-conditioning and yet still they prefer to stay outside. Cubans often express their thoughts and interests loudly, whether complaining, joking, singing, or just to initiate a conversation. This *social exposure* makes it easier to examine them than if one were to examine other societies which prefer “to hide” at home. It even becomes difficult to avoid conversations in Cuba. In a way, this reminds me of what I experienced in India, where I also did research (which I did not publish) some years ago. The degree of social interaction one may develop with Cubans is influenced by factors like the language and culture. However, my experience suggests that the attitude also plays an important role. Trying to

eat what they eat, to use the public transport as they do, and to attend the attractions they like to attend, among other practices, helped me get a closer insight into this society, into their likes and dislikes. I intended to learn things which most foreigners do not make an attempt to learn when they visit Cuba. I wanted to learn more than what a “Lonely Planet” book for tourists would say. Therefore, the nightlife in Havana or other “tourist attractions” were not really interesting for my purposes. Not only because they represent only a small part of what Cuba is, but also because I think this is what we get to know the most when we talk to people who have travelled to Cuba. My daily activities as an ordinary citizen included: waiting long periods for the “guaguas” (public buses), eating the “10-cuban-pesos pizzas” or at social canteens, living as another member of a Cuban family and sharing their daily family issues. These experiences became essential to develop a better understanding of Cuban society. Also meaningful was the unpleasant but interesting anecdote of crossing almost the whole country in one night in a roofless lorry-trailer. On that night of 29th December 2013, I thought I was going to die from hypothermia. However the interesting events began with the vicissitudes to arrive—in the dark of night—at the hitchhiking point in the “ocho vías” (eight lanes) national highway. My destination was *Santiago de Cuba*. At the “ocho vías” hitchhiking point I waited for a couple of hours aside many other local travellers, holding notes in my hands and waving—like everyone else there did—to get a ride. When finally a lorry stopped to pick us up, this short dialog occurred:

—It is 60 pesos to Camagüey³²— says the co-driver.

—I have only 40—an old man replies.

—Just get in—the co-driver responds.

No one of the remaining eight of us complained or asked for the same discount. We all got in the trailer. Later on I would find a way to continue my trip. The amount of conversations of all kinds, which I listened to—and participated in—during that night, was impressive. Also interesting was to learn of the different motives they were travelling for. One of the travellers even promised to hire another one to work on his farm. Moreover, nobody asked

³² A bit more than two US dollars

me why I —as a foreigner— was travelling in this way. After that trip I understood how much could be experienced in just one night in Cuba —if one aims for it. Ultimately, I realised how safe I felt during the whole journey, unlike the way one may feel when travelling alone at night in other countries. Another interesting experience was to witness a public fight happening between one of my interviewees and a neighbour. “Se fajaron³³” — Cubans would say. Since my surveys were mostly carried out in public spaces —where much of Cuban social life stems from— people passing around or other unexpected events frequently interrupted the interviews. However, I never imagined that a fight would be one of these events, let alone a fight that involved one of my interviewees. Also interesting was to observe the fight and how then the whole block got involved in trying to stop it. Neighbours stopped whatever they were doing at that moment to get involved in the conflict. This is something that helps in imagining how Cuban citizens would behave in hazardous or disaster situations. Thereby, the opportunity I had of meeting Cubans from different backgrounds and livelihoods contributed significantly in allowing me to discover more profound aspects of Cuban society. Students, professionals, “jineteros”,³⁴ street vendors, urban tribes, street musicians, members of mass organisations, militants of the Communist Party and the Communist Youth, and detractors of Cuban leaders are examples of people I met. In addition, also remarkable was to observe the nightlife of Cuban youth in the surroundings of the 23rd and G streets intersection, in the *Plaza de la Revolución* municipality. During these nights I held long conversations with Diego, a poet and peanut vendor who helped me in understanding less known aspects of Cuban society. These moments showed me the “party atmosphere” and nightlife of Cubans somewhat indifferent to tourists. Many of these people were part of the so-called urban tribes. In places like these, away from the nightlife attractions recommended in books, tourists are scarce. It was the many experiences such as those presented above, which contributed to my views, thoughts and ultimately, to the way I performed this research and the objectives I was aiming for. My enquiries, analyses, and findings are influenced by these experiences. Ultimately, I believed it was appropriate to share some of these experiences, in order that

³³ “Fajar” or “Fajarse” is the verb used by Cubans to mean “to quarrel”

³⁴ Hustler or similar, typically found in touristic places in Cuba

the reader would hopefully better understand the logic I used, together with possible omissions or mistakes in my analyses.

4. Research Design and Methodology

This chapter describes all the aspects related to the research design and methodologies used to carry out the present study, from its beginning to its end. It includes a description of the sampling methods, the sample unit categories, the sites chosen, and the possible sources of error and bias. The chapter also intends to clarify the rationale and assumptions behind the decisions made during the whole research process, as well as the criteria for evaluating each situation, condition, and findings. Consequently, discussions of the possible limitations of the criteria, strategies, and methods adopted are also included. These aspects allow assessing the validity and reliability of the study through an analytical process.

4.1. Sampling

According to Morgan (2008, p. 799), “Sampling is the process of choosing actual data sources from a larger set of possibilities.” The qualitative part of the research utilised non-probability sampling. Within this method of sampling, the *purposive sampling method* is chosen, since interviewees with relevant knowledge for the objectives of this research were selected. A particular application of this method known as *snowball sampling* was also used in this part of the research. The latter since some of the sample units were included in the research design after getting recommendations from previous interviewees (see Bryman, 2008).

The sample strategy adopted for the quantitative part of the research resembles clustered sampling, where I selected cities or neighbourhoods and sampled many units within these areas (see Bryman, 2008). Within each cluster (neighbourhood) I surveyed in a systematic pseudo-random sampling, selecting two or three households in every block. The categorisation as pseudo-random refers to the fact that although I did not have a conscious bias to select units, the probability (random) sampling may still not be achieved due to other not recognised factors.

4.2. Sample Sites and Settings

One of the first decisions made in this research process was related to the specific areas to be chosen as the sample sites. This decision considers that the nature of the topic and the problem it involves are not related to any specific place in particular, but to the country as a whole. Therefore, any place in Cuba could be considered a valid option, which given its own particularities would still provide significant and interesting results. However, the different sites to be chosen may emphasise different features and aspects within the problem of natural hazards and DRR. This is something to bear in mind when analysing the results and findings of this study, which by no means intends to generalise the results to the reality of the whole country. Still, the research design included the selection of more than one sample site, thus making it possible to have an idea of how the sample-site selection may influence the findings. Another issue to be considered is that since every area of the country has been directly or indirectly affected by natural hazards, any inhabitant would potentially have input regarding the topic.

The criteria for selecting sample sites varied according to the nature and type of data collected. To gather the qualitative data required in this study, the sample site in general was not a crucial aspect. Therefore, the sites were defined in great extent by the sample units and the environment where they operated on a daily basis. Interviews with authorities or specialists were then performed mainly in their own working places with their particular conditions. Most of these working places are located in the city of Havana, in the municipalities of Playa, Cerro, Plaza de la Revolución, Centro Habana, 10 de Octubre, Habana Vieja and Regla. Other sample sites consisted of institutions in the cities of Santiago de Cuba and Holguín. Non-structured interviews and personal communications were performed in several other places in the country, including Baracoa, Playa Girón, and Ciego de Ávila. Moreover, it is worth taking into consideration a characteristic that I perceived during the research process. Members of public institutions or NGOs do not receive privileges due to the fact that they have important responsibilities. They use public transport, eat at social canteens, and live in modest places. In contrast, considerable income differences are perceived in cases of people working directly or indirectly with tourists.

Although most of my research was carried out in the capital, Havana, I did not limit my research to any particular place within the country. One of the reasons for doing this was my interest in having a broader idea of the intertwined work of different areas, disciplines, methods and their adaptation to different realities within the country. I also wanted to have an idea of how much people's actions, behaviour, thoughts would change in other places. One can argue that in Cuba it is not even necessary to do this, since migrants from other cities and provinces are represented in Havana (see ONEI, 2013). Thus, it may be possible to get a reasonable idea of the demographic influence in thoughts or views by just staying in Havana.

In general these settings allowed a fluent and clear communication between the interviewee and the interviewer, thus making it possible to complete the interviews as planned. In a few cases these settings brought about some unexpected difficulties, especially when the working places were crowded. Consequently, these particular interviews were frequently interrupted or not as fluent as expected. The real effect that these difficulties may have produced in the data collected is difficult to determine, but they would be mainly related to a lower quality of the answers due to a loss of concentration of the respondent. Cases where the respondents felt intimidated by the setting's environment were not detected. However this effect may always be present in different degrees during interviews.

On the other hand, this study also considers perceptions of ordinary people related to the topic in question. These perceptions were mainly gathered by following quantitative approaches for data collection. The criteria utilised in this case to select sites was that of searching a great diversity of sampling unit categories, comprising different neighbourhoods, age, ethnicity, sex, and occupation. These criteria, rather than aiming for achieve the randomness that allows a generalisation of the findings, sought for increasing the range of views that may help addressing the concepts and research questions of the study. Criteria based on income level were particularly disregarded in this study. This decision was made considering that despite the increasing inequalities in Cuba due to the recent changes in the model the country still holds an outstanding level of equity compared to other countries (Brundenius, 2009).

The sample sites where most of the quantitative data was collected include the municipalities of Havana already mentioned above. The other municipalities included in the study were Boyeros and Marianao. The settings to collect these data were the neighbourhood's streets and people's homes (see Chapter 3). In the former case, the deficiencies due to interruptions were often present. These interruptions occurred at different magnitudes, from just short interruptions due to curious inquiring of other neighbours, to long and persisting interruptions that made the interview impossible.

4.3. Sample Frame and Sample-Unit Categories

Based on its objectives and research questions this study defines institutions and individuals as its sample units. In the case of the qualitative data, the sample frame from which the sample units are selected consists mostly of all the institutions that have a recognisable role within the NCD system and the process of DRR. Moreover, the selected sample frame for the quantitative data is the Cuban population above 15 years old. This age limit was set arbitrary, based on the quality of the questions and the objectives of this study. In these, the experience, degrees of understanding, and knowledge that youngsters from that age onwards were expected to have seemed sufficient.

The sample units provide different type of data depending on the method used to sample them. In the qualitative part of this study, the sample-unit categories will be mainly defined through the role institutions and individuals play within the system. In this connection, the criteria will consider, on the one hand, institutions that play a direct or indirect role in the NCD system and DRR processes. On the other hand, the criteria also considered the specific responsibility each individual has within her/his institution.

Moreover, the criteria for selecting the sample units in the quantitative part of this thesis are based on social and biological aspects. Among these it is intended to comprise different neighbourhoods, age, sex, and occupation to obtain an idea of how much (or little) these variables may influence the findings. This diversification of sample units gives the

possibility of including a greater variety of concepts, views, and thoughts that may provide better understanding of the problem analysed in this study.

4.4. Sample Size

The qualitative part of this thesis did not have a fixed size of samples to be selected. The criteria used solely intended to include enough institutions and individual actors to help encompass the main angles and perspectives necessary to analyse the complexity of DRR processes. To determine the amount of sample units that would allow obtaining a considerable diversity with the purposive sampling, a kind of theoretical saturation was sought (on theoretical saturation, see Auerbach & Silverstein, 2003; Bryman, 2008; Corbin & Strauss, 2008). However, this latter process brings with it a difficulty in determining when the investigated concepts are indeed fully developed (Corbin & Strauss, 2008, p.148).

On the other hand, the criteria for selecting the sample size for the quantitative part of the study aimed to diversify the concepts and categories found through these data. According to Fowler (2009) although sample size helps to increase reliability, it is not the only way of achieving this purpose, and in some cases may even decrease it (p. 44). Moreover, the sampling process of this study was to some extent motivated by achieving a sample size that would be tolerable from a statistical point of view (p. 45). However, it is reminded that the quantitative data of this study do not intend to generalise results, but to serve only as a complement to the qualitative part.

The sample size was ultimately defined by the capacity of obtaining respondents, which was mainly limited by time. A total of 87 questionnaires were obtained.

5. Research Methods

This thesis uses macro and micro level data regarding one of the successful aspects of Cuba's socio-political, cultural, and economic system. Since the literature focusing on the aspects analysed in this research is not frequent, its design is considered as exploratory within the topic.

Based on the research questions of the study, and the kind of data needed to address them, a mixed-method strategy between quantitative and qualitative analysis was adopted. As Bryman (2008) claims, a mixed methods research (i.e., using quantitative & qualitative methods), if “competently designed and conducted” (p.624), might improve our capacity of explaining the phenomena we are analysing, compared to the alternative of using only one of the methods. This is possible by seizing several advantages the mixed method can provide. For example by triangulating and corroborating findings, offsetting weaknesses, mutually explaining either method's findings, enhancing integrity and credibility, analysing unexpected results, among others (pp. 608-9). In conclusion, mixing both methods in a proper way should entail a certain synergy between them, thus strengthening each method's findings (Bryman, 2008).

The qualitative data in this study is complemented by quantitative data from first and secondary sources. The qualitative data include semi or unstructured interviews to authorities from different fields related to the problem of this study. Additionally, participant and nonparticipant observation and ethnography were used as methods that can help find important meanings and patterns, which may not become apparent through the sole use of interviews. The quantitative methods focused on finding frequencies of concepts that help complement the results in the qualitative part. For example, it was analysed the frequency of factors that —according to individuals— explain Cuba's successful DRR strategy.

The quantitative part of the research considered semi-structured or structured interviews, which were performed through interviewer-administered and self-completed questionnaires. These questionnaires included some *open questions*, acknowledging the risks that this implies, making their analysis more complex (see Bryman, 2008). The reason for including these questions was an attempt to obtain both quantitative and qualitative data that could support or complement the results. However, most of the questions used were *closed questions*, which allow performing statistical analysis of the data in a simpler way, through codification of responses. These questions used *rating scales* that examined favourable or unfavourable views of a certain topic, thus resembling those known as “likert scales” (see Bryman, 2008; Maranell, 1974). However, I used questions instead of statements and I did not use several statements to examine just one topic, as the original method does (Garwood, 2006, p. 161).

Moreover, to perform statistical analyses of the quantitative part of this research, I used the open source software “R”. I laid substantial effort in coding the open questions and their answers. Hence, it was possible to analyse and compare results of these open questions in a sufficiently reliable and valid way. The details of this codification are explained throughout this chapter. Interviews, surveys, and every personal communication performed during the research process used the Spanish language, which is the official language in the Republic of Cuba. Spanish is also my mother tongue, thus favouring the different steps of this research, from the data collection to its analysis and interpretation.

Summarising, the methodology for doing the research through mixed research methods include the elements below. Additionally, this chapter discusses some ethical considerations that were considered during the research process.

5.1. Interviews

Structured interviews or *questionnaires* consist in interviews that ask “exactly the same questions” to all the respondents (Bryman, 2008, p. 699). This study utilised structured

interviews to obtain quantitative data from ordinary people. After *piloting* and re-piloting some earlier versions of the questionnaires, its final version (see Appendix II) consisted of 44 questions in addition to the control variables (sex, age, occupation, etc.). I did piloting of questionnaires to ensure they were completely understandable and did not induce confusion. Piloting was also useful to have an idea of the time questionnaires consumed to be responded. In addition, I tried to explain the technical terms in my questions, after I noticed some people did not completely understand what I meant with words like “transparency”. The questions in general did not present difficulties. Only a couple of open questions brought about more difficulties among respondents. However, I decided to keep them after successfully trying them with 15-year-old kids. Finally, after having discussed all these issues with Marta Pérez Rolo at the *Latin American Faculty of Social Sciences* (FLACSO)-Havana, I started sampling with the last version of the questionnaire. The initial contact with FLACSO-Havana was taken before I arrived in Cuba. Establishing contact with an institution such as this one was essential for the successful development of the research process. For example, contacting authorities to arrange and coordinate interviews would have been impossible without the support from FLACSO-Havana.

On the one hand, I performed *semi-structured interviews*. These interviews include a core of questions whose order is somehow maintained through the research process. However, their flexibility also allows reorganising them as convenient. Furthermore, they can include additional questions that the researcher can decide to ask while performing the interview (see Bryman, 2008). Semi-structured interviews were very often used in the piloting process of the questionnaires of the present study.

On the other hand, I carried out *non-structured or unstructured interviews*. These interviews have a topic or aspect of interest as an initial guide, giving the possibility of a great diversity of questions that may come up during the interview (see Bryman, 2008). These type of interviews were used in encounters with ordinary people in different places of the country and also when interviewing some authorities.

5.2. Secondary Analysis

Secondary analysis consists in analysing data from earlier sources. The researcher that is using these data has no connection with them (Bryman, 2008). This analysis can encompass quantitative and qualitative data. This type of analysis was also used in the present study to obtain qualitative and quantitative data. This allowed prioritising areas of focus, as well as having the necessary initial insights to start the research process. For example, literature and official documents were analysed to get general information of groups or generalised statistical data for the whole country that helped complementing the results of the present study. This strategy is also used to get statistics of natural disaster performance. In addition, these sources will help understanding the logistics and methods of educating the population.

Secondary-sources provide complementary quantitative and qualitative data for this thesis. The latter include theoretical analyses related to the topics of democracy, environmental governance, and sustainable development among others. Additionally, laws and other legal documents represent important material to be examined.

5.3. Participant and Nonparticipant Observation

Another qualitative data-collection strategy used in this study is known as *participant* or *participatory observation*. This type of observation gives a deeper understanding of phenomena of life by making the researcher become involved and “experience” the reality she/he perceives, thus also affecting it (McKechnie, 2008, pp. 598-599). Examples of the use of participant observation include my participation in multiple debates and forums about different topics that were held during my stay in Cuba (see Appendix I). In the same way, an even deeper degree of involvement is referred to as *ethnography* or *ethnographic research* (see Bryman, 2008). This process seems to emphasise the “participatory” aspect of the research process more than just purely observing. My active participation in the

socio-cultural group *Nuestra América*³⁵ during my stay in Cuba is an example of this. Cuban nationals and some international students and young professionals form this group, which organises socio-cultural events oriented toward the community in Havana. Some of the members of this group are—at the same time—members of other organisations, such as the *Union of Communist Youth* (UJC, for its Spanish acronym). I became involved as a member of the group. Such kind of participation gave me an opportunity to perform *ethnographic research* among youth in Cuba.

In addition, the study also used *nonparticipant observation* as another strategy for collecting data. This strategy is described as an “unobtrusive” way of observing phenomena and collecting primary data. As opposed to the former strategy, nonparticipant observation considers no direct interaction between the observer and the phenomena. Therefore, the observer may or may not be present in the setting to carry out this kind of observation (Patrick Williams, 2008, pp. 561-562).

Before starting the quantitative data collection, I walked around different neighbourhoods to get familiarised with their settings, and with the characteristics and activities performed by people inhabiting them. This also allowed me to identify features of each setting that would affect a proper sampling process. In addition, these walks helped me recognise the most effective and convenient ways of approaching people. For example, I realised that I had to avoid interviews during baseball game transmissions. These walks are academically known as “transect walks” (see Brockington & Sullivan, p. 61).

Moreover, many of the concepts and categories studied during the research process provided guidance for finding relevant directions to follow in subsequent stages. Therefore, concepts were used in a ‘sensitizing’ way, rather than adopting a fixed initial definition for them (Blumer, 1954, p.7).

³⁵ The name *Nuestra América* (Our America) recalls the work of José Martí (1853-1895) written in 1891. Martí uses this name as a concept to refer to the countries of Latin America and their common struggles against imperialism.

5.4. Statistical Analyses

This thesis includes statistical analyses as part of the quantitative part of the research. Therefore, some assumptions must be taken into account when interpreting these analyses. Apart from the possibility of not having fulfilled the randomness required for probability sampling, the quantitative analysis of this study can be criticised regarding other aspects. These are related to the type of distribution of the analysed population and also to the type of data gathered from it. The sample analysed is not distributed normally according to aspects like age. I did not measure other aspects like family income, which might have indeed shown a normal distribution. Kuzon et al. (1996) argue that this is a common mistake, or ‘sin’, because statistical analysis is applied only to normally distributed populations. On the other hand, the scales used in most of the questions of my questionnaire (e.g.: *no, not at all; very little; somewhat; yes, but not much; yes, a lot*) might not be considered interval or equidistant scales. Therefore, according to these authors, it would be a mistake to represent them as integers that can be subjected to statistical parametric analysis. They explain that “[a]n interval scale has discrete, defined levels and, in addition, the interval between each of the levels on the scale is well defined [and usually equal]” (p.266). However, other scholars have demonstrated that in many cases these claims are unfounded (see, for example, Bacchetti, 2002; Havlicek & Peterson, 1976; Norman, 2010). To demonstrate this, Norman (2010) considers historical evidence of multiple studies (see, for example, Dunlap, 1931; Pearson, 1931) and shows that despite the mistakes revealed by Kuzon et al. and thanks to the robustness of the parametric statistics, statistical results are still valid.

5.5. Ethical Considerations

When performing research, one must often —if not permanently— deal with several issues related to ethics. To consider and to respect ethical considerations are practices that become necessary for performing a good-quality study (Bryman, 2008). In this study, ethical issues are of particular relevance on the one hand because of the nature of the topic. On the other

hand, ethical issues are relevant here also in relation to the geopolitical context affecting the country. Therefore I have put careful attention toward respecting the integrity, privacy, and security of people and institutions; thus following rules and procedures when these have been required.

On the one hand, every institution I visited and the individuals I interviewed or surveyed had access to all the required information related to my research, and also the documents that identified me as a researcher. This was done through what is called the *informed consent* (Bryman, 2008). This included a brief introduction of the research topic, the questions I was going to ask, and the approximate time the interviews/questionnaires would take. Additionally, I always explained the interviewees/respondents the principles of anonymity and confidentiality that I was committed to follow. An exception to these principles is made with authorities that explicitly allowed to be cited in this study. I also provided additional information in all the cases required. Moreover, in every case, I ensured I did not use longer time than required and I always suggested performing the interviews/surveys in the place of preference of the participant. In this way, I avoided abusing the kindness and confidence of the interviewees.

On the other hand, people who cooperated with this study did it absolutely based on the information I provided them. Interviewees did not expect any reward and they were not submitted to any external pressure other than their own interest in contributing.

Ultimately, I am also aware of the regulations and guidelines of the Norwegian University of Life Sciences (NMBU) for performing fieldwork, research studies, and thesis writing.

6. Results and Findings

6.1. General Comments

The degree of knowledge regarding natural hazards and risk of disasters is readily apparent when talking to almost anyone in Cuba. For instance, David, a 15-year-old boy explained to me aspects of the preparation they receive for disasters. He asked: "Do you know what an *albergue* is? There —he continued— people are provided food, medicine, bedding and toiletries." Then I asked him how they learn these things, and he responded: "they are explained in television, but I learnt them mostly at school, in the geography class" (personal communication, December 2, 2013).

Moreover, Luis Emilio, a young sociologist, political educator, and member of the socio-cultural group *Nuestra América*, gave me an interesting surprise in an informal conversation we had. The conversation was about my experience with the surveying process of my research. I told him that it had been particularly difficult to make people understand why questions relating to democracy, transparency, or participation, were connected to DRR. He interrupted me and immediately replied:

Of course they are connected! These issues have enormous influence in DRR. The way people feel involved in these processes and the confidence this builds determines how they react in extreme situations (personal communication, February 28, 2014).

In addition, as explained throughout this study the way Cubans respond in hazardous situations is also related to other underlying social factors. Maria has relatives in Miami and Tenerife. During an interview with her and her family, she told me:

I could have moved out there [to Miami or Tenerife] if I wanted, but why losing all what I have here? Why living there and be always worried that they can take something away from you? Here we may have little, but we always have. Also those countries lack solidarity, brotherhood and humanism (personal communication, February 25, 2014).

Another aspect worth of mentioning arose during the above interview. I noticed some differences between these family-members' views on what is most important in a democracy. Maria said she thinks the most important thing is that "you have ability to acquire things". Her sons strongly disagreed with her and said: "it is more important to have free and quality education and free health-care", and they added —“without that, you have nothing”. Then, Maria concluded “ah, but we already have that.”

The relevance of disaster risk reduction (DRR) in Cuba is palpable daily. In newspapers, seminars, television programmes, among others. For instance, in one edition of the Granma newspaper they report on: “analysing the management plan to conserve the largest wetland in the Caribbean.” On another page of the same edition they describe the plantation of *green belts* in the commune of *Pinar del Rio* to prevent forest fires. Below in the same page, the newspaper has an article about a conference in Camagüey as a prelude to the *9th international Congress on disasters* (Granma, December 21, 2013). In the following section, I delve into these and other aspects by providing data from interviews with Cuban institutional authorities and intellectuals. Additionally, I describe some participant or ethnographic observations that contributed to the research. The data gathered here constitutes the core of my qualitative research. In addition, the questions try to explore the presence or absence of ideology, although not directly asking about it. As mentioned in section 2.5, this thesis considers the concept of ideology not only as a way of conceiving an ideal world, but also as a way of understanding reality, human practices, and values (see Acanda, 2002).

6.2. Qualitative Analysis: Excerpts from interviews and other observations

The people I interviewed or surveyed during this research had, to a greater or lesser extent, a positive attitude during the interviewing process. The interviews in several cases adopted the form of friendly conversations. In a few cases I could not finish all the questions I had because of interruptions or because the interviewee had not enough time.

One of the main objectives of this thesis is to understand the factors that contribute to Cuba's outstanding performance in facing environmental hazards and reducing risk of disasters. I was interested in examining views of Cubans in addition to the views of the available literature explaining Cuba's success in DRR. Therefore, the following section focuses on questions exploring these issues.

i. Factors that determine Cuba's outstanding performance in DRR according to people's perception

What are the main factors that allow the outstanding preparation and response to environmental hazards in Cuba compared to other countries?

Ángel, a member of the civil defence committee at the University of Havana did not hesitate in responding: "The achievements are due to the constant policy making of the party and government" (personal communication, December 3, 2013). As explained in previous chapters, what Ángel mentions is confirmed by examining the broad Cuban legislation about the topic. However, having a complete legislation does not imply that society will follow it. This issue encouraged me to complement the question above in subsequent interviews by asking the following sub-question:

Is it enough to copy the Cuban NCD system of laws to get the same results in other countries?

Herminia Serrano, a specialist in environmental management and adviser to the presidency of the Environmental Agency (AMA, for its Spanish acronym) asserts:

In Cuba our Civil Defence is a 'system' [and not only an institution], which is fully-integrated in society (...) knowledge is not enough, the importance is to understand how groups and people relate to each other. Unlike Cuba, in the rest of the Caribbean countries there is no coordination of the four phases of disaster management (H. Serrano, personal communication, December 2, 2013).

Additionally, another significant aspect is that Cuban authorities go even further by retrospectively examining the errors detected in facing each hazard. For example, during a pouring rain on the last weekend of November 2013 two deaths occurred. In this regard, Serrano explains: “in our model, understanding the cause of these deaths is essential for learning, therefore, we must incorporate the results delivered by the autopsy on the bodies”. Serrano adds that the first aspect that explains Cuba’s performance in DRR is the country’s social model, and then the specific model of the NCD in line with that social model. Nowadays’ the short-term priorities in AMA are to train specialists of various fields in risk management (personal communication, December 2, 2013).

Miriam Llanes, from the Cuban Institute of Meteorology (INSMET, for its Spanish acronym), grounds Cuba’s DRR success on “the political will of the government (...) existing since the beginning of the revolution”. She adds that “the Cuban NCD is not only an institution, people themselves are the NCD.” Thus, her view coincides with that of Serrano. Llanes also explains that from an early age Cubans are taught these issues in schools. For example, children take home research tasks to learn about DRR —she is particularly aware of that because parents call the institute asking for help in answering these tasks (M. Llanes, personal communication, December 10, 2013).

Luis Sauchay, a specialist of the *Latin American Centre for Disaster Medicine* (CLAMED, for its Spanish acronym) emphasises legislation, education, and culture as the main reasons of Cuba’s success in DRR. He explains: “Cuba has legislated all that is needed and all what is to be done for environmental care and to act in disaster situations.” Moreover, Sauchay points out the high level of educational preparation and professionals who have free access to university courses directly related to the topic as another factor. Therefore it is not only high-quality education in general, but specific preparation that positively influences Cuba’s performance. Sauchay relates these factors to exigencies posed by society, due to its education and culture (L. Sauchay, personal communication, December 18, 2013). In connection to DRR contents in formal education in Cuba, CLAMED held a workshop on December 17, 2014. The workshop, in which I actively participated, had as a goal to

discuss and update the curriculum for the master programme in health care and disasters at the University of Medical Sciences in Havana.

Ramón Pichs, director of the Research Centre of World Economy (CIEM, for its Spanish acronym), explains that solidarity has an important role in the functioning of the system. Pichs asserts that Cuban success is also based on the political will existing at the highest level, assimilating this as an issue of national and local priority. For Pichs the development of institutions and also their technical and material capacity are also important factors. However these latter capacities are not the most essential, if one considers that Cuba's outstanding performance has been achieved despite the difficulties existing in these aspects (R. Pichs, personal communication, December 18, 2014).

Lídice Castro-Serrano, head of the Environmental Education Department of the Centre for Information, Management, and Environmental Education of CITMA, declares:

The social model also enables and facilitates that the processes for the preparation of the general population occur, since our social model contributes to the integration of all sectors of society based on an objective (L. Castro-Serrano, personal communication, December 20, 2013)

For Ricardo Berriz, researcher of the *Centre for Local and Community Development* (CEDEL, for its Spanish acronym), what influences is:

The educational level of the population, with an average level of ninth grade (...) the culture of the country, where the people, leaders, and institutions are prepared on a 'concept of defence' either in the face of war or before natural and technological contingencies. (R. Berriz, personal communication, December 23, 2013)

In addition, Berriz explains that there is a structural and functional strength of the Cuban NCD system, which arrives at the local level. The presence of the NCD system at the grass-root level of Cuban society is internationally recognised. This recognition has described the Cuban DRR strategy as a *Community-Based Disaster Management*³⁶ (CBDM). Therefore

³⁶ Thompson and Gaviria (2004).

the system and its working principle make each person know what to do. In this regard Berriz adds: “thanks to the coverage of the communication and information system even the *zones of silence or skip zones*³⁷ are reached”. According to Berriz the *Early Warning System* (SAT) is also important. This system is supported on a technical and scientific level, which includes weather stations that are scattered throughout the country. He concludes: “we have people who are constantly innovating and inventing (...). The country in this respect has conditions of a developed country” (R. Berriz, personal communication, December 23, 2013). Moreover, the *zones of silence* mentioned by Berriz can be associated to *extreme isolated areas*, which according to experts are usually marginalised and, therefore, more vulnerable (see, for example, Gaillard et al., 2010). An important practice for providing sustainable livelihoods and avoiding marginalisation in these areas has been the installation of renewal energy technologies to ensure their permanent communication and access to resources in normal and extreme situations (Cherni & Hill, 2009). Another kind of marginalisation described by authors such as Wisner et al. (2012) is the one referred to as *political marginalisation*. The organisational structure³⁸ of political and mass organisations in Cuba ensures representation for every locality. This comprehensive representativeness allows neighbourhoods to have political influence in national structures, although some claim this influence is insufficient.

Another important source of vulnerabilities is that presented by the low quality housing. The case of old Havana (*Habana vieja*) households is illustrative of this problem. Frequently, old colonial buildings in this area have begun to collapse over time. This effect has worsened with extreme weather phenomena, thus causing dead or injured people. This was one of the probable causes of people dying during the pouring rain on the last weekend of November 2013. Organisations addressing these kinds of vulnerabilities in Havana are those such as the Master Plan (Plan Maestro) and PCMA. These two organisations depend on the *Historian's Office*³⁹ (Oficina del Historiador), with many of their projects emanating from this latter organisation. The responsibility of PCMA is to be the mediator between

³⁷ Zones where radio-communications are not heard. See Ionospheric Prediction Service (n.d.) and León (2004).

³⁸ From the bottom level to the top one these are: zone committees, municipal direction, provincial direction, and national direction.

³⁹ See <http://www.ohch.cu/oficina-del-historiador/>

environmental policies and citizens. Their members are also promoters of projects and environmental educators. They take what people say and do and transform it into projects. PCMA's projects are intertwined with those of the Master Plan, and are focused on the historical city centre. The projects prioritise the most vulnerable citizens.

Before 1993, the state funded works for conservation and restoration. The special period forced the start of a self-financing dynamic. Nowadays, PCMA works with a mixed budget, since the *Historian's Office* receives an amount of the national budget that is used in projects that PCMA implements. On the other hand, the Master Plan brings together many specialists, as geographers, architects, sociologists, and psychologists, among others. These specialists contribute to a common interest in developing the research programme that follows up the rehabilitation of the area. The mission is to support social, environmental, revitalisation, and rehabilitation projects of the historical centre of Havana. Regarding rehabilitation projects Ulice Acosta, a specialist at PCMA, explains:

[I]t is a rehabilitation that is not only architectural, but integral, since the human or social being is taken as a fundamental element for that rehabilitation process. These policies always aim toward making human beings benefit directly from the transformation processes. (U. Acosta, personal communication, February 4, 2014)

In addition, PCMA implements programmes regarding management of solid waste, energy consumption, and the situation of stray animals in the city. An important support is given to the community with projects such as those for improving hygienic conditions, providing special vehicles for disabled people, and integrating marginalised groups of youth.

Moreover, Roydes Gamboa, a board member of the University Students Federation (FEU, for its Spanish acronym) at the University of Havana enunciates other factors contributing to Cuba's success in mitigating hazards to prevent disasters.

The main factor is environmental education. Cuban society is given preparation in the CDR, FEU, at work, or any other places to learn the measures to be taken in each of the phases. We also have a meteorological system that is constantly giving weather forecasts. There are also debates regarding these issues. Here [in Cuba] no distinction is made, all receive the same

information and everyone is prepared in the same way. (R. Gamboa, personal communication, January 3, 2013)

The several elements described hitherto provide a broader picture of what the Cuban NCD system is and how it works. As seen, while some authorities emphasise more objective aspects that may explain the issue, others remark on subjective elements. Therefore, education, communication means, laws and regulations, can be associated with objective factors present in the Cuban system of DRR. Whereas solidarity, culture, people's relations, as features of the Cuban social model, may be considered subjective factors. A significant part of the literature has already focused on the objective aspects. In contrast, the purposes of this study seek to understand better the subjective factors of disaster risk reduction in the face of natural hazards. Therefore, it became important to analyse aspects like people's behaviour in extreme situations. The rationale behind this is to understand Cuban's positive attitude and behaviour within the DRR model, apart from the acknowledged objective factors. The presence of human or social values like solidarity may definitely be an important element explaining this. Thereby, the features of this value-based culture and other subjective factors will be analysed throughout this study. In this connection, I enquired Cuban authorities and people in general the questions below.

Do you think human values such as solidarity play an important role in DRR and other issues? Does Cuban society have them?

The answers to these questions among the different interviewees are very similar. These vary in intensity and provide different examples of how and when solidarity, unity, altruism, brotherhood, and other human/social values act. Interviewees agree that solidarity is a characteristic of Cuban people, it is part of their 'idiosyncrasy' or 'cubanía'⁴⁰—they say. Examples are seen in the huge number of evacuees who are welcomed into other people's homes in every extreme situation. According to Berriz, these evacuees may prolong their stay even during the periods of recovery. Furthermore—he adds—some

⁴⁰ According to Fernando Ortiz (1881-1969), a Cuban multidisciplinary intellectual who deeply studied Cuban culture, the "cubanía" included three virtues: faith, hope, and love (Ortiz, 1940, p. 166). See also Prieto (1994).

Cubans have even donated part of their homes to run schools damaged by an extreme event. "Cubans share the little they have" —says Miriam Llanes. In the same way, Castro-Serrano explains:

If you pay attention you will see that in the communities we live very like a family, say, people in a neighbourhood or community have much confidence, all communicate with each other, we help each other. And I think that's essential when facing a situation of danger or disaster. We tend to do that, to collaborate in exchange for nothing, because we like to help others. (Personal communication, December 20, 2013)

Moreover, the interviewees recognise their value-based culture and idiosyncrasy existing not only since the outset of the revolution, but even earlier. However, Castro-Serrano explains that with the social model the revolution began to build —i.e. a transition to socialism— these values were reinforced. These values like solidarity have been promoted not only among Cubans, but also towards other countries or with anyone who needs it. Thus Castro-Serrano concludes: "all this it is only to support, to contribute, and to help others as human beings we are. That is essential" (personal communication, December 20, 2013).

Whether the descriptions of a strong presence of human values within Cuban culture are exaggerated or not, is something that depends on each point of view. Evidence of Cuba's international solidarity despite its economic crisis (see, for example, Blue, 2010; De Vos et al., 2007; Huish, 2008) can be interpreted as an expression of a value-based culture (Saney, 2009). However, it must be acknowledged that these values among Cubans are changing, as evidenced in studies on younger generations (Domínguez, 2005).

Furthermore, to examine the extent to which a value-based culture underlies Cubans' discipline in extreme situations, and the existence of more subjective factors, I asked the question below.

Why do Cubans cooperate in extreme situations?

The answers to this question in most cases were again related to the presence of human values, where solidarity, humanism, and brotherhood were often mentioned. Again drawing upon culture, Aurelio Alonso Tejada, winner of the 2013 *Cuban National Literature Award*, explains:

I think this is part of a ‘culture against neglect’⁴¹ that the revolution has created since the early 1960s and that is linked to many other things: with social issues and with how to respond to natural disasters (...) The 1959’s revolution rescued Martí’s ideal of solidarity. (A. Tejada, personal communication, February 11, 2014, my emphasis)

The *culture against neglect* that Tejada describes could be interpreted as a way of preventing people’s marginalisation. Solidarity may help in ensuring access to resources to everybody, even if the government failed in fulfilling this task. This process is favoured by the fact that social mass-organisations and the OLPP are replicated with the same structure throughout the whole country. These structures help avoiding what Gaillard and Cadag (2009) refer to as *political marginalisation* of people. In addition, the high level of organisation of Cuban society contributes to *social capital*. This *social capital* is also a source of unity and knowledge (Thompson & Gaviria, 2004). Neighbours would, for example, feel more familiar and know more about each other due to the frequent meetings of the CDRs. Moreover, despite the overall scarcities in Cuba, the *culture against neglect* is also emphasised by the functioning of mass-organisations. These organisations help ensuring permanent access to minimum standards of resources to every citizen. This logic creates what is referred to as “sustainability of resources,” which is key in strengthening people livelihoods and —consequently— helps them cope with disasters (Gaillard et al., 2010, p. 69).

Cooperation and solidarity are essential elements in developing such a *culture against neglect*, which would be emphasised in extreme situations. However, one may wonder about the relative weight that these subjective elements have within the Cuban DRR

⁴¹ Cultura contra el desamparo

strategy compared to tangible or objective elements. Examples of the latter are legislation or technology. According to the responses of many specialists, cooperation and values such as solidarity are essential but not decisive. An example of the latter can be found in how evacuation measures function in Cuba. People evacuated from vulnerable homes prefer to find shelter at a neighbour's safer home, due to proximity to their own homes. This proximity would make evacuated people able to keep an eye on their evacuated homes. Nevertheless, if neighbours would not agree in receiving the vulnerable ones at their homes (because of lack of solidarity or any other reason), the government still has the alternative of receiving this people in full-equipped *albergues* (shelters). According to Rolber Reyes at the local office of CITMA in Holguín, if people lose solidarity this would indeed affect the system, but not up to a level that the system cannot work any longer. It would affect in making people feel less comfortable when being transported to farther places. This would also imply additional costs for the government in transport and in providing all necessary in shelters. Reyes reminds that this also applies during the recovery phase, where people's cooperation is also essential. In this phase people normally help in collecting debris, and in clearing the streets—for example. He argues that people also cooperate in these tasks because they know that if they wait until it is carried out by the state, it will take longer. According to Reyes, this is a kind of knowledge that is transmitted between individuals (personal communication, January 23, 2014). Also describing how social values become evident in Cuban society, I can mention a situation I experienced in Baracoa, a city located on the eastern extreme of Cuba. On January 20, 2014, a pouring-rain flooded the streets of the city in a period of 20 minutes. The streets transformed into rivers, thus becoming difficult and dangerous to walk along them. However, every lorry or motor vehicle transiting in those moments would stop to take people who needed a ride.

Other interviewees provide more views related to a culture against neglect. For instance, Madelin Villalón-Semanat from CENAISS asserts:

Government actions toward the people do have an impact. The care given to them has aroused their trust toward the leaders of the revolution. Sometimes the revolution is regarded as something intangible, but wherever you turn, you can touch it. Therefore people have some trust toward the revolution, and thus the attention of the population is achieved (...) it is almost a

slogan: the revolution will not neglect you. (M. Villalón-Semanat, personal communication, January 21, 2014)

Juan Valdés Paz, winner of the *Cuban National Award for Cultural Research* in 2011, contends: “here the interesting thing is the degree of *social discipline*” (personal communication, February 28, 2014). Valdés Paz explains that Cuban society’s cooperation in extreme situations has a multidimensional explanation: political, economic, civil, and cultural. From an economic perspective, Valdés Paz explains that the weight of the private sector and its activities in capitalist countries makes social discipline more difficult. Conversely, the omnipresence of the Cuban state in the economy entailed a strict discipline in cooperating, working as an administrative policy of immediate application. However, this characteristic of the Cuban model is changing; therefore its influence in cooperation may also change. Valdés Paz argues that from a subjective point of view, we find *negative and positive economic incentives*. *Negative incentives* are related to people’s low amount of private goods and their low ability to replace them. This condition makes them avoid abandoning their homes in hazardous situations, unless surveillance was provided. As mentioned in section 2.5 in Chapter 2, coercive mechanisms to enforce people to leave their homes in hazardous situations have been applied although very seldom —according to my interviews. On the other hand, Juan Valdés explains that *positive incentives* also exist, since the expenses of protection are almost completely covered by the state. These aspects have created a massive *disposition to being protected* among Cubans. The examples of individual incentives provided by Valdés Paz, illustrate how the Cuban model has incorporated elements that are becoming relevant in *hybrid environmental governance strategies* (on these strategies, see Lemos and Agrawal, 2006). Regarding the existence of individual incentives, I discussed with some experts the existence of contra-incentives that may obstruct the functioning of the Cuban NCD system. Richard Levins, Professor of the University of Harvard, provided interesting comments to the case of *dengue fever* in Cuba. He argued that people’s habit of saving water at home in case of water shortages might stimulate the proliferation of the mosquito that causes *dengue fever* (R. Levins, personal communication, February 21, 2014). When queried about this, Rolber Reyes, a specialist of CITMA in Holguín, explained that this contra-incentive effect is in fact possible, not only in the case of *dengue fever*, but also in other examples. However, Reyes claims that the

government is aware of these habits and tries to face them with permanent education in these issues (R. Reyes, personal communication, July 7, 2014).

Analysing now the political perspective, Valdés Paz contends that the *military traits* of the Cuban model also favour the social discipline necessary in hazardous situations. Therefore, the existence of a centralised state and a single political party increase the ability to conjugate unitary actions of all the institutions. In the same way elements that in other cases are virtues, become clogs in contingencies that create a quasi-military scenario. The lack of administrative autonomies, decentralisation levels, and territorial differences in Cuba, help achieving this discipline. “The most military traits are the ones that become most efficient in these situations” —claims Valdés Paz. He asserts that deaths are avoided to the extreme, and everyone knows that if a fatality occurs, it will create a problem for all. Another feature of the Cuban model is the capacity to mobilize all resources, namely, means of transport, facilities, funds, etc. “Capitalist countries are very complicated in this regard”—explains Valdés Paz.

Regarding civil aspects, Valdés Paz asserts that it is very difficult to find Cubans that are not involved in Cuban civil organisations (see also section 6.4). Every citizen is in a CDR, trade unions, FMC, ANAP, etc. Valdés Paz argues that what critics of the *real socialism* called *framing of the population*, has a virtuous character here: the mobilising capacity of a population is much greater when it is organised. On top of all, Cuban citizens are members of more than one organisation at the same time. This multiple-involvement allows Cubans to be summoned in multiple ways. Critics see this involvement just as a political function such as monitoring the population. However, they neglect the civilian functions of this involvement, which results in protecting the population.

In addition, B. Deblois from *Oxfam international* also refers to what is often criticised as being an excess of monitoring performed by the Cuban state. As he explains, at any neighbourhood in Cuba the state has carried out censuses:

Through commissions, the state knows exactly who is living at each place and which problems he or she has. The CDRs allow having a photograph of a neighbourhood on real-time. This

allows knowing the means everyone has, together with the physical and mental disabilities, thus increasing the quality and speed of the response. (B. Deblois, personal communication, February 27, 2014)

In relation to the cultural elements explaining cooperation of Cubans in extreme situations, Valdés Paz categorises his analysis based on the different natural hazards. According to him, Cuba has a *culture of hurricanes* (*cultura de huracanes*), and these phenomena are even reflected in Cuban religiosity⁴² (see, for example, Ortiz, 1947; González, 2010). The influence of hurricanes in Cuban culture is due to the serious natural threat they pose to the country. He acknowledges that not all what the hurricane does is bad, for example, they supply moisture to the ground⁴³. Other less frequent and longer-term natural hazards have not influenced Cuban culture as hurricanes have. These are contingencies related to climate change that still need policy-making. Besides, the virtues of popular mobilisation do not have the same effects on these longer-term hazards. Examples of these are sea level rise, the rise in the average global temperature, and the decrease in precipitation. Valdés Paz claims that both the hurricane-culture and the threat of these long-term contingencies may have the virtue of favouring environment-friendly productive systems. Nowadays, the country has a hybrid model of agriculture, mixing *agro-ecology* mechanisms with the conventional agricultural mechanisms previously established. This transition process to ecological methodologies is not new (Levins, 2005). However it has been obstructed by the lack of labour force in the countryside (see, for example, Suset et al., 2011).

Cubans' culture of hurricanes and their will to cooperate in extreme situations emphasise social values that are present in Cuban society. Political and economic decisions to manage disasters are also connected to the presence of these values. The following section tries to explore these connections.

⁴² One must bear in mind that the word "hurricane" comes from the Spanish huracán and this, in turn, comes from the Taíno hurakán 'god of the storm.' (see "Hurricane," n.d.)

⁴³ For a description of positive effects caused by extreme phenomena, see Pérez Hernández (2005).

ii. *How human and social values influence Cuba's disaster risk reduction strategy*

Who or what do you think can or should develop human values? The family? The State? Society? All? Has it been so in the case of Cuba and in your particular case?

Most answers to these questions agreed in giving the three suggested elements a key role in developing values in the Cuban population. The main responsibility is given to the family or to the state, depending on each point of view. Some of the interviewees added that school and even the television in Cuba have important roles in generating a *culture of values*. To this respect, Castro-Serrano explains:

From the point of view of our culture, we have already incorporated that in our training, in our education. So from the family we are encouraged to be supportive, collaborative (...) In fact, the state also promotes and strengthens this, which is formed already within the family and at school, because one of the principles of the Cuban revolution is solidarity. (L. Castro-Serrano, personal communication, December 20, 2013)

Regarding the role of the state, Berriz describes the way in which it promotes values, and the methods used:

The state has a supreme responsibility to develop these capabilities, [by] standardising and financing them, and creating programmatic schemes for development. (...) Solidarity is a natural condition that is crushed under certain conditions and accumulated in others. In societies that are built on the basis of individual interest there is a conflict between this and solidarity. Societies that try to develop themselves around human solidarity have an appropriate 'culture broth' for these things. (R. Berriz, personal communication, December 23, 2013)

The quote above gives another ingredient to this understanding. It suggests that all humans have an inner sense of solidarity, which may be stimulated or suppressed in certain conditions and depending on the social model. Cuban society would be an example of a society that permanently stimulates these values. Figure 6-1 below provides an example of how values are promoted by the Cuban government.



Figure 6-1: Examples of signs and billboards throughout the country disseminating social values⁴⁴

In connection to the role of educational institutions in this issue, Roydes Gamboa, a student leader from FEU, asserts:

One of the premises the University of Havana has is that the teacher not only conveys contents with respect to the syllabus, but [he/she] also imparts values (...) so that the student to takes action for the benefit of society. (R. Gamboa, personal communication, January 3, 2014)

Moreover, to further explore values, culture, thoughts, and principles Cubans have, the following section addresses the concepts of democracy, participation, and popular power. These concepts in turn allow understanding the existence of ideology and legitimacy. Although these aspects might not seem related at all to the problem of disasters, authors such as Wisner et al. (2012) have demonstrated the contrary. As these authors explain, a country's political model, its development strategy, together with the political participation of citizens are examples of *root causes* contributing to increase or decrease vulnerabilities.

⁴⁴ The translated messages are: "Revolution is to be treated and treat others as human beings"; "Do good and do not look to whom you do it"; "Sports develop the habit of effort, discipline, and the sacrifice spirit"; "The revolution is the union of all honourable people"; "The extraordinary unites humans"; "A man who loses his honour, loses everything."

iii. Development and democracy paradigm: policies, participation and decision-making processes

Could you mention elements that you think should exist in a democracy?

The answers to this question again drew upon principles and moral values, together with the need of a broad popular participation. In these the interviewees emphasised the contents of this participation. These contents include not only consultation, but also involvement in the planning, organisation, decision-making, and execution of policies. Regarding the existence of these elements in Cuba, Berriz provides some examples:

One of the things being done in the country is the public consultation of the fundamental laws (...) The Constitution was made through public consultation and was also changed [in the same way]. [Besides] the Cuban Communist-Party held its last congress a few years ago, when some processes of policy direction on key issues for the country were taking place. A public query was made on a first level of consultation and then a second one to put into discussion of the whole society what the guidelines [of the future policies] should be. Later when all this was collected it was necessary to come to a consensus. An open democratic exercise occurred at the level of the delegates to the congress, and also televised, where one had the possibility to intercommunicate [with them] regarding the decisions to be made. A consensus was sought and a consensus was reached. The [approved] guidelines of the party are the policies for the country. In connection with policy management and nowadays' design of basic policy, this was one of the most democratic exercises I have experienced in Cuba in recent years (...) The other element [important for a democracy] is the obligation of the authorities to account for their management and the possibility of recalling leaders. (R. Berriz, personal communication, December 23, 2013)

On the other hand, Mercedes Lugo, coordinator for the European section at the International Relations Department of the CTC, mentioned other elements defining a democracy. According to her, a democracy must ensure social development and participation in the political development of the country. A democracy should abolish the “exploitation of man by man” —she asserts. In addition, she argues that all kinds of discrimination should end. In this topic, she criticises Cuban culture as being male chauvinist (*machista*). Moreover, she also refers to the definition of liberties, according to

which Cuba is often criticised. She claims that in Cuba people say freely what they want, as she illustrates with the example below:

Out there in the streets, some people like to speak out atrocities about the revolution. However, they still like to participate in the massive parades such as the one on the 1st of May, even shouting revolutionary slogans. (M. Lugo, personal communication, February 12, 2014)

In addition, she argues that what some young people want is “debauchery” (*libertinaje*), which they confuse with having liberties. “They hold false criteria of what liberty is in other countries” —she asserts. Lugo also mentions Cuban nightlife, where people have fun as much as they want, being allowed to drink in the streets. In other countries —she argues— you do anything wrong and the police immediately come. However, she acknowledges that a necessity of improve participation always exist, but this does not mean that there is no participation in Cuba.

Anticipating contents to be included or ignored when receiving answers for the previous questions, I elaborated the question below as a complement. Besides, this question directly applies the concepts previously discussed to environmental issues.

Do you think people's participation in policy and decision-making on the one hand, and the evaluation and control of leaders and institutions' agency on the other hand, are essential for the proper performance of countries in environmental issues? Is this observed in Cuba?

All interviewees agreed on the importance of both participation and control exercised by the masses. However, the perception of how much needs to be improved in these aspects varied among the interviewees. To this respect, Llanes argues:

The policies have to be applied, not only remain written (...) Here [in Cuba] participation exists, as seen for example in the ‘meteor’ [mock drill exercises]. Even I have lectured there. (M. Llanes, personal communication, December 10, 2013)

The quote above suggests noncompliance with laws. If true, controlling such practices is something that must be prioritised to improve the system. Spared efforts in controlling noncompliance with laws logically damages efforts in creating a complete legislation. Moreover, although Llanes provides a clear first-hand example of participation, this covers only one aspect of what real participation should encompass (see, for example, D'Angelo Hernández, 2005; Guanche, 2013; Valdés Paz, 2009).

On the other hand, Castro-Serrano explains that an important way of participation is through ensuring *popular power*. For example at the grass roots and the circumscription level, participatory exchanges are made between the population and the *popular power representatives* or *delegates*. Thereby, participation in decision-making would occur as policies go down to the bottom instances to search for approval, such as happened with the approval of the new *guidelines of the PCC*. In this process, everyone gave his/her opinion and this was taken into account to modify *the guidelines* that were finally approved. Another way of participation in decision-making is that of the trade unions. According to Castro-Serrano all Cuban institutions and companies have their own unions. These unions provide effective ways of channelling workers views. Regarding trade unions functioning, I asked Mercedes Lugo whether trade unions tend to agree in everything with the leaders of the revolution. She replied that debates of trade unions are usually heated, and every disagreement is put on records. However, the compromise is to follow decisions adopted by *democratic centralism*. “Revolutionaries have brains and do not think alike” —she claims (M. Lugo, personal communication, February 12, 2014).

Moreover, another example of popular participation mentioned by Castro-Serrano is the draft of the *labour code* recently approved by the ANPP in December. This draft went through all unions in the country. According to her, all workers opined and conveyed their criteria before it was approved. In the same way —she adds— many other organisations represent effective ways used for the exchange between the government and the population. Student or youth unions, the CDR, NGOs and religious organizations that constitute civil society are illustrative examples. Castro-Serrano also mentions important national

discussions fostered by the Union for Writers and Artists (UNEAC), which is a Cuban NGO with a focus on culture.

Benjamin Deblois from *Oxfam international* argues that although participation processes exist in Cuba, they still maintain the vertical structure of the model, thus not meaning real participation (personal communication, February 27, 2014). In contrast, Mercedes Lugo asserts: “The CTC holds horizontal relations with every ministry and with the rest of structures constituting society.” She explains that this is ensured because every working place in Cuba has its own trade union. This includes ministries and government institutions, since all these duties are considered as any other type of work. She adds that every trade union in Cuba is represented by the CTC. Nowadays, a challenging task for the CTC is to try to affiliate *cuenta propistas*⁴⁵ to trade unions that defend their interests. According to Lugo, 97 per cent of Cuban workers are affiliated to the CTC, whereas only 84 per cent the *cuenta propistas* are part of it through trade unions (M. Lugo, personal communication, February 12, 2014).

To continue examining the role mass organisations in Cuba, I was particularly interested in observing the contents and type of discussions being held at CDRs meetings. Since these meetings are public, it is possible to observe them. I attended some of the meetings of a CDR in the Centro Havana Municipality. I noticed that a majority of people attending were probably older than 40 or 50 years old. In an interview to Mrs Caridad, a former president of one of these committees, I asked about the reasons for the low participation of young people. She replied that it was something they were pretty aware of. She added that they keep trying to reverse this situation, for example by giving tasks of the CDRs to young people according to their interests. In my interview to Roydes Gamboa from FEU, I asked him about the same issue. He explained that university students like him, are already involved in politics at the university. Therefore, they hardly have time and energy to participate more actively in their local CDR in addition to their studies and political duties at the university. However, he claimed that in his case, he tries to remain updated about the issues at his neighbourhood by attending the most important CDRs meetings. The low

⁴⁵ Independent or self-employed workers

interest of young groups of Cuban society in getting involved in social and political processes was addressed by the *Battle of Ideas campaign* initiated in 2006 by Fidel Castro (see Taylor, 2009).

Moreover, during the meetings of the CDR I attended, I noticed that great parts of the complaints (*planteamientos*) brought up by citizens to the CDR were related to daily or practical issues rather than directly political ones. For instance, complaints were related to people indiscriminately accumulating rubbish in some spots of the neighbourhood or about people from upper floors of buildings who throw water careless on people walking in the street below.

On the other hand, Castro-Serrano explains that the cooperatives themselves are now emerging in all kinds, but until some time ago only agricultural cooperatives existed. The peasant sector also has its own organisation, which is the *National Association of Small Farmers* (ANAP). Organisations such as the *Cuban Association of Animal Production* (ACPA) and the *Cuban Association of Agricultural and Forestry Technicians* (ACTAF) are also formal exchange-channels with the state. The directions go through all these organisations and until they are approved at a national level. Each one of these actors plays an important role in society, and everything has its own space to have a prominent role — claims Castro-Serrano (personal communication, December 20, 2013).

As discussed in Chapter 2, the *Cuban Electoral Law* (Law No. 72), which was amended for the last time in 1992, provides important elements for ensuring popular power and political participation. In this connection, Cary Cruz from the *Antonio Núñez Jiménez Foundation of Nature and Humanity* (FANJ, for its Spanish acronym), explains:

We have reached a higher requirement of participation, because the high level of the Cuban intelligentsia, which is higher than in many other countries, requires participation levels that match this intelligentsia. (C. Cruz, personal communication, February 18, 2014)

In addition, she argues that policies must integrate science into decision-making processes, which in turn may provide legitimacy. Although integrating science into decision-making

processes has been a priority Cuba, some experts see these efforts as still insufficient. Eduardo Planos, from the Climate Centre of INSMET, emphasised this necessity during a colloquium on the environment on February 21, 2014 in Havana (see Appendix I). Planos claims that authorities must learn to use the available information, and this information must be updated as often as possible. Planos' views coincide with those presented at a scientific workshop on November 25, 2013, related to a bilateral cooperation project on DRR between Cuba and Norway. During this scientific event, many specialists advocated the need for transforming every recommendation from scientific studies into results.

Moreover, Sauchay addresses the connection of a necessary scientific background in decision-making to citizens' demands for explanations when decisions are made:

To draw these types of policies we must have a scientific guiding role (...) [to find out] what scientific evidence tells us which one is the right way and which one is not. From there, it comes into play the political level and of course always with the approval of the masses. The Cuban people have a high educational level and therefore one needs to explain very well the reasons underlying any decision. (L. Sauchay, personal communication, December 18, 2013)

In the quote above, Sauchay also explains how the high educational level of Cuban people serves as means of empowering people to permanently demand participation and transparency. Moreover, Castro-Serrano explains how improving participation is not only important for deepening democracy, but also because it has positive effects on DRR strategies:

Participation is important because it contributes even to the perception of risk. That is to say that while people engage and participate in the identification of problems, in knowing in every place what problems exist and how we can provide solutions to them, it enables people to acquire the real perception of risks they must have before natural hazards (...) participation must be included in everything: in the development of policies, in finding solutions, in monitoring, and in evaluation, it's essential. (L. Castro-Serrano, personal communication, December 20, 2013)

Participation is also related to development of *consensus* and *commitment* of society with the socio-economic model. This is the reasoning that helped me develop the following

question, which despite seeming not related to the topic of this study, it is so. Furthermore, I intentionally avoided the word *socialism* in it for many reasons. Among them was the purpose of preventing that people would misinterpret my intentions. Another reason was to avoid abusing a term that most of the time might be used only as a simplification, and not because people indeed believe to have achieved socialism.

Acknowledging that different views exist, do you think that Cubans in general hold a degree of consensus and commitment to a common desire to continue building a socio-economic model different than global capitalism?

Interviewees agree that a consensus and commitment to the Cuban model exist in general terms among Cubans. They pin down, though, that this does not mean that changes are not required. Some things need to be changed, especially *unpopular* elements like low salaries, the double currency, and the *egalitarianism (igualitarismo)* of the model (see Ludlam, 2009). Regarding low salaries in Cuba, Ludlam (2009) argues that they are “obviously low, as much external comment notes, but it is also misleading, given that ‘social wage’ is exceptionally high” (p.547, emphasis in the original). On the other hand law has favoured *egalitarianism*, which has meant matching salaries of activities significantly different in terms of intensity and quality. After long debates it has been now globally recognised (see R. Castro, 2014) as a practice that was even going against the principles of a socialist transition (see Marx, 1875/2008). In the same way, Sauchay explains more about the evolution of the system:

For many years we were trying to build a system similar to Europe [the Soviet bloc], and we later realised that this was not the case (...) [now] we are searching our own system with our own features, strengths, and weaknesses. It is an alternative to capitalism because it puts at the centre of attention in society, trying to solve the basic problems of each person, within the possibilities of Cuba. Because you have to keep in mind that Cuba is underdeveloped and that is also enduring a blockade for more than fifty years. (L. Sauchay, personal communication, December 18, 2013)

In the quote above, Sauchay brings up a topic that is a source of permanent debates in Cuban society. This topic is related to the extent to which the Soviet model influenced the Cuban revolution (see also Chapter 2). I witnessed how this debate is daily present among Cuban intellectuals in one of the seminars organised by FLACSO (known as *Balcón FLACSO*) on January 15, 2014. Herein, the central topic was Lenin and the debates around his work. Suddenly, the debate turned to the mentioned Soviet influence in Cuba. The views varied from those who minimised this influence and others who claimed the opposite: “we copied the model built by the Russian communists and I know it because I was there when we did it” —comments a man from the audience. On the contrary, a panellist replied that even US leaders like Ted Kennedy recognised the Cuban revolution as “autonomous” and “autochthonous.”

Regarding the extent of changes in the Cuban model, doubts arise about the possibility that these would entail returning to capitalism. To this respect Castro-Serrano explains:

Most of our population feels committed, and not only that, but everyone is aware that building an alternative model to capitalism is imperative to survive and to develop ourselves, despite all the economic problems we have. These are not hidden to anyone, we all suffer from them but in the end we always opt for a socio-economic model different from capitalism. There’s no intention of going back. Cubans we are known for being very critical of their own model, but that does not mean we are against it. We want it to be better; we want it to be perfect. (L. Castro-Serrano, personal communication, December 20, 2013)

Throughout this study, I have examined some underlying principles that influence strategies and practices of the Cuban model of DRR. Based on views of the citizens I interviewed and surveyed, these principles are connected—in a greater or lesser extent—to the model’s ideology. Therefore, it becomes interesting to examine whether socialism, as the ideology underlying the Cuban model, is a distinctive factor. The results of this study may help understanding the extent to which features of socialism may explain Cuba’s performance in disaster management and other issues. However, the scope and objectives of this study do not intend to establish a comparison determining which ideologies might produce better strategies to cope with natural hazards. Examining the performance of models based on

distinct ideologies could have allowed such comparison. In this way, one might determine if the features that mostly distinguish models are at the same time influential in their respective performance in DRR. In addition, this study intends to examine questions of legitimacy and consensus that could also be essential in achieving success in DRR. As discussed above, a direct relationship between these elements is not obvious, herein my interest in analysing it. I addressed these issues in the interview with Juan Valdés Paz, with the questions presented below.

Does socialism have more advantages than capitalism in disaster risk reduction?

To respond this question and to understand some of its possible answers, one should make distinctions between theoretical contents of ideologies and the practical experiences one may find in world's history. Analyses and conclusions may differ substantially depending on the stance adopted. Valdés Paz addresses both theoretical and practical aspects in his comments below:

By definition socialism should respond better than capitalism in these issues, since it considers public policies where common interest predominates, and therefore, the interest of the masses and the common good. Socialism was defined as a society where self-government and self-management predominate. These are two conditions highly favourable to emergency policies. However, even in the historical version of the 'real socialism' the state-government superseded these two conditions. Thus the commitment of the state with public policies that took into account the interests of the masses, produced policies of high universal contents. Within these policies, protecting the population was a basic requisite for the regime and a condition for the political consensus where it relied. (Valdés Paz, personal communication, February 28, 2014, my emphasis)

This contrasts with Benjamin Deblois from the Cuban section of *Oxfam international-Cuba*, who claims that common interests in Cuba hamper the process, unlike other countries where private or more localised interests exist. Conversely, Wisner (2001) provides an example where features of capitalism hindered a proper strategy to cope with

disasters in the case of El Salvador. In addition, the case of the disaster in New Orleans, US in 2005⁴⁶ can be analysed. Regarding the latter, Valdés Paz contends:

What explains that the capitalist regime could have survived this contingency is that the victims assume it as a *God's punishment* and not as the *regime's responsibility*. In a socialist regime this cannot occur, for it requires appointing direct responsibilities. Mutual commitments operate in this as well. The state is much more responsible or the only responsible for the interests of the masses. The most curious thing is that something like the New Orleans tragedy has no capacity to subvert the regime. Conversely, a tragedy like the one in Chernobyl liquidated the legitimacy of the Soviet regime. If socialism would not fulfil its commitment it would mean a political disaster, since its consensus is based on fulfilling this commitment. (J. Valdés Paz, personal communication, February 28, 2014).

The quote above describes a relationship between consensus, legitimacy, and the ideology underpinning a social model. The question below addresses the two former concepts.

Is there a political consensus and legitimacy in Cuba?

According to Valdés Paz, consensus is a disposition of the population before the political regime⁴⁷. However, it is difficult to measure it. The electoral act, which is wrongly assumed as defining consensus, does not provide a correct idea of its extent. Valdés Paz argues that consensus always includes people who support the regime and those who are not against it—and these two groups are completely different. He further explains:

There is an active and a passive consensus and—in addition— the opposition. In the modern world, say, in capitalism, the consensus is mainly based on passive consensus. The opposition to the regime—and this does not include electoral contenders—is neutralised or reduced to its minimum levels. The politically active opposition is also minimal. Therefore, voting circles around a big mass of passive consensus, which passively accepts private or public policies. (J. Valdés Paz, personal communication, February 28, 2014)

⁴⁶ See also Burby (2006); Comfort (2006); Congleton (2006); Kates et al. (2006); Schneider (2005).

⁴⁷ For a further discussion of the term 'consensus', see Zelditch and Floyd (1998).

In addition, Valdés Paz contends that the concept of consensus has been minimised and what has gained greater momentum instead, is the concept of legitimacy. According to Valdés Paz, legitimacy is defined as “the ability to create consensus” (see also Dussel, 2007). Valdés Paz argues that this ability is not a property of the population, but the regime’s. He asserts that the Cuban regime’s legitimacy (or its ability to create consensus) has multiple sources, each of them being subject of analysis. Moreover, he explains that the relative weight of each of these sources has also varied over time:

At the beginning our history, the struggle against *Batista*, the end of tyranny, and the leadership that emerges from this process influenced heavily in building legitimacy. (J. Valdés Paz, personal communication, February 28, 2014)

Another heavy component is “the work of the revolution” (*la obra de la revolución*). Especially the first generations experienced a transformation process of society in favour of the vast majority (see Guerra-Vilaboy & Loyola-Vega, 2010). The relative weight of the work of the revolution is strongly influenced by the generational effect. The first generations in Cuba were those who saw more clearly the advances and benefits conveyed by the revolution compared to the reality of the country before 1959. In this regard, in one of the events organised by the socio-cultural group *Nuestra América*, we discussed how the views of young generations in Cuba were changing. We addressed the unfortunate but true trend of some youngsters yearning for lifestyles based on consumerism. These youngsters neglect the social rights they enjoy in a country like Cuba and forget that in capitalist societies these social rights do not exist as rights but as commodities. For some, this situation resembled the evolution of societies of the former Soviet Union, where some groups of these societies started yearning for social rights that were abolished with the arrival of capitalism (see also Balabanova et al., 2004; Lichfield, 2014).

A third component of legitimacy that Valdés Paz acknowledges is the regime’s “legality”:

The regime is founded on juridical and legal bases, and a constitutional framework has always protected it. Besides, all measures have been endorsed legally; we have a juridical system that works. (J. Valdés Paz, personal communication, February 28, 2014)

Another source of legitimacy according to Valdés Paz is regarding democratisation processes being recognised by Cuban society:

The revolution is experienced as a real democratising process. We come from a liberal regime that became a dictatorship until 1959. Within the framework of the institutions existing before 1959 it was impossible to guarantee the interests of the vast majority. With votes or without them, the system managed to make no relevant changes. (J. Valdés Paz, personal communication, February 28, 2014)

An overview of Cuba's history of conflicts demonstrates this impossibility of changes for example in regards to an agrarian reform. The Cuban sugar-based-model existing long before 1959 did not even allow a reform of the type that would have gone in favour of the national bourgeoisie—in terms of competition (see Guerra-Vilaboy & Loyola-Vega, 2010). Conversely, changes introduced by the revolution like redistribution of wealth, increasing popular participation, and the state serving the vast majority were seen as a truly democratising experience.

Moreover, Valdés Paz argues that democratic deficiencies should also be discussed, although not in the liberal sense, but in the socialist one. For instance, deficiencies such as too much state, too much centralisation, and minimal accountability should be acknowledged. However, the Cuban population has experienced these processes not as “the democracy”, but as “developing the democracy.” This process of improving the Cuban model of democracy has been uninterrupted hitherto. According to Valdés Paz, the fact that Cubans recognise these improving processes becomes another source of legitimacy. The subsequent modifications of the Cuban Constitution since 1959 onwards may confirm what Valdés Paz asserts. These modifications have always implied broadening participation and establishing a more direct political representation. The last important modifications of the Cuban Constitution in these aspects were in 1967, 1976, 1992, and 2002 (see Guerra & Gallardo, 2009; Roman, 2003).

As mentioned, the correlation of these components as source of legitimacy has varied over time. Especially since the 1990s, the weight of the revolution's work has decreased. In an economic crisis there is almost nothing to distribute, on the contrary, one must shorten the supply of public goods. Besides, the historical legitimacy is vertiginously descending and the historical leaders are dying. The juridical sphere still plays and will play a major role. In this regard, it is nowadays announced that a new constitution will be debated soon, since the changes of the model are clashing with the constitution. However, what becomes increasingly stronger is the democratic development as a fundamental source of legitimacy. This development includes public consultations, plebiscites, and debates about the model and its reforms. If the regime achieves involving the population in massive processes of debate and construction, it would raise the quality of democratic practice. The mechanisms of direct and participatory democracy would then be established. The latter also requires that levels of self-management and self-government be raised, especially creating more cooperative managers (*gestores cooperativos*).

Moreover, according to Valdés Paz the Cuban model has reduced municipal powers. Therefore, he argues that giving back more power to municipalities is necessary to improve Cuban democracy, since people would have less mediation to influence public policy. Therefore, this would be another source of legitimacy for the government.

With all these premises the aforementioned virtues could be raised to face contingencies. If self-management is promoted within the population, people will depend less on the directions of the NCD, and they will contribute with more initiative to the self-protection processes. A more democratic development in these aspects will redound to the benefit of socialism and to the benefit of the protectionist virtue of the regime.

Is there a risk that decentralising would mean losing some of the virtues of the centralised system?

According to Valdés-Paz, maintaining the same features of the government or a pyramidal design in the Cuban NCD system means to continue limiting it. The system nowadays does

not educate the *grass roots* in terms of self-management, but in terms of *mobilisation*. If self-management were adopted, the grass roots would be the ones moving the pyramidal apparatus and not the other way round —as it is now. Besides, the local protection organ would gain weight and strength, and thus more autonomy and initiative. The system would accumulate more culture of disaster management and information. This does not mean that a municipality should have the power to control resources of the central army, such as specialised equipment or vehicles. Some capacities and resources would always remain in central structures to be used in emergency situations. Therefore, a further development of self-local-management would by no means hinder the necessary coordination of actors. The coordination will remain ensured by the existing juridical normative and a further development of local-management should be included in it. Thereby, improving democracy, decentralising management, and increasing participation would reinforce the system and the virtue —and not the vices— the state has created. Consequently, a system such as the Cuban NCD would be reinforced, not replaced (J. Valdés Paz, personal communication, February 28, 2014).

The multiple topics discussed above provide a necessary background to better understand citizens' perception of Cuba's environmental governance approach. This approach is examined in the next section by emphasising the role of popular participation within it. In addition, the importance of accountability and control of leaders and institutions is assessed. Ultimately, the Cuban NCD system and Cuba's disaster risk reduction strategy are also described in more detail.

iv. Environmental Governance

How do you evaluate the environmental policies of the Cuban government and the institutions responsible for these issues? (Environmental protection, hazards preparedness, etc.)

In general, the interviewees have a positive view of the environmental policies, although everyone recognises the need to improve their contents and application. Moreover, the

importance of communication channels was also raised, since the mass media are also used to foster policies to protect the environment. The example of teaching recycling on television is highlighted⁴⁸. However recycling of waste from industries and households remains a topic of low environmental performance in Cuba. Replacing obsolete technologies in industries remains a problematic hindering a better environmental performance (Suárez et al., 2012). Conversely, other interviewees frequently mentioned the *US blockade* as a key factor malfunctioning of policies like these.

On the other hand, some specialists argue that Cuban authorities obstruct a more substantial arrival of international aid in extreme situations exceeding government's capacity. Benjamin Deblois explains that it is the vulnerable state itself the one that must make an appeal for deploying the mechanisms of international cooperation in disaster or hazardous situations. However —Deblois argues— Cuban authorities never make these appeals. “It could be because of their policies, their pride, their arrogance, or any other reason” —he says. Yet some cooperation mechanisms are still activated in cases where aid organisations are already present in the country working with a development programme. The same obstacles are found by donor organisations, thus preventing the arrival of important amounts of financial aid to Cuba. In this connection, the literature explains that the last time that the Cuban government requested for humanitarian aid was after hurricane Irene in 1999. This practice was interrupted due to the multiple cases where humanitarian aid was used as an excuse to carry out “humanitarian interventions.” These may have included sending military forces that would threaten the revolution (Puig González et al., 2010).

Moreover, regarding compliance with environmental laws I witnessed procedures at the University of Havana that showed how these laws might be followed. Its authorities at the civil defence department sought for the safe destination of toxic-waste from an accidental fire in a chemical laboratory at the University. When asking them about general compliance with laws they argued: "not everyone follows the law." For example they described an accident that occurred at a pharmacy institute. In that case the headmaster did not keep

⁴⁸ A famous television programme that has the role of providing serious thematic courses is known as *Universidad Para Todos* (University For All)

control and had not established its NCD local-committee, which every institution should have by law. According to Rosell, from the NCD department at the University of Havana:

Problems may arise when positions are appointed considering how good revolutionaries some people were, but not necessarily how well trained they are in these issues. (Rosell, personal communication, December 3, 2013)

The quote above raises another problem that if indeed exists, should also be corrected to avoid serious consequences. Even through the lens of the Cuban socialist model where both good professionals and good revolutionaries are appreciated, they should not be confused. In Cuba, being a good revolutionary (*buen revolucionario*) is something strongly appreciated by a great amount of the population—if not the majority. For instance, in my street interviews I heard a few times expressions like: “she/he does not deserve to be a militant of the party”. These were referring to someone who did not have an exemplary behaviour in certain circumstances. The interesting thing here was to realise that these people were not even militants of the party and still considered that having merits was expected in militants. As they explained to me, people in general—militants or not—may nominate someone with exemplary attitudes of social service to become a member of the party. The proposal is then analysed within the party according to its statutes (see PCC, 1998, §3).

Returning to analysis, we may notice that priorities, limitations, and drawbacks regarding environmental issues can be detected in several examples. Sauchay provides some of them:

You can see how much the cars pollute here. But to manage to have cars that do not pollute, you need money, and Cuba does not have it. In contrast, before 1959 forests covered 14% of Cuba; nowadays this percentage rose to between 26% and 28%. The cost of creating green areas in the country is not the same as having cars that do not pollute. (Personal communication, December 18, 2013)

Regarding reforestation, some specialists disagree with the pace Cuba is addressing this issues. Cary Cruz from FANJ referred to this issue as an example of how slow the country is improving in environmental issues (personal communication, February 18, 2014). In

connection to aspects that some may see as success and others as failures, one may try to find whether self-criticism exists or not. Self-criticism can be considered as a clear requisite for self-improvement. Particularly relevant in this aspect is the recognition of failures by decision-makers such as CITMA, through the *National Environmental Strategy* (EAN) as seen in Chapter 2. I observed similar critical attitudes in the international scientific-workshop connected to the bilateral cooperation-project between Cuba and Norway. Also relevant in these issues are interviews to authorities with direct responsibility in implementing environmental policies. Castro-Serrano as specialist of CITMA explains:

In Cuba there is a law of environment that is currently being revised and updated. The law was drafted in 1997; since then until now a lot has happened. I think it is something that must be permanently refined and improved (...) Now, where more work is needed is at the intersection that must exist between hazards, vulnerability and risk and their direct relationship with environmental problems in each area, in each locality (...) the environmental problem may worsen the risk of disasters, increasing vulnerabilities, etc. So I think that yes we can work harder and work more. [It must] be clear that all related to environmental problems and policies has a direct relationship to disaster risk. And they have to be even more interrelated. (L. Castro-Serrano, personal communication, December 20, 2013)

In relation to improvement, Castro-Serrano points out an example of the international cooperation that Cuba has fostered. This is the case of the *Capacity Building Centre for DRR and Adaptation to Climate Change* (see Figure 6-2). This centre is part of a cooperation project between Cuba and Norway. I visited this centre as part of the activities of the *international* scientific-workshop connected to this project.



Figure 6-2: Capacity Building Centre for DRR and Adaptation to Climate Change (Source: this author)

Castro-Serrano explains that her institution is also assigning courses that work with executives and leaders of popular directories. These courses will focus on the relationship between environmental issues and disaster risk management. Castro-Serrano comments show awareness of the interconnection of factors of the pseudo-equation of risk, which in other countries are neglected (see Pichler & Striessnig, 2013). As mentioned earlier, other organisations in Cuba like the *Antonio Núñez Jiménez Foundation* (FANJ) work in the same direction, i.e. raising awareness of the strong relationship between environmental problems and disaster risk reduction. Analysing and raising awareness of the relationship of these concepts, requires understanding the relationship between organisations and society. This implies analysing the environmental governance strategy followed in Cuba. Thus I asked:

What is the role and how society, unions, NGOs, cooperatives, academia, and public administration, interact in environmental aspects in Cuba?

To answer these questions the interviewees provided some clarifying examples. One of them was related to the cleaning of the Havana Bay. In this work the *Cuban Academy of Sciences*, the GTE-HB, the CDRs, the CTC, the FMC, the police, fire fighters, and social organisations have had to work together; all with the guidance of CITMA. Other examples

were related to tree planting or climate change mitigation through official calls from the state to the industries to promote the use of new technologies. On the other hand, according to some specialists the interaction between NGOs and the state needs to be improved. Benjamin Deblois from *Oxfam international* argues that the Cuban state most of the time would not let one do what is called *the first identification of needs*. This procedure is taken over by the state, which subsequently determines the *action plan*. Only from this point onwards, bilateral agreements or international organisations like the UN cooperate.

Other important concepts arising when analysing the strategy of environmental governance and the approach to DRR, are those of trust and transparency. The former, related to trust between the different actors of the system, but particularly trust of citizens in the institutions. The latter concept related to transparency of the environmental institutions and processes. To understand Cubans' perception on these issues I elaborated several questions that help in that respect. Some of them are further analysed in the quantitative part of this study.

Is there transparency in the agency and decisions of the Government and institutions in environmental matters?

The interviewed authorities coincide in having a positive perception of transparency within environmental institutions, and especially when considering the recent years. They acknowledged that institutions recognise their failures and mistakes. However, these results are not as unanimous as they may seem. Views of ordinary people vary more and are sometimes negative, as demonstrated below in the quantitative part of this study. Nonetheless, a generally positive view is still maintained. Moreover, the involvement of environmental specialists in their activity may favour transparent processes, as Castro-Serrano asserts:

I am part of that *environmental gear* and I respect the people who work in the environmental area of this country (...) To work in the environmental area one must be very committed and ideally have a sense of belonging, one must be sensitive. I think most of people who work in the environmental sector in Cuba have that feature. And that is why there is a real transparency in

everything that is designed and made. This does not mean that everything is perfect and that there are no deficiencies; of course they exist, like in all aspects. (L. Castro-Serrano, personal communication, December 20, 2013)

Transparency may help build the population's trust in institutions and the government, thus favouring an efficient functioning of interconnected multidisciplinary-systems, such as the Cuban NCD (see Ostrom, 1990; Wisner et al., 2012). Multidisciplinary-systems may help creating strategies that take into account all the variables implied when implementing new programmes or policies. These practices would avoid negatively affecting previous programmes and would help approaching a sustainable development. The Cuban model, its institutions, policies, and legislation show signs of a commitment to an ecological path embedded in a sustainable development approach (see, for example, Levins, 2005). Some organisations have even recognised a sustainable development as existing uniquely in Cuba (see World Wide Fund For Nature [WWF], 2006). The following question intended to examine the views of authorities regarding this issue. Understanding how far (or how little) Cuba has reached in incorporating elements of sustainable development may help explaining its relevance to DRR.

Do you think Cuba is in route toward a sustainable development? What would be the most successful aspects of this approach?

Cuban specialists coincide in considering the Cuban economic crisis as probably the greatest obstacle to build a sustainable development. However, in some cases the economic crisis may have fostered adopting this pathway (this will also be addressed in another question below).

Considering obstacles and advantages in adopting sustainable development, Castro-Serrano describes:

To achieve the sustainable development we want, the economy is one of the pillars and therefore economic development in Cuba is imperative to achieve other things. Precisely the Cuban state policies and all these changes being implemented are based on achieving greater economic

development. But this economic part is the weak point of sustainable development in Cuba. On the other hand, other aspects are strengths. For example, having achieved access to culture, education, and health care to the entire population is something that fosters sustainable development. These are aspects that in Cuba we have consolidated long ago; and we refine them and improve them to achieve higher goals. Moreover from the point of view of environmental work, Cuba since long ago is working towards a sustainable development regarding nature and its resources, and this is established as policy. What prevents these other elements [to occur] with much higher speed is the economic issue. When we manage to attain stability of economic development, we will have many more achievements and we will come much closer to accomplish that well desired sustainable development. (L. Castro-Serrano, personal communication, December 20, 2013)

As mentioned earlier, some authors claim that the commitment to a more sustainable development in Cuba was mostly a response to the economic crisis the country has been immersed (see, for example, Whittle & Rey Santos, 2006). This is addressed by Levins (2005), providing evidence that demonstrates Cuba's early adoption of ecological and sustainable pathways and its relation with socialist ideology. To complement these data with primary sources, I asked the question below:

Do you think the pathway of sustainable development was taken because external pressures forced Cuba to do so? Or was it part of the aims of the revolution?

The answers of interviewees coincide in identifying elements of sustainable development as principles of the revolution. They give examples of policies, like the one of reforestation, the literacy campaign, the agrarian reform, and many other reforms that drastically improved the living standards of Cubans. Besides, interviewees mention the messages given by the leaders of the revolution in the early years of the revolution (see, for example, F. Castro, 1974). Alonso Tejada emphasises the role of the socialist state in achieving goals connected to sustainable development:

The greatest challenge that a real revolution of our time has—a socialist one, although the term is so battered, but still identified with the philosophy of prioritising the common good of society—is that of solving the state's role not as guarantor of the logic of growth and economic

profiting, but as a guarantor of the common good of society. (A. Alonso Tejada, personal communication, February 11, 2014)

A difficulty connected to implementing sustainable pathways lies in knowing the most sustainable solutions that will benefit the whole society. The thematic of nuclear energy has played an important role in debates regarding sustainable development. This type of energy has been used in Cuba even before the revolution, mainly in nuclear medicine. The revolution continued and further developed its use in other branches of medicine industry, such as biomedicine, radiobiology, and radio-pharmacy. In 1976, Cuba and the URSS signed a bilateral agreement that included building three nuclear plants. The fall of the Soviet bloc affected Cuba's pace in developing nuclear-energy use, interrupting the construction of the nuclear plants (Muñoz Nieves, 2012). Besides, nuclear disasters such as the one in Fukushima, Japan, in 2011 have likely influenced the debate on nuclear energy in Cuba⁴⁹. It is also reasonable to think that Cuba's nuclear strategy may have lost momentum when commitments to more ecological paths began. I addressed this issue in an interview with Rolber Reyes, a physicist at the local offices of CITMA in Holguín.

According to the testimonies provided so far, we have seen elements that give clear evidence of the intentions of the Cuban government and its institutions of adopting a sustainable development. Together with these efforts, we have also discussed the necessity and—to a certain degree—the efforts of opening more channels of real participation throughout the country. Participation may be well considered as another ingredient of sustainable development in its broadest concept. Therefore, the struggle in each of these directions, it is merely the same struggle. Strategies and methodologies of broadening participation are multiple. As discussed above, one methodology that is being consciously implemented in Cuba, although perhaps not to the extent demanded by many, is popular education. The following question helps analysing the perception of authorities regarding this issue:

⁴⁹ On the disaster in Japan, see Visschers and Siegrist (2013)

Has the Cuban system of education and particularly environmental education used principles or methodologies of "popular education"?

As head of the Environmental Education Department, Castro-Serrano has much to say about this issue:

For more than 20 years Cuba has been promoting and using the methodologies of ‘popular education’. These methodologies were introduced primarily through Cuban NGOs. These NGOs promoted the study of this [type of education] and all what [Paulo] Freire made from Brazil. NGOs have been instrumental in disseminating popular education in Cuba, mainly the ‘Martin Luther King Centre’ (...) Community projects and those that the Ministry of Culture develops have a very strong base of popular education (...) to promote active and effective participation of people in the processes developed. Popular education came to Cuba several years ago and is now incorporated in the different educational processes of the country. The preparation of those who work directly with people, with the population, is based on popular education. (L. Castro-Serrano, personal communication, December 20, 2013)

In February 14, 2014, I participated in an event that had as main guest the liberation theologian known as *Frei Betto*. Several members of the *Martin Luther King Centre* (CMLK, for its Spanish acronym) also attended the event. CMLK is a Christian organisation that disseminates social values and participation through popular education methods.⁵⁰ Moreover, the other guest at the event was Paulo Freire’s wife. Betto and Freire were not just good friends, but strong advocates of popular education methodologies (see Freire et al., 1988; Gadotti & Torres, 2001). The interesting debate developed in that event made me realise the diversity of assessments regarding implementation of popular education in Cuba. According to Betto’s view, Cuba’s formal education is still a paradigm of traditional *banking education*. The members of the CMLK strongly agreed with this. Conversely, my experience visiting organisations like the GTE-Havana-Bay and the FANJ informed me of popular education methodologies being used in Cuba. Thus the debate suggests that although these methodologies are used in non-formal education, they have still a long way through until they are effectively implemented within formal education. At

⁵⁰ See <http://www.cmlk.org/>

least, popular education is still considered an important objective within the Cuban model —as evidence demonstrates.

Another angle to examine channels of participation is to analyse the importance given to local knowledge. The question used to address this issue is below:

Is local knowledge incorporated into DRR and policy development in general?

The specialists argue that including local knowledge is still not incorporated as it should, but it is being considered today much more than before. Castro-Serrano explains:

Today we are taking much more into account local knowledge of the situations and risks that exist in each territory, and this contributes to all the studies that are being performed (...) all these studies have been built because they were taken there, to the grassroots, to the municipal assemblies and the territories; we have made them known. That contributes to get feedback, to strengthen and improve all the plans that are being developed on the basis of dealing with disasters, and of course this feedback arrives at the top leadership of the country. (L. Castro-Serrano, personal communication, December 20, 2013)

To this respect, Deblois identifies similar failures in the Cuban model. He explains that although the Cuban system is very efficient and capable of performing many programmes, it lacks material resources and an approach to the community. In addition, he confirms that the weakest point of the Cuban state is in reconstruction, rehabilitation, recovery of livelihoods, and water issues, although the latter aspect is nuanced (personal communication, February 27, 2014).

The following sections describe the main findings in formal visits to the *National Seismological Research Centre* (CENAIS, for its Spanish acronym) in the city of *Santiago de Cuba* and to the local office of the *Ministry of Science, Technology, and Environment* (CITMA, for its Spanish acronym) in the city of *Holguín*.

6.3. Visiting Provinces

i. CENAIIS in Santiago de Cuba:

In the city of Santiago de Cuba, in the province of the same name, I visited the facilities of *CENAIIS* and the *National Seismological Service* (SSN, for its Spanish acronym). In the SSN seismological monitoring of the country and surrounding areas of the Caribbean is permanently performed.

CENAIIS is involved in projects such as the *seismic survey of households* of the old historical-area of the city. Specialists of CENAIIS have performed these surveys. In the area, the surveyed households are clearly distinguishable, since they hold adhesives on their entrance-doors evidencing it (see Figure 6-3). When interviewing inhabitants of the area, they also remembered having been surveyed.



Figure 6-3: Examples of households surveyed by CENAIIS in Santiago de Cuba (Source: this author)

The specialist Ibia Vega explains that CENAIIS started working on risk management in the late 1990s, analysing threats, vulnerabilities, and calculating risk scenarios (personal communication, January 21, 2014). According to Darío Candebat, another specialist, the attention for reducing vulnerabilities is placed on the most deteriorated homes. A

construction and seismic code establishes minimum standards for every existing or future household. To enable compliance with these requirements, the state provides grants and loans to families, even though they may not suffice all the necessary expenses in the short-term. Moreover, Ibia Vega argues that reducing physical vulnerability to disasters involves relocating and resettling people, rather than just evacuating people. These actions, together with the reparation of homes imply high costs, but the economic situation of the country does not allow fulfilling them. Regarding reparation costs, Ibia Vega comments that she and other colleagues have asked for grants to repair damages caused to their homes by *Hurricane Sandy*. According to her, these grants are subsidised and have reasonable payment periods (personal communication, January 21, 2014). Furthermore, the Cuban law ensures that people are not chased to pay their debts as private financial institutions in other countries do. The law establishes that mortgages cannot affect people's livelihoods. Therefore assets or goods such as people's homes, food maintenance, or small farmers' land are indefeasible⁵¹. However, mortgages may include "luxury-goods" such as holiday houses (Peña Pupo, 2012). The issue of mortgages clearly distinguishes the Cuban model from most countries, where uncontrollable indebtedness and mortgages have unleashed global crises (see Oficina Internacional del Trabajo [OIT], 2011).

Moreover, regarding construction policies, the *National Housing Institute* (INV) launched an initiative called *self-effort construction* (*construcción por esfuerzo propio*; see López Jiménez, 2011). Its purpose is to encourage public participation in the construction or modification of their homes —with compliance of construction codes. Hitherto, the initiative has had great impact and considerably increased people's requests to modify their homes⁵² (D. Candebat, personal communication, January 21, 2014).

However, seismic events are not the only phenomena affecting the eastern provinces of the country, where Santiago de Cuba is located. Cuban citizens often described *Hurricane Sandy* as a phenomenon that hit harder than expected the population of this part of the country. They believe this was influenced by the lack of recent experience on these

⁵¹ 95.6 per cent of occupied homes in Cuba are owned by their residents

⁵² In 2013, self-effort construction accounted for 47.7 per cent of finished homes in Cuba (ONE, 2014)

phenomena in that area. In Santiago de Cuba the education on environmental hazards had been more focused on preparing the response to seismic events. The information in these issues is permanently distributed through bibliographic material destined to authorities and the population in general. In this regard, CENAIS and other institutions and NGOs like CARE⁵³ have performed multiple community workshops. Priority is given to employ socio-political organisation to develop and deepen the mutual transfer of knowledge (see, for example, Vega-Cuza & Guasch-Hechavarría, 2013). In this connection, the specialist Sandra Rosabal describes how they interact with the community in the *days of the defence*. These days are celebrated in Cuba as means of creating a *culture of defence* within the population. In these events she and other specialists give talks and interview citizens and local leaders to identifying key problems of the community. Thereby, the actions to be adopted become strengthened (S. Rosabal, personal communication, January 21, 2014). These events also give local knowledge a prominent role in reducing risks. Strategies such as the *community and family plans* are eloquent examples of the role played by citizens. Herein, families adopt responsibility for carrying their own analyses at their households and neighbourhoods to assess risks. Thereby, they become more conscious of the risks and of what needs to be done to reduce them. Family plans are revised and complemented by CENAIS. Candebat explains that these strategies intend to create truly participative processes, making citizens participate in the results and the solutions to be adopted.

The *State Committee for Standardization* (CEN, for its Spanish acronym), and particularly its seismological and environmental sub-committee, is the institution responsible for revising and updating the seismic code. Two specialists of CENAIS are part of this seismic and environmental sub-committee. One of them, Ricardo Oliva, explains that updates contemplate refining the *seismic mapping* and the *seismic micro-zoning* of the country (personal communication, January 21, 2014; see also Morejón-Blanco et al., 2014). Data contributing to the seismic mapping is obtained by research coming from different institutions, as well as master and doctoral theses in Cuba. The first seismic code was established in 1984 and it was amended in 1999. Currently, a new modification is to be approved in 2014. I asked Oliva about the extent that economic problems negatively affect

⁵³ see <http://www.care-international.org/where-we-work/cuba.aspx>

seismological research. In this regard, he explains that all seismic research is expensive and requires equipment for experiments. For instance, a *seismic-vibration table* was to be installed at the *University of Oriente* after the special period. However, as Oliva comments, the space is still there waiting for the table. Furthermore, he claims that all which has been acquired, it has been through international-cooperation. For instance, the seismic stations operated by the SSN have been modernised thanks to collaboration with China (personal communication, January 21, 2014).

Darío Candebat explains that the language of the code might be difficult to be understood by citizens in general. For this reason, CENAIIS is planning to create the *popular self-construction manuals*. These manuals will translate the code to a language easily understood by everyone, thus making sure that everybody understands what they should do. I asked why this was not done before. Candebat responds: “just because of lack of resources. The idea and the information have existed since long time ago” (personal communication, January 21, 2014).

ii. CITMA in Holguín

In the city of Holguín, in the province of the same name, I visited the facilities of the local office of CITMA. This office currently performs risk studies to identify the most critical areas that require resource focus. For instance, Rolber Reyes, provincial coordinator of vulnerability studies in the province, showed me partial results of a study of hazards of rain, wind, and sea flooding. The study took two years and included the participation of three sociologists, a geographer, a mathematician, two civil engineers and health-care and housing technicians. After a survey generated by a study like this the specialist knows up to which street people need to be evacuated depending on the approaching cyclone. A study of this type, samples three per cent of the population of the municipality. The *Meteoro mock drill* is updated with the latest results of this kind of studies. These studies are examples of multidisciplinary approaches being adopted by CITMA. Many authors recommend

multidisciplinary approaches to address environmental issues (see, for example, Espina, 2013; Levins & Lewontin, 1985; Wisner et al., 2012).

Reyes provides additional examples that put in evidence the priority the country has had in reducing risks. One of them is the energy revolution that took place some years ago in the country. Herein, the Cuban government set priority to create batteries and generators in different points of the country. These batteries contribute to the national electricity grid. So, when the system is somewhere damaged, the rest of it assists immediately prioritising facilities of vital necessity.

Regarding on-going and future environmental projects in Cuba, I was interested in finding out how the authorities avoid conflicts of interest that may exist between these initiatives. Reyes explains that the authorities are trying to integrate all organs in a single regulatory body or ministry, so as to concentrate efforts to distribute resources evenly towards environmental issues.

The issue of using sources of renewable energy is also a priority of the Cuban state, as explained by María Eugenia Torres, specialist from *Cubasolar*. An example is the National Wind Atlas, drafted by the *Institute of Meteorology*. Particularly, the Holguín province has the largest wind park, which consists of 12 wind turbines. In addition, another park is already planned for the area. The places where wind turbines will be installed are already determined for the entire country. These tasks are performed in conjunction with the *Centre for Information Management and Energy Development (CUBAENERGÍA)*. Reyes mentions other on-going projects seeking non-conventional renewable energy: Tidal power project in Matanzas, biofuels, and biodiesel in Guantanamo.

Moreover, Cuba is also putting effort in the development of photovoltaic power generation. This technology has allowed using solar panels for providing television in schools of communities with difficult access. Regarding this Reyes claims: "this is all about risk management, but people do not see it." In addition, Reyes recognises a lack of methodologies to monitor people's learning about these issues. It is necessary to find

effective ways of transferring information to the public —he asserts (personal communication, Holguín, January 2014).

Also in Holguín I interviewed Ismael Columbie, administrator of the provincial CGRR, which is a key institution in the distribution of information toward and from the public. Columbie enumerates some of the tasks performed by the CGRR in Holguín:

- Maintaining databases of previous events
- Works in conjunction with the NCD in the preparation of plans
- Evaluating all that can affect the environment in the area
- All development in the area must be based on studies that in turn incorporate sustainability.

In addition, Columbie explains that specialists of the NDC coordinate with daily information coming from the CGRRs. On the other hand, Meteorological stations daily send information to CGRRs. Together with the CGRRs, early warning points (PATs) work in the most vulnerable areas (river basins, landslide-risk areas, etc.). For example, an early warning would be when the activist in charge alerts that it is raining a lot and the river is rising. The PATs are volunteer activities of those who carry them out. These people may work from their homes or from places specially equipped for these tasks. In Holguín, for example, 26 PATs are located in private households. Other PATs are also located in schools. Those in charge are people who were prepared through training courses. PATs are equipped with means of communication (telephone, radio, etc.), lighting, waterproof clothing, and rain gauges, among other things. Columbine also describes the role of the CDRs in performing these tasks. When an extreme event is approaching, the CDRs lead the people to shelters, prioritising the most vulnerable households that have been already identified in previous phases. For the recovery stage, the CDRs are also asked to make the cadastre of the area.

I asked these specialists about experiences of looting during disasters. They explain that during a disaster, authorities and people in general make sure that no one takes advantage of the situation. For this purpose, they form brigades that remain watching evacuated areas. On the other hand, the state penalises anyone selling scarce food supplies, which is another way through which some may try to benefit from. For example, Reyes describes that after the hurricane Ike, those who were caught selling bread at a more expensive price than normal were subject to public trials. These trials are called *exemplary trials*. To assist the recovery of material goods the state provides loans, subsidies, and donations to those in need. This economic support includes money to pay the transport of building materials.

6.4. Quantitative Results

The quantitative part of this research is based on data gathered in different places, with no specific pattern of sampling other than intending to respect randomness (see Chapters 4 and 5). In total 87 questionnaires are considered in this study. These questionnaires were filled out in two ways: an interviewer-administered and a self-completion way. The sampling site was set mainly in the city of Havana, within different neighbourhoods. Other surveys were performed in Santiago de Cuba and a smaller amount was surveyed in other provinces. Unless indicated, the figures and tables presented in this section are elaborated by this author based on data from this research.

a) Some general data of the sample

General data from this study and secondary sources are provided below to have an idea of the extent that some control variables may affect the quality of the results.

Figure 6-4 illustrates the age distribution of the sample and the Cuban national total. Within the sample, individuals between 15 and 64 years old constitute the 97.7 per cent of the total sampled⁵⁴. On the other hand, the same group constitutes the 83.7 per cent of the national

⁵⁴ This thesis considers respondents of 15 years old and above

population eligible in the study (i.e. 15 years old and above). This means that the sample is approximately 14 per cent younger than these age groups in Cuban population. The most substantial difference is noticed in the last group (65 and above).

In addition, the median and mean of the sample and at the national level are compared in Table 6-1. The average age of the sample is 1.5 years younger than the national average, thus reflecting a similar difference to the described above, although less dramatic.

Table 6-1: Median and mean ages of the sample and nationwide. Source: this author and ONEI (2014b).

	Sample	National
Median	38.0	39.5
Mean	37.6	39.1

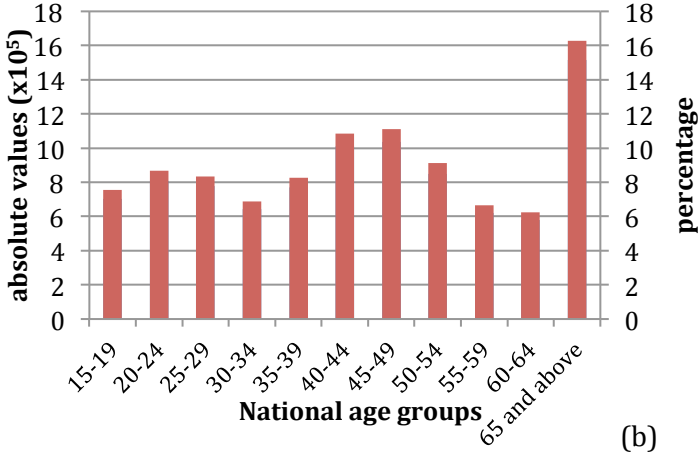
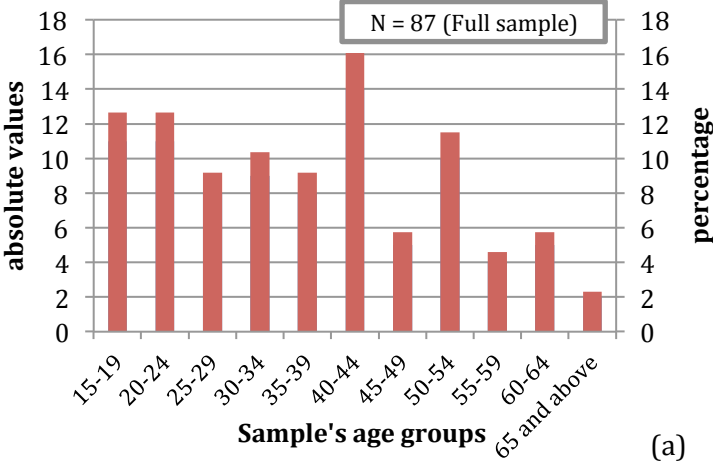


Figure 6-4: Age distribution of the sample (a) and the Cuban national total (b). Source: elaborated by this author based on data from this study and ONEI (2013).

Regarding sex distribution of the sample, it can be noticed a disparity between the amount of men and women. In contrast, at the national level the proportions of both men and women are more equalised (see Table 6-2).

Table 6-2: Sex distribution of the sample and nationwide. Source: this author and ONEI (2013)

	Sample	National
Women	38	5,620,719
Men	49	5,589,345
Total	87	11,210,064
Sex ratio	1289	994

Moreover, in terms of level of attained formal education, the sample shows similarities with the Cuban population (see Figure 6-5). According to official data (ONEI, 2014a) the average educational grade within the Cuban population aged 15 and older is 10.8th grade. In contrast, the sample has an estimated average⁵⁵ of 13.8th grade for the same age group. Moreover, 52.9 per cent of the sample has finished the secondary education level. This result is also similar to those presented at the national level, where 71.4 per cent of the Cuban population⁵⁶ has completed secondary education.

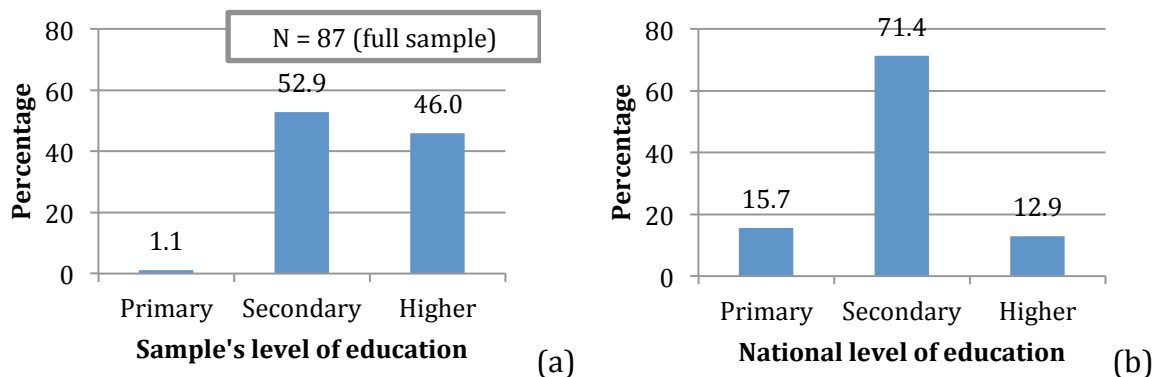


Figure 6-5: Level of education of the sample (a) and nationwide (b). Source: this author and ONEI (2014a).

Moreover, Figure 6-6 below illustrates a distribution of sample sites (origin of the sampled units) considered in this study. According to this distribution, 83 per cent of the individuals were sampled within the city of Havana. This province accommodates more than half of the

⁵⁵ The extension of a university undergraduate degree and a post-graduate degree was assumed as 5 years, respectively. For example, finished undergraduate education is assumed as a 17th grade of formal education.

⁵⁶ This percentage considers the population who has completed at least the primary level of education, which according to ONEI (2014a) accounts for 92 per cent of the country's population.

Cuban population and holds the highest percentage of interprovincial immigration (26.3 per cent of the total, see ONEI, 2013). Figure 6-7 illustrates the distribution of sample sites within the city of Havana, being “Centro Habana” the most frequent.

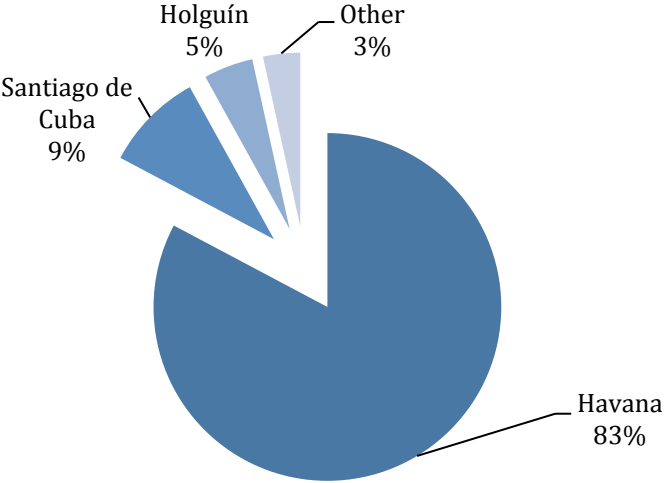


Figure 6-6: Sample sites considered in the study.

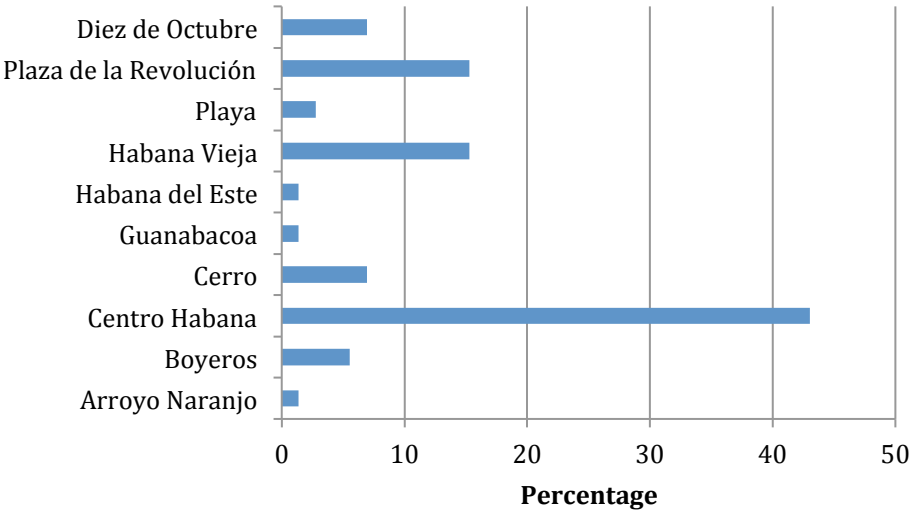


Figure 6-7: Municipalities used as sample sites within the city of Havana (83 per cent of the total sample).

b) Specific data collected

The following figures present some of the quantitative data collected in this study. They constitute the results of the more relevant questions used in the surveys to ordinary Cuban citizens. The numbering of questions does not necessarily follow a logic order, since they provide information to multiple topics of interest at the same time. Therefore the data and results could have been organised in multiple alternative ways.

The first group of questions is more directly related to the topic of natural hazards and disaster risk reduction. These questions focus on experience, education, and people's views regarding these issues. As explained earlier, most of these questions provide answers within a scale, thus resembling "*likert scales*" (see Bryman, 2008) that illustrate favourable or unfavourable views to a certain topic.

After piloting the questionnaire, Question 1, which enquired about the frequency with which people had experienced extreme phenomena, was modified a couple of times. The reason for doing this was to avoid underestimating people's counting of these extreme situations. I noticed that some interviewees claimed not having experienced any extreme situation even in areas recently affected by extreme phenomena. In some cases interviewees did not count past event as having been "extreme" even though their homes were damaged. They explained these situations never became a risk of disaster for them, because everything was always controlled. Therefore, from then on, I decided to ask if extreme phenomena had occurred "near" them, thus trying to make them count phenomena that seriously affected their surrounding areas and not necessarily directly their own households.

Question 1: *How frequent have natural phenomena such as cyclones, hurricanes, earthquakes, wildfires, droughts occurred near you?*

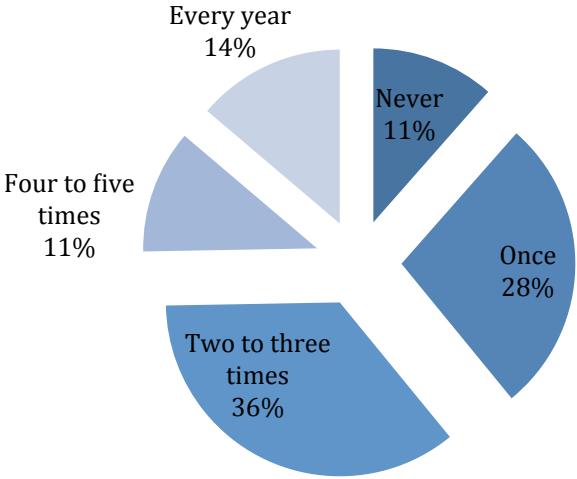


Figure 6-8: Sample’s perception of the frequency of extreme phenomena occurring near them.

As seen in Figure 6-8, most of the interviewees claim to have witnessed extreme natural phenomena two to three times in their lives. Remarkably, 11 per cent of the interviewees claimed not to have experienced these phenomena at all.

Additionally, I asked the interviewees to describe —if possible— the dates of the phenomena they had experienced, together with the names or the type of these phenomena (i.e., cyclones, earthquakes, floods, fires, droughts, etc.). Only 61 respondents out of 87 remembered names of phenomena. These results are shown in Figure 6-9 in chronological order. As seen, the event most frequent mentioned is Hurricane Flora, which hit the country in 1963 claiming more than 1200 human lives. Other respondents remembered only approximate dates of occurrence of extreme events, or the type of phenomena that affected the country, among which they mentioned seismic events, pouring rains, fires, and droughts.

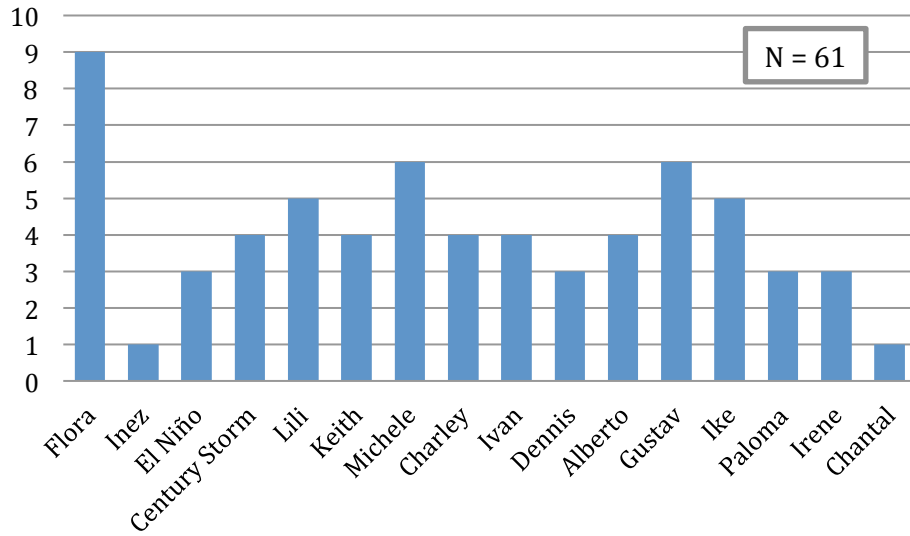


Figure 6-9: Frequency of names of extreme phenomena remembered by respondents (organised in chronological order).

Question 4 below, examines the issue of environmental education from the respondents' perspective.

Question 4: *How much information or education about climate change, disaster prevention, sustainable development, and/or environmental care have you received?*

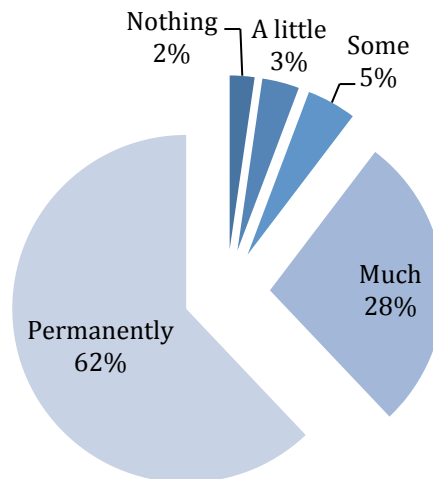


Figure 6-10: Sample's perception of the level of environmental information received.

According to the results of Question 4 (see Figure 6-10), the surveyed sample recognises a high level of environmental information distributed in the country, where 62 per cent claim that this information is distributed in a permanent basis. However, it is noticed that in spite of the acknowledged high level of education and efforts in these matters, still some Cubans claim not having received any kind of information. As read in Question 4, the information considered here not only includes the issue of natural hazards but also other environmental issues. Question 5 asked about the different information channels from where individuals claim to have received information regarding the above-mentioned issues. The results illustrate a predominance of television (29 per cent) and radio (21 per cent) as the main channels (Figure 6-11). A lower but still considerable amount is that of individuals claiming to receive this type of education at their places of study, conferences, or from all available channels.

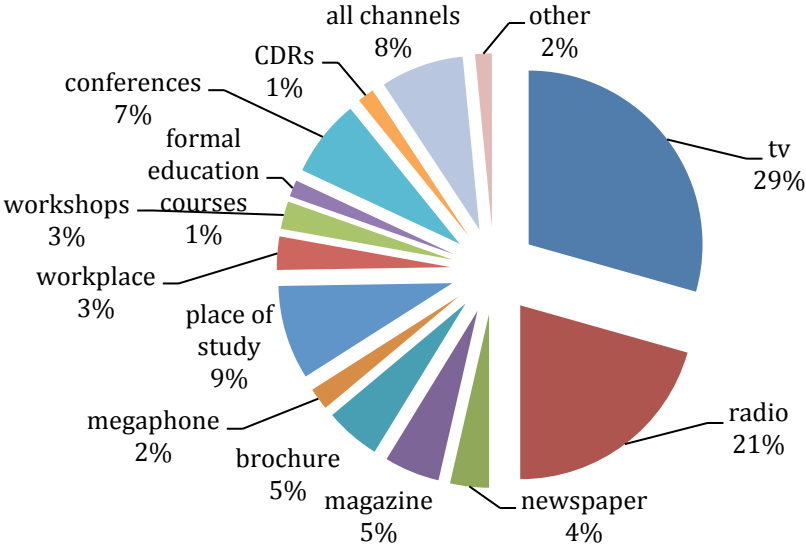


Figure 6-11: Channels for receiving education on environmental and DRR issues

Question 6 below examines the behaviour of Cubans regarding their own level of environmental care.

Question 6: *How often do you make efforts to take care of the environment?*

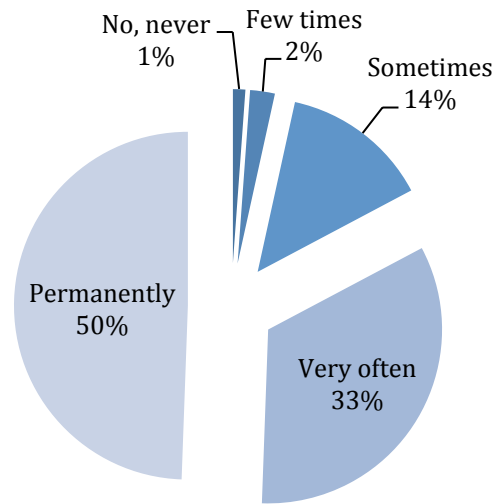


Figure 6-12: Sample's efforts to "take care" of the environment.

As seen in the results in Figure 6-12, the interviewees claim to make considerable efforts in taking care of the environment. It is not part of this thesis to assess the accuracy of the responses to this question. However, one must bear in mind that culture and knowledge of what one actually means with "caring for the environment" affect the results. In addition, a sense of shame or other similar feelings may influence in this kind of questions, especially if the respondent is answering to the researcher.

The following two questions (7 and 9) explore the experience of individuals in having had contact with mock drills or training exercises regarding disaster risk reduction. In addition, I asked them about their impressions of the possibilities to contribute and participate with their own ideas and knowledge, regardless of their participation. With this I wanted to consider how vertical or hierarchical people think these processes are and how included they felt within them. The results indicate that a high percentage of the sample has been frequently involved in these exercises. Nevertheless, the percentage of respondents who have never participated is also significant. Question 9 shows that a great majority of respondents feel that these processes admit participating with own views and knowledge.

Question 7: *How many times have you participated in mock drills such as the “Metoro”?*

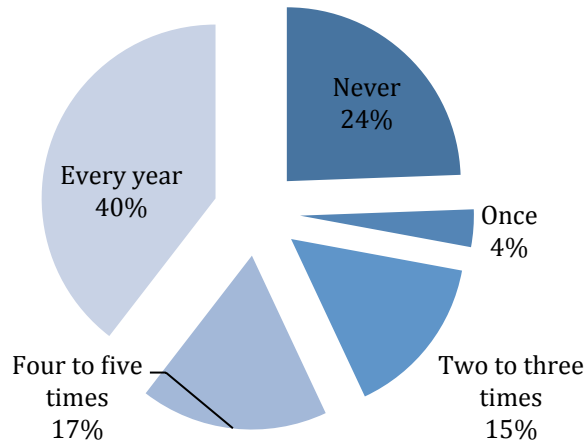


Figure 6-13: Sample’s participation in mock drills such as the Metoro

The results in Figure 6-13 indicate that a majority of the respondents have participated in mock drills at least once in their lives. However, a considerable amount (24 per cent) still lacks this type of preparation. Questions 9 to 17 were phrased in a way that included both people’s experience and their thoughts on hypothetical disaster situations.

Question 9: *Was it possible or would it be possible to contribute with your own knowledge, opinions, or experience in environmental workshops or disaster mock drills?*

Table 6-3: Is it possible or not to contribute with own knowledge

	No	Yes
Absolute	7	80
Percentage	8.0	92.0

The results in Table 6-3 illustrate that an overwhelming majority of the respondents recognise the possibility of contributing with one’s own views in workshops and mock drills. The recognition of this possibility may help building trust between individuals and

authorities in these events, thus favouring mutual learning processes. My participation in a workshop at CLAMED on December 17, 2014, may provide an example of the possibility of contributing with personal views in educational instances. This possibility becomes particularly relevant when it exists regardless of people's condition or expertise. At the mentioned workshop, specialists of CLAMED discussed the contents of the master's in health care and disasters, which is held at the University of Medical Sciences of Havana. During the workshop I actively discussed and contributed with my own views in different topics.

Continuing the topic of education and knowledge, Question 11 evaluates whether the respondents feel confident or not with their current knowledge-level regarding DRR. This confidence, if truly based on knowledge and not on irresponsibility, may also favour people's discipline in extreme situations. The question asks for both cases: people having experienced disaster situations or when considering a hypothetical future case.

Question 11: *How useful your current knowledge was or would it be in disaster situations?*

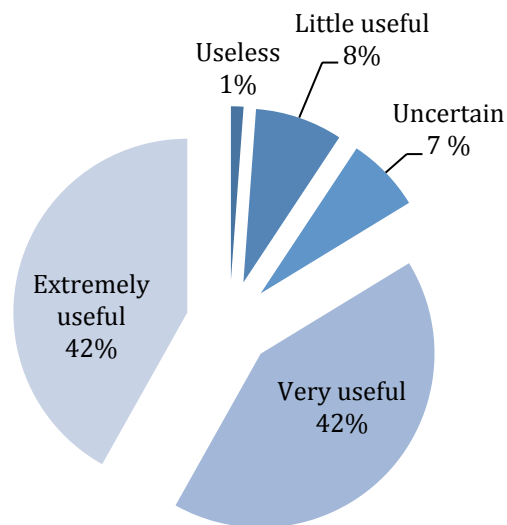


Figure 6-14: Sample's perception of their knowledge's usefulness in disaster situations.

The results in Figure 6-14 indicate that the people sampled feel significantly confident with their knowledge about natural hazards and DRR. Similarly, Question 12 addresses the perception of safety when individuals take into account their knowledge in conjunction with the Cuban NCD to face disaster situations.

Question 12: *How safe do you feel with your knowledge and the Cuban NCD to face a disaster situation?*

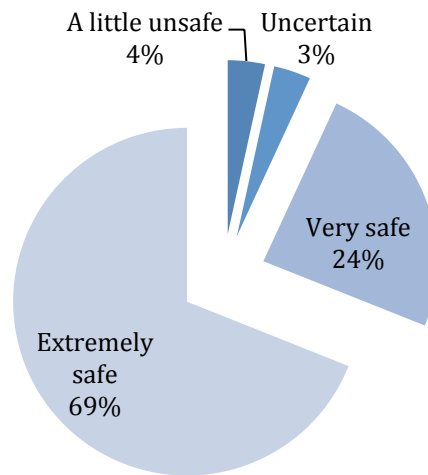


Figure 6-15: Degree of safety perceived by individuals in relation to their knowledge and their trust in the Cuban NCD.

The results illustrated in Figure 6-15 confirm a perception of usefulness of people’s knowledge in disaster management, together with their confidence in the NCD system. Question 13 asked whether respondents had received responsibilities or tasks during hazardous situations. The results obtained indicated that 36 (41.4 per cent) claimed to have performed tasks in these situations.

Question 14 —as other questions— is considered an *open question*, for it gives the option of any possible answer. However, in this and other *open questions* I still added some examples of possible answers –with the options “Other?” and “Which?” included. The latter was necessary since I perceived certain confusion in respondents after piloting questionnaires. This question intends to analyse how people feel regarding cooperation and

mutual help. Therefore, it is possible to delve into the *psychology of cooperation*⁵⁷ of Cuban people. The question addresses both cases: people having experienced disaster situations or when considering a hypothetical future case.

Question 14: *What did you feel or would have felt when receiving a formal task or role in DRR?*

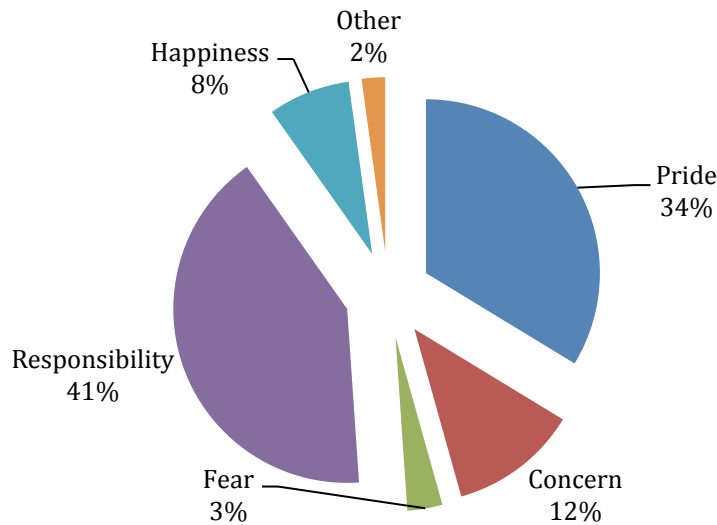


Figure 6-16: Sample's feelings when/if having received a formal role or task in DRR.

As seen in the results in Figure 6-16, the most common feeling the sample recognised was that of *responsibility* (*responsabilidad*.) This should be interpreted better as *feeling a sense of responsibility*. The second most frequent feeling is *pride* (*orgullo*), which indicates how much respect and importance they give to having a role in DRR and how willing they are to cooperate. These results also may reflect the degree of engagement and empathy that Cubans have in these situations. One of the respondents put some of these feelings together in one sentence:

[I would feel] concern for the *responsibility* of fulfilling my duty; *pride* because of the confidence placed on me, and *happiness* for being able to save or protect human lives. (Personal communication, January 15, 2014)

⁵⁷ On *psychology of cooperation*, see Tyler (2010).

Question 16 complements the results illustrated in question 14 by demonstrating willingness to help others (apart from family and friends). Thereby, a 69 per cent of the sample asserted that they might even risk their lives for helping, thus evidencing strong and selfless commitment with mutual help (see Figure 6-17).

Question 16: *How much did/would you get involved in helping others during a disaster occurrence?*

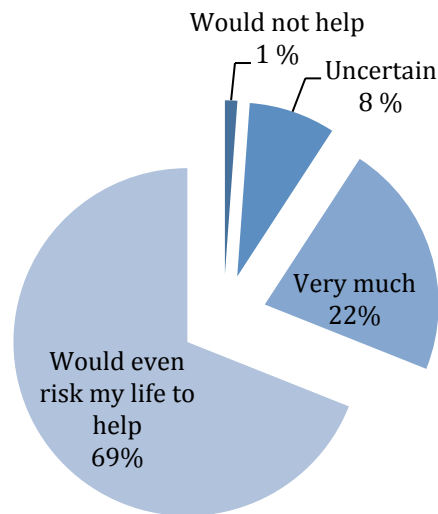


Figure 6-17: Respondents' degree of involvement or the will to help in hazardous situations.

As part of a focus group with the local civil defence committee at the University of Havana, a student who was fulfilling his social service at this institution provided an illustrative example of this “will to help”. Regarding the role of brigades staying in evacuated areas to avoid looting he asserted that he would gladly stay fulfilling this task even though it implied risking his life. The following three questions (17, 19, and 21) are alike. The three of them address the negative effects that extreme situations could have had over the interviewees.

Did you or your family suffer from - ?

- *injuries or physical harm caused by a disaster? (Question 17)*
- *psychological disorder caused by a disaster? (Question 19)*
- *material damage and/or property loss resulting from a disaster? (Question 21)*

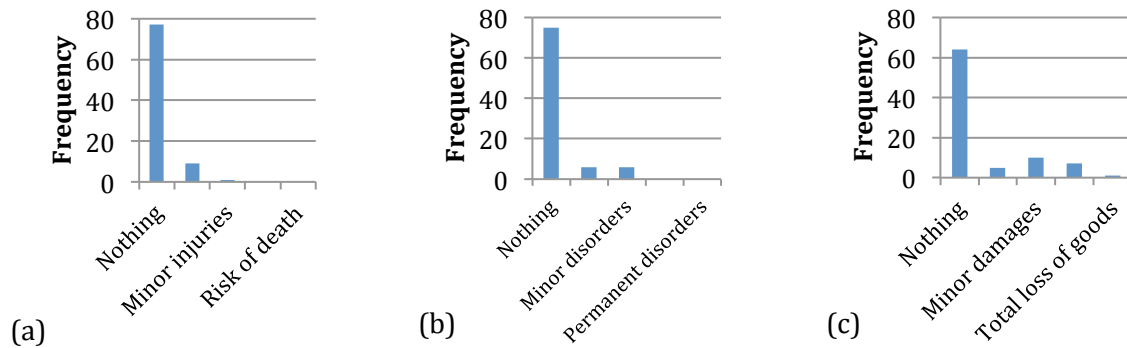


Figure 6-18: Physical harm (a), psychological disorder (b), or material damage (c) respondents claim to have suffered from.

The results of Figure 6-18 and Figure 6-19 show that in general individuals constituting the sample have not considerably suffered from extreme situations. The possible influence of these results in other aspects of interest, such as the respondents' degree of trust in government and institutions is examined in the following section. Material damages seem to have been the most frequent negative effects caused by extreme phenomena.

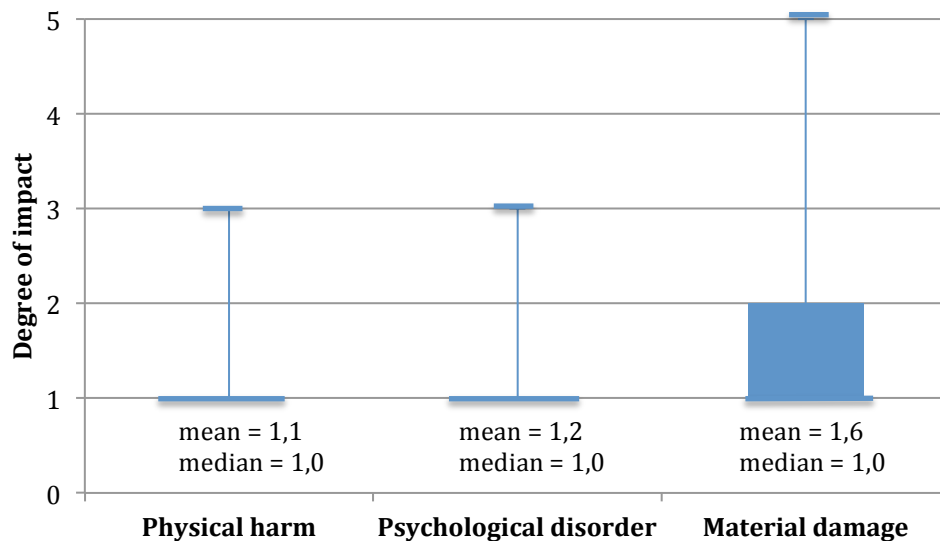


Figure 6-19: Degree of physical harm, psychological disorder, or material damage respondents claim to have suffered from.

The results presented in Table 6-4, Table 6-5, and Table 6-6 below provide similar results to those presented above, including more details and the cases of having or not received

state aid in these issues. These data were obtained through Questions 18, 20, and 22. It may be noticed that few cases claim not having received state aid after been negatively affected by extreme phenomena.

Table 6-4: Degree of physical harm versus having (or not) received state aid.

State Aid	Degree of Physical Harm					Total
	Nothing	Almost nothing	Minor injuries	Serious injuries	Risk of death	
No	-	-	-	-	-	0
Yes	3	9	1	-	-	13
Total	3	9	1	0	0	13

Table 6-5: Degree of psychological disorder versus having (or not) received state aid.

State Aid	Degree of Psychological Disorder					Total
	Nothing	Almost nothing	Minor disorders	Serious disorders	Permanent disorders	
No	-	2	1	-	-	3
Yes	0	4	5	-	-	9
Total	0	6	6	0	0	12

Table 6-6: Degree of material damage versus having (or not) received state aid.

State Aid	Degree of Material Damage					Total
	Nothing	Almost nothing	Minor disorders	Serious disorders	Permanent disorders	
No	-	0	1	1	-	2
Yes	0	5	9	6	1	21
Total	0	5	10	7	1	23

Question 24⁵⁸ also complements the information obtained by previous questions in terms of understanding the *psychology of- cooperation* or *mutual help* that Cubans have. The question directly addresses the high degree of cooperation found in Cubans and asks them

⁵⁸ As mentioned before, the numbering of questions must not confuse the reader, because they can be organised in more than one way.

to explain it. In this question I did not include any suggestion of answer, thus allowing a free spectrum of possible answers.⁵⁹

Question 24: *Why do Cubans cooperate that much in extreme situations?*

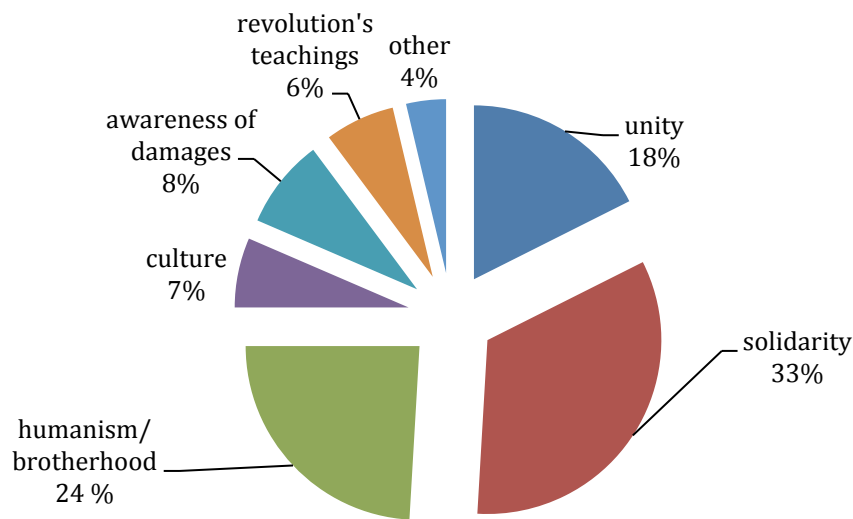


Figure 6-20: Why Cubans cooperate in extreme situations, according to respondents' views.

The results in Figure 6-20 resemble what was found in the qualitative part of this study, emphasising the strong presence of human or social values such as solidarity and humanism. The respondents also raised other elements more directly related to ideology and the Cuban social model and to Cubans' culture. The following two questions complement these results. Question 25 directly asks about the importance of human values in these issues. Question 25 was necessary not only to confirm the results of Question 24, but also to address the issue of human values in case respondents did not consider them in their answers to Question 24. Question 26 asks about the degree to which these values are present particularly in Cuban society.

⁵⁹ As explained above, because of their greater complexity, in other questions I included examples of possible answers. However, in these the alternative "Other? Which?" was also always present, so to find out if the desired answer was something different than the suggested.

Question 25: How important are human values such as solidarity in these and other issues?

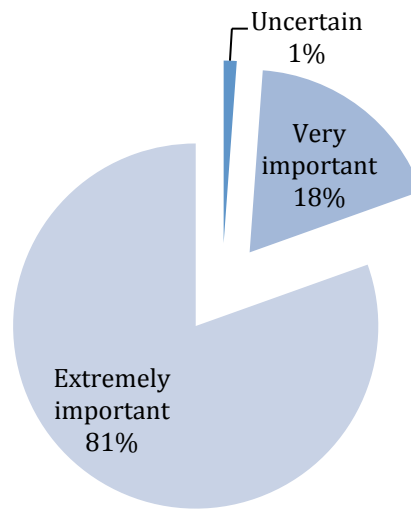


Figure 6-21: Sample's perception of the importance of human values in disaster risk reduction and other issues.

Question 26: Does Cuban society possess these values?

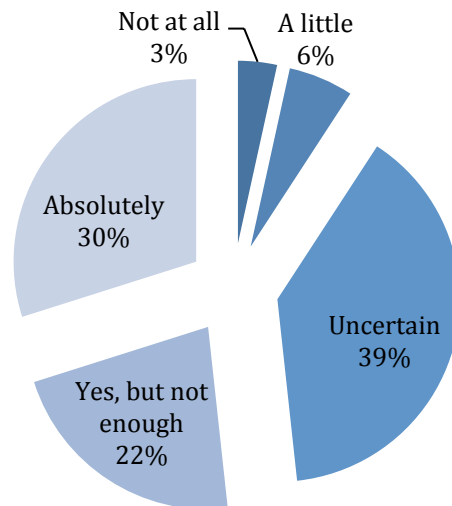


Figure 6-22: Sample's perception of the degree to which human values are present in Cuban society.

The results in Figure 6-21 confirm the relevance of human values in these issues, as already seen in the case of cooperation (Question 24). In contrast, the results in Figure 6-22 partially acknowledge the presence of human values in Cuban society. When contrasting these results with those from other questions, one might recognise that they do not necessarily imply a negative result regarding the existence of human values. They might rather indicate *self-criticism* of Cuban citizens, in terms recognising the necessity to improve or increase the presence of these values within society.

Moreover, questions 27 and 28⁶⁰ are important because they help understanding how human, moral, ethical, and social values are created —according to Cubans. Besides, the results may provide ideas of how feasible is to build processes that develop these values in other places —especially in societies where a lack of them is evident.

Question 27(28): *Who or which entities allow creating or must create human values among Cubans?*

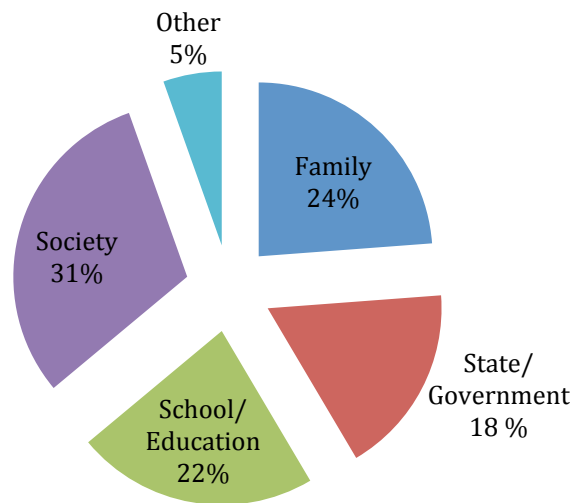


Figure 6-23: Sources of human values among Cubans, according to the sample’s views.

⁶⁰ Question 28 just asked if question 27 is applied to the particular case of Cuba. Only one respondent out of 87 answered negatively to this. Therefore, I merged both questions into one.

As seen in Figure 6-23 the family, the state or government, formal education, and society in general are considered responsible for developing values. In addition, the respondents confirmed that in the case of Cuba, values have been developed by these entities.

Question 23 corresponds to one of the main *research questions* of this study. Hence it provides essential information for the qualitative part and for the overall results of this thesis. Some of these results are summarised by the conceptual map presented in section 6.5. It is worth noting that although Question 23 is presented after questions 24, 25, and 26, it was asked before the latter. The necessity of enquiring Question 23 before addressing elements such as human values directly was based on the interest in letting the respondents deeply think on elements connected to DRR. Thereby I intended to avoid “shaping” their minds in advance.

Question 23: *What elements allow Cuba to have such an outstanding preparedness and response to natural hazards?*

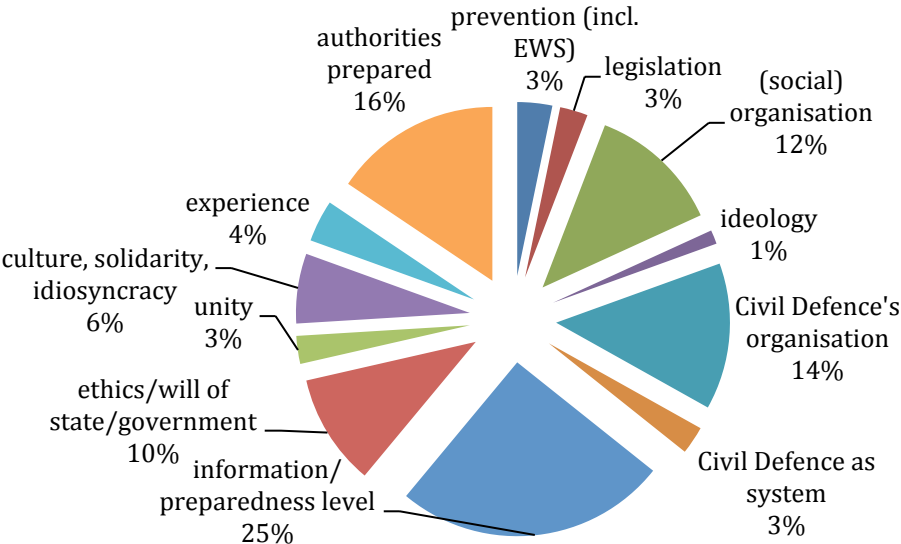


Figure 6-24: Elements that allow Cuba to have an outstanding preparedness and response to natural hazards.

To analyse the results of Question 23 maintaining validity and reliability, I grouped the concepts based on what the respondents explicitly meant and not what I thought they meant. Figure 6-24 presents the result of this process, illustrating the multiplicity of factors identified by the sample as sources of success of Cuba's DRR model. According to the sample, it is not only the general level of information or preparedness (which is frequently emphasised in the literature), but also other underlying factors with considerable influence. Wisner et al. (2012) consider these and other factors in what they call "progression of vulnerability" and "progression of safety" (pp. 11-33). These progression processes analyse the presence (or absence) of *root causes* and *dynamic pressures* in connection with the existence (or not) of *sustainable livelihoods*.

The following questions, although not directly addressing the main topic of this research, represent an essential part of the study. As explained throughout this study, these questions help understanding underlying factors that may explain the discipline to cooperate and mutual help of Cubans in extreme situations.

Question 29 has the aim to assess the unity that —according to each respondent— exists in Cuba regarding its model and the transition to socialism. Question 30 complements it by addressing the respondent's particular case. Unity, as seen in some results above, is an important factor that helps societies coping with hazardous situations. Both questions do not directly enquire about socialism, thus acknowledging constant debates and nuances on its definition and therefore avoiding misconceptions⁶¹.

⁶¹ As discussed above, this study considers the Cuban *socialism* as a transition process, as defined by its leaders (see, for example, Guevara, 2006; Guevara & García, 2009) and as envisioned by Marx (1875/2008).

Question 29: Do you think that Cubans hold—in general—a desire and commitment of building a model different from world capitalism?

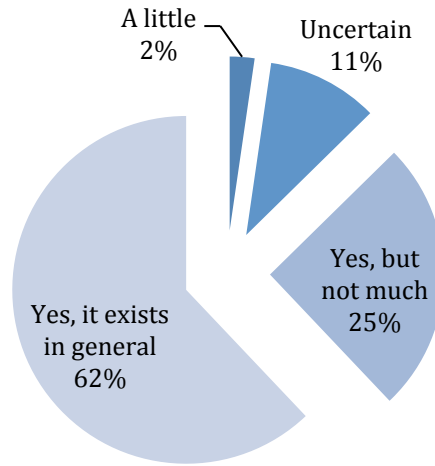


Figure 6-25: Degree of commitment (of others) to build an alternative model different from capitalism, as perceived by respondents.

Question 30: Do you feel a desire and commitment to build a model different from world capitalism?

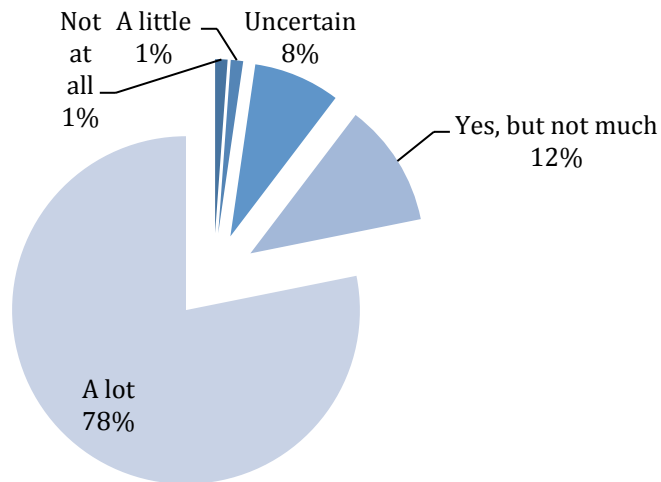


Figure 6-26: Respondents' commitment to build an alternative model different from capitalism.

As seen in the results in Figure 6-25 and Figure 6-26, the respondents perceive a commitment to a model different than capitalism existing in a great majority of the population. The commitment acknowledged is higher when referring to their personal cases than when referring to the rest of society.

Question 31 delves into respondents' thoughts regarding ideal societies, and the aspects of a model they appreciate most. I intentionally omitted asking a question directly enquiring whether they think or not that the Cuban system is a democracy. The reason for not including such a question was that I considered more interesting to make them imagine any society and not only theirs. Besides, one may expect that not only in Cuba, but also in any country people would become suspicious if a stranger asks these kinds of questions.

Question 31: *Which are, according to you, the most important conditions that should exist in any country in the world to have democracy in that place?*

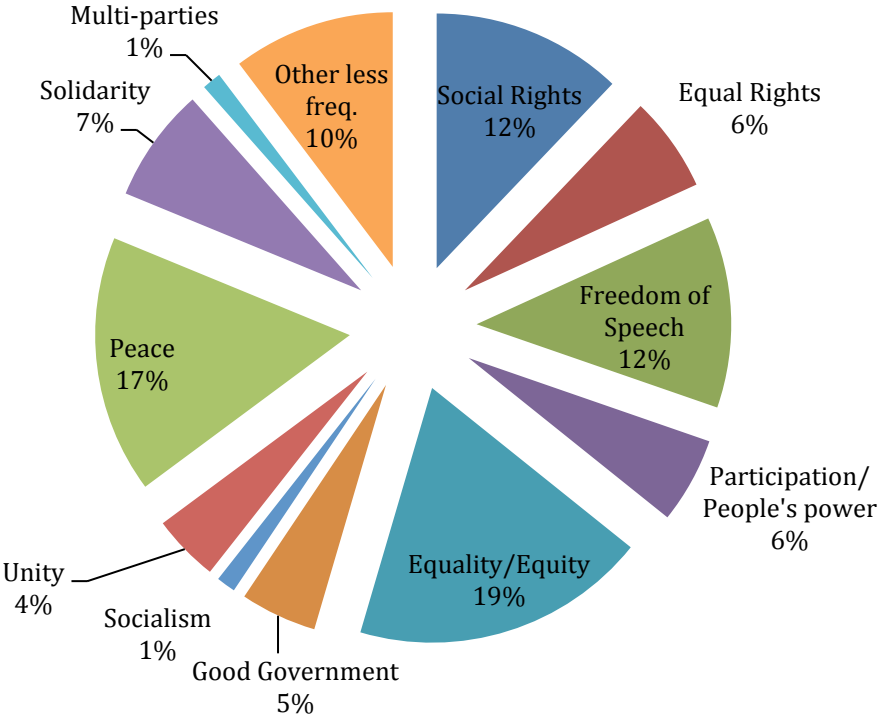


Figure 6-27: The most important conditions that any country requires for having a democracy according to respondents.

As in Question 23, analysing the results of Question 31 implied a considerable challenge. To make this process valid and reliable, I grouped the concepts based on what the respondents explicitly meant and not what I thought they meant. This requisite was necessary even though my presence when interviewing could have bestowed on me the ability of deducing more. The latter inasmuch as questions were interrelated and allowed perceiving the individuals' general stance. For instance, as illustrated in Figure 6-27, similar groups such as social rights and equal rights are separately considered. Within social rights I included cases mentioning the existence of free education and public health, among others. On the other hand, cases mentioning, the existence of "equal rights" do not necessary mean equality of "social rights" in particular. The same rationale was followed in grouping the rest of the cases.

The results of Question 31 indicate that according to the respondents, democracy requires many elements. Among the most frequent ones we find: the existence of equality or equity, peace, social-collective rights, freedom of speech, equal rights, and participation. It is interesting to notice that their definition of democracy differs almost completely from the dominant liberal or Western paradigm of democracy. The latter concept, considers the existence of elections within a multi-party system as one of the main requisites for a democracy (see, for example, Heywood, 2002).

Question 32 intends to analyse how Cubans appreciate some unique and distinctive aspects of the Cuban political system, such as accountability, revocability, and control of leaders. These practices are recognised by the Cuban Constitution (§ 68), representing features of direct and participative democracy models (see Lenin, 1973; Roman, 2003). However, some argue that these practices are underused or not properly applied.

Question 32: *How important are accountability and recall of leaders who do not comply in a democracy?*

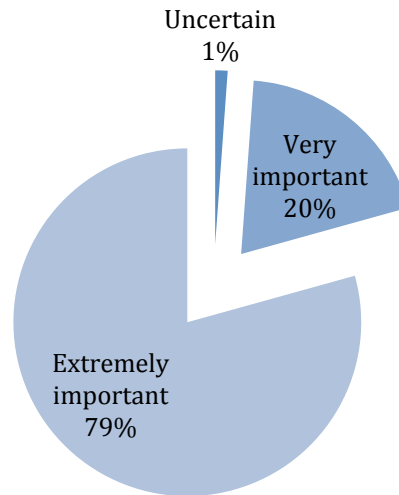


Figure 6-28: Importance of accountability and revocability of leaders for a democratic system, according to respondents.

As illustrated in Figure 6-28, a great majority of the respondents consider as “extremely important” the existence of accountability as a condition for having a democracy. The right to revoke or recall leaders that do not comply with their duty as such is also highly relevant. None of the respondents considered these elements of little or no importance; hence these two categories do not appear in the chart. However, accountability and revocability were not generally mentioned in the results of Question 31 (see Figure 6-27), with the exception of few cases⁶². Perhaps respondents forget mentioning elements that are present in Cuba’s model and which are assumed to be obviously granted in any democracy. Similarly, Question 33 addresses the importance of the right to evaluate and control the agency of institutions in disaster management and other issues.

⁶² These few cases were included in the “Other less frequent” group of the pie chart.

Question 33: *How important is citizens' right to evaluate and control the agency of institutions for good performance in disaster management and other issues?*

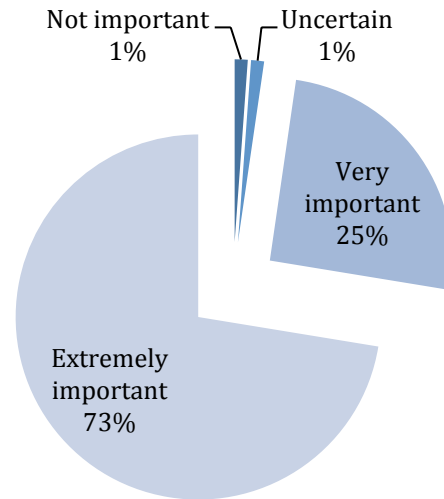


Figure 6-29: Importance of the right to evaluate and control the agency of institutions in disaster management and other issues, according to respondents.

The results in Figure 6-29 show that an overwhelming majority of respondents consider the right to evaluate and control the agency of institutions a key element in disaster management and other issues. In this connection, Question 34 attempted to analyse the degree to which Cubans feel politically empowered within their model. This empowerment requires seizing theoretical principles of socialism that consider mechanisms of control, accountability, and recall of leaders and institutions as fundamental aspects (see, for example, Lenin, 1918/1977a).

Question 34: *How much do Cubans utilise mechanisms to control the agency of leaders and institutions?*

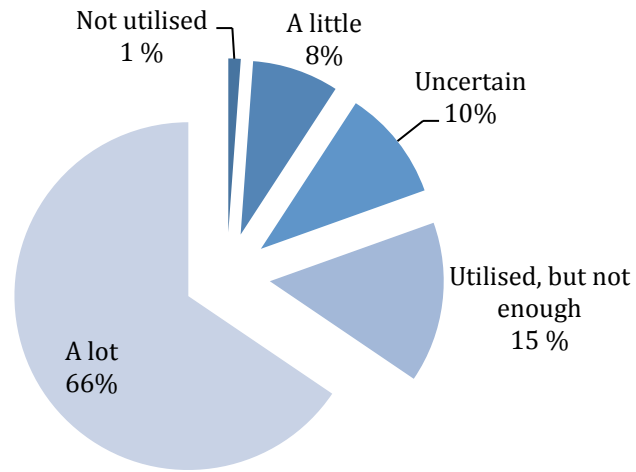


Figure 6-30: Respondents' perception of the use of mechanisms to control the agency of leaders and institutions

The results in Figure 6-30 exhibit a majority of respondents recognising popular use of mechanisms of political control of leaders and institutions. However, the amount of respondents who, on the contrary, consider that these mechanisms are almost not used is still significant. The results suggest that although mechanisms of political-control exist, they should become more accessible to citizens.

Another aspect connected to democracy and specifically emphasised in models of direct democracy is that of broadening participation. I examined this issue in Questions 35 and 36 through its connection to disaster management.

Question 35: *How important is popular participation in policy development and decision-making for the proper management of disasters and other issues?*

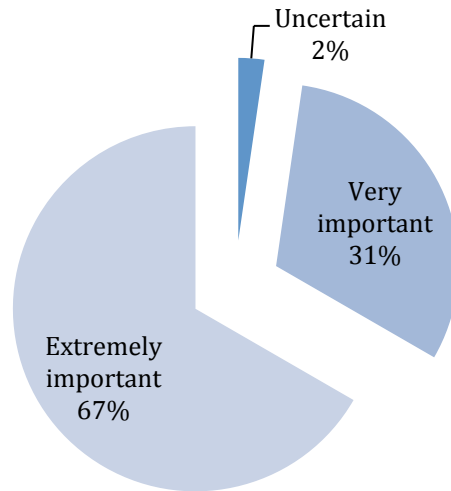


Figure 6-31: Respondents' perception of the importance of popular participation in policy-development and decision-making in disaster management.

Question 36: *Do Cubans use mechanisms of popular participation in policy- and decision-making in disaster management and other issues?*

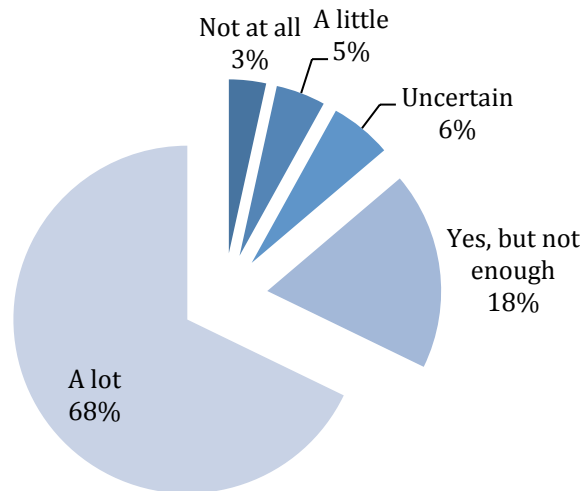


Figure 6-32: Respondents' perception of the use of mechanisms of popular participation in policy- and decision-making in disaster management.

The results in Figure 6-31 illustrate respondents bestow high importance to popular participation in policy–development and decision–making applied to the case of disaster management. The categories giving no or little importance to participation did not appear in the results. Figure 6-32 indicates that respondents in general agree that Cubans can indeed seize these mechanisms of political participation in DRR. However, the results also suggest that these mechanisms should be improved.

As discussed throughout this study, empowering citizens in policy- and decision-making are key issues in developing better systems for coping with natural hazards. Also connected are the proximity and transparency between citizens, the government, and public institutions. These aspects help developing mutual trust, unity, and social discipline (Evans, 2012; Ostrom, 1990; Thompson & Gaviria, 2004). Question 37 addresses respondents’ assessment of Cuba’s environmental policy. This issue is connected to trust and transparency addressed in Questions 38 and 39, respectively.

Question 37: *How do you assess environmental policy of the Cuban government and institutions related (e.g., environmental protection, disaster prevention, etc.)?*

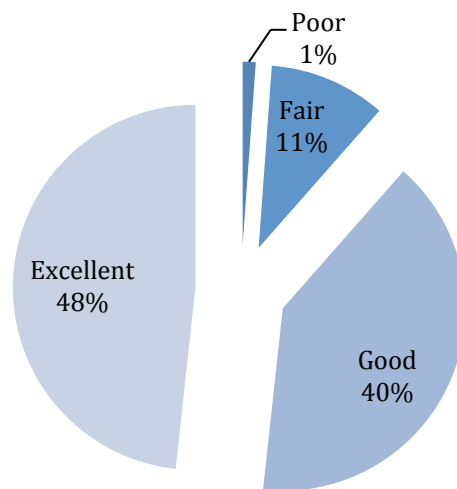


Figure 6-33: Respondents’ perception of environmental policy of the Cuban government and institutions related.

The results in Figure 6-33 show that a great majority (88 per cent) of respondents highly approves Cuba’s environmental policy.

Question 38: *Do you trust in the government and public institutions?*

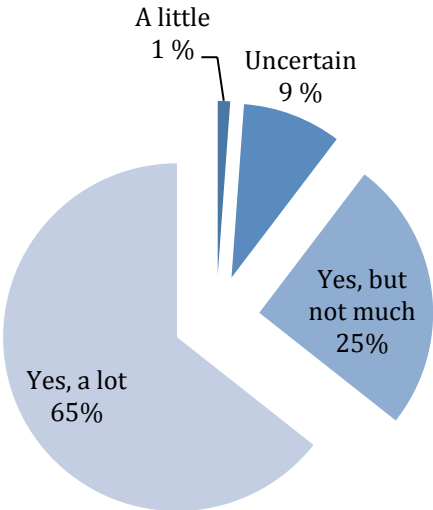


Figure 6-34: Respondents’ trust in the government and public institutions.

As seen in Figure 6-34 and Figure 6-35 both questions provide similar results in terms of general trust and perception of transparency. These two results may be correlated in the sense that more transparency generates more trust in the government and institutions (see the statistical analysis in the next section). Nevertheless, transparency is not regarded as the only factor generating trust. A considerable amount of respondents think that there is much to be improved in terms of transparency.

Question 39: *Is there transparency in the agency and decisions of the institutions and the government in environmental matters?*

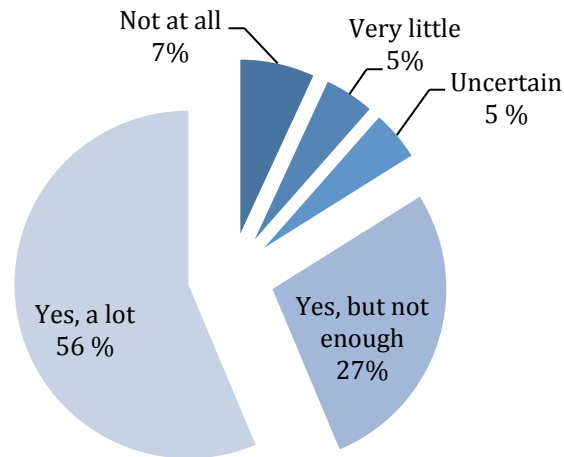


Figure 6-35: Sample's perception of transparency of agency and decisions of the institutions and the government in environmental matters?

In Question 40 I intended to directly examine the extent to which citizens seize upon mechanisms of political influence and political participation.

Question 40: *Have you ever given comments or put complaints regarding policies or management at the municipal, provincial, or national government level?*

Table 6-7: Frequency of individuals who have put (or not) complaints at the municipal, provincial, or national government level (N = 87, full sample).

	No	Yes
Absolute	57	30
Percentage	65.5	34.4

The results in Table 6-7 indicate that a majority (65.5 per cent) of respondents have not made complaints at any of the government levels. The reasons explaining this result may be many, including that of people not feeling the need to put complaints. This is further discussed in the next section. However, Question 41 may suggest (or disregard) reasons why people do not use (or under-use) complaints as mechanisms of political empowerment and political participation.

Question 41: *Do you think your comments or complaints were or would be considered by the respective political representation?*

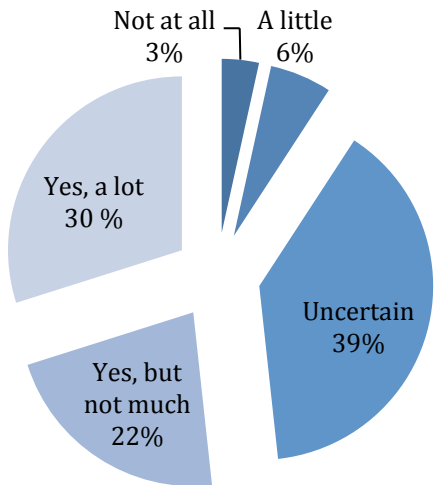


Figure 6-36: Sample’s perception on the degree to which their comments or complaints were or would be considered by the respective political representation.

The results in Figure 6-36 indicate that a majority of respondents (52 per cent) think that their comments or complaints were or would be considered by the political representation. However, a considerable amount of respondents was uncertain about this issue. These results suggest that the underuse of complaints as mechanisms of political participation is not necessarily explained by a lack of impact of these complaints.

As mentioned above in both the qualitative and quantitative parts of the study, the level of social organisation in Cuban society plays a key role in coping with natural hazards. As mentioned by some experts, Cubans are in general active members of different political and

mass-organisations (see J. Valdés Paz, personal communication, February 28, 2014). I analysed the particular case of the sample considered in this research in questions 42, 43a and 43b.

Question 42: *How often do you participate in national or local politics?*

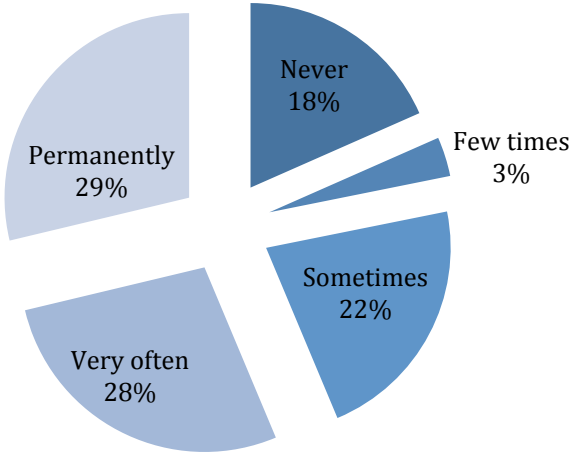


Figure 6-37: Sample’s political-participation frequency

The results in Figure 6-37 indicate a high level of political participation of the respondents, with almost 60 per cent claiming to participate very often or permanently.

Question 43a: *Do you participate in mass-organisations?*

Table 6-8: Sample’s participation in mass organisations

	No	Yes
Absolute	3	84
Percentage	3.4	96.6

Question 43b: In which organisations do you participate?

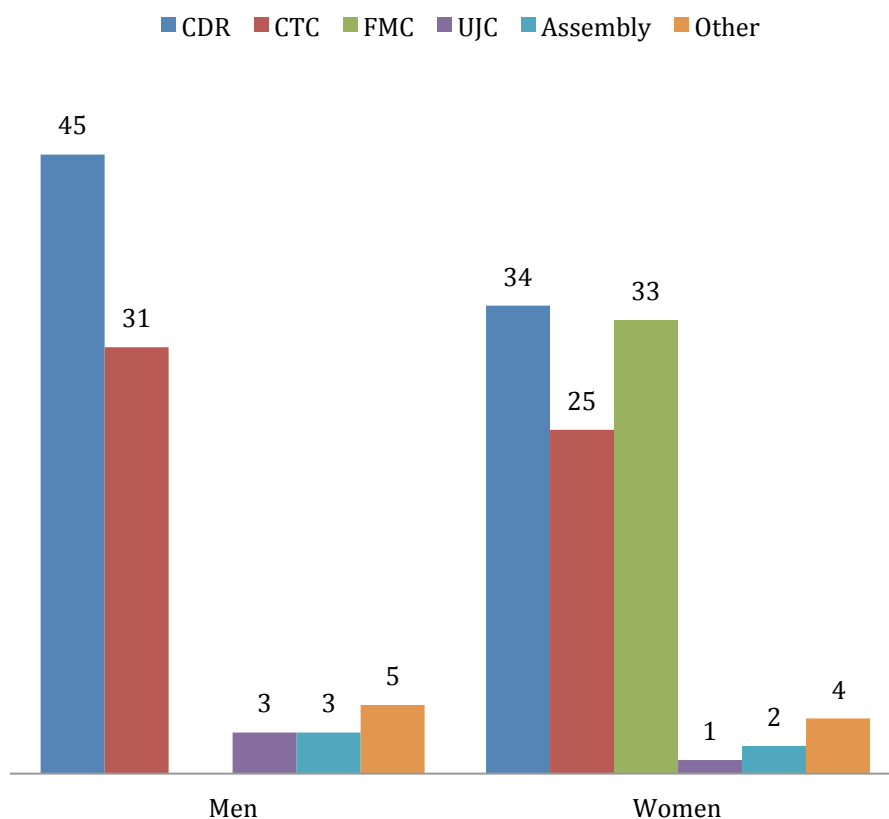


Figure 6-38: Sample's distribution of participation in mass organisations^{63 64}.

As seen in the results in Table 6-8 and Figure 6-38, almost all respondents (96.6 per cent) participate in socio-political mass-organisations, being the most frequent one the CDRs. These results coincide with the findings in the qualitative part of this thesis. During the surveying process, it was interesting to notice that some respondents did not recognise the CDRs or the CTC as being political organisations. These respondents saw these organisations only as mass-organisations. Such views may be influenced by daily discussions on practical topics within these organisations, which frequently do not explicitly refer to political matters. However, the role of CDRs in detecting failures or

⁶³ The total quantities for men and women exceed the total of the sample, since Cubans are normally members of more than one organisation.

⁶⁴ FMC (in green) is an organisation exclusively for women.

threats to the revolution is definitely an important political task. Similarly, CTC's role in representing the workers' interests in policy and decision-making is clearly a political role. Although already addressed in previous questions, respondents' perception of the importance of political participation is directly enquired in Question 44.

Question 44: *Do you think it is important that people participate in politics and mass-organisations?*

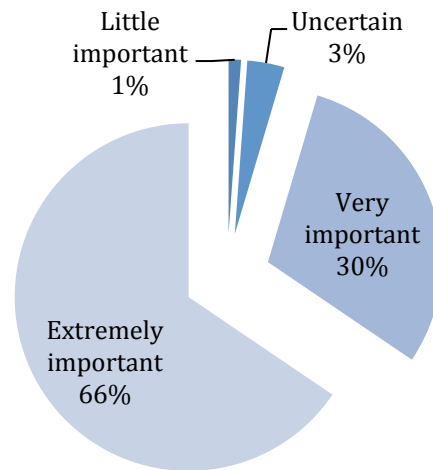


Figure 6-39: Importance of participation in politics and mass organisations, according to respondents.

The results in Figure 6-39 emphasise respondents' connection to politics, which is not only evidenced in their thoughts but also in practice, as the results of questions 42, 43a, and 43b illustrated.

In the following section, I explore the existence (or nonexistence) of relationships between some of the variables discussed above. These analyses do not intend to be conclusive or to generalise findings to the whole Cuban population. As explained above, although I tried to respect randomness when selecting sample units, multiple variables may have distorted this intention. Ultimately, this analysis seeks to triangulate previous findings by increasing the range of tools to address the concepts and research questions of this thesis.

c) Relationship between variables

Relationships between some of the variables considered in this thesis are explored by using the *ordinary least square method* (OLS) and the logistic or logit regression (see A. Field, 2009; Hastie et al., 2009). The latter method is recommended when the outcome variable is categorical or dichotomous⁶⁵. The statistical analyses between variables assumed a significance (α) level of 0.05 (5 %). Therefore, statistical tests (t-tests) with a probability value (p-value or $\Pr(>|t|)$) below a 0.05 significance level are considered statistically significant, thus suggesting probable correlations of variables (A. Field, 2009). The statistical t-tests used in the analyses correspond to two-tailed tests⁶⁶. The tables below specify the analysed variables including —between parentheses— an identification of the question number corresponding to each variable. Only some of the variables (or questions) analysed in previous sections of this thesis were considered. However, the selected variables allow addressing most of the elements emphasised in this thesis, such as human values, ideology, participation, culture, and education. In these analyses some variables were assumed as independent variables, i.e., not being influenced by any other. On the other hand, dependent variables are assumed as being affected by other independent variables. Although these dependency relationships might not be realistic, the assumptions do not prevent from establishing correlations between variables. For the purposes of this thesis, the latter is considered sufficient without needing to imply relations of causality between variables.

The results presented in Table 6-9 correspond to an OLS-regression between trust in the government and institutions and the degree of material damages people have suffered due to extreme phenomena. The statistical test demonstrates that no significant correlation ($p > 0.1$) exists between these two variables.

⁶⁵ For a discussion on the need (or not) of using the logit method in this case see Hellevik (2009).

⁶⁶ On one-tailed and two-tailed statistical tests, see Lee (2007).

Table 6-9: Bivariate regression (OLS) between trust (Q38) and having suffered material damages as a result of the occurrence of extreme phenomena (Q21).

Independent variable	Coefficient (s.d.)	Pr (> t)	R
Q21: Material damages	-0.057 (0.073)	0.438	-0.084
N		87	

Significance level ‘***’ 0.001, ‘**’ 0.01, ‘*’ 0.05, ‘.’ 0.1

The results of the bivariate OLS-regression and the statistical test in Table 6-10 indicate that trust of the respondents in institutions is significantly correlated ($p < 0.001$) with their perception of transparency of the government and institutions. In addition, the coefficient R indicates a high positive correlation with considerable linearity⁶⁷ ($R = 0.596$). A positive correlation suggests that trust in public institutions and the government increases with the increase in transparency.

Table 6-10: Bivariate regression (OLS) between trust (Q38) and transparency (Q39).

Independent variable	Coefficient (s.d.)	Pr (> t)	R
Q39: Perception of transparency	0.361 (0.052)	1.11E-09***	0.596
N		87	

Significance level ‘***’ 0.001, ‘**’ 0.01, ‘*’ 0.05, ‘.’ 0.1

Similarly, the results in Table 6-11 indicate that individuals’ commitment to the model is significantly correlated ($p < 0.001$) to their degree of trust in the government and public institutions. The correlation is positive and relatively high ($R = 0.428$), thus indicating a somewhat linear relationship between both variables.

⁶⁷ I.e., data which is organised as following a straight line.

Table 6-11: Bivariate regression (OLS) between commitment to the model (Q30) and trust (Q38).

Independent variable	Coefficient (s.d.)	Pr (> t)	R
Q30: Commitment to the model	0.392 (0.090)	3.54E-05***	0.428
N		87	

Significance level '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1

The results in Table 6-12 indicate that a significant and positive correlation ($p < 0.01$, $R = 0.279$) exists between respondents' commitment to the model and their will to help others during a disaster situation. However, the degree of linearity in this case is less than the relationships analysed above.

Table 6-12: Bivariate regression (OLS) between commitment to the model (Q30) and will to help (Q16).

Independent variable	Coefficient (s.d.)	Pr (> t)	R
Q30: Commitment to the model	0.270 (0.100)	0.00892**	0.279
N		87	

Significance level '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1

Table 6-13 presents a logistic regression between posing complaints at a local or national government level (Q40) and the perception of these complaints' impact on policies and decision-making (Q41). The results of the statistical test do not reflect a significant correlation ($p > 0.1$) between the variables. This result suggests that individuals do not necessarily abstain from posing complaints because they think these complaints would have low or no impact. The reasons for not using complaints as a way of influencing policy and decision-making may be due to other reasons. In some cases, I tried to delve into this issue by asking the interviewees the reasons for not having used mechanisms of complaints to

their local or national government. Most of the answers I got were of this kind: “I have not posed any complaint because it has not been necessary.”

Table 6-13: Logistic regression between posing complaints (Q40) and perception of their impact (Q41).

Independent variable	Coefficient (s.d.)	Pr (> t)	R
Q41: Perception of complaints’ impact	0.151 (0.215)	0.484	0.075
N		87	

Significance level ‘***’ 0.001, ‘**’ 0.01, ‘*’ 0.05, ‘.’ 0.1

Individuals’ perception of the usefulness of their environmental and disaster-management knowledge is also analysed through an OLS-regression with control variables (age, sex, and level of attained education). As seen in Table 6-14, the statistical test shows no significant correlation ($p > 0.1$) between control variables and the dependent one. This result suggests that human or social conditions (such as age, sex, or education-level attained) do not affect individuals’ perception of their knowledge usefulness. The regression coefficient⁶⁸ (or slope of the linear relationship) in the case of the variable “sex” indicates a negative relationship. This can be interpreted as men perceiving more usefulness of their knowledge than women. However, as explained above, none of the three correlations are significant.

⁶⁸ Not to be confused with the correlation coefficient “R.”

Table 6-14: Multi-variate regression (OLS) between perception of knowledge usefulness (Q11) and control variables (age, sex, and level of attained education).

Variables	Coefficient (s.d.)	Pr (> t)
Age	0.011 (0.007)	0.135
Sex (Male = 0; Female = 1)	-0.212 (0.208)	0.313
Attained education	0.031 (0.030)	0.305

Significance level '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1

Table 6-15 presents the correlation matrix resulting from the regression carried out in Table 6-14. Correlation matrices show the correlation coefficients (R) of a multi-variate regression analysis. The importance of these matrices is to examine the existence of what is referred to as *multicollinearity* between independent variables (see Field, 2009). *Multicollinearity* means that one or more predictors or independent variables have high positive or negative correlations ($|R| \geq 0.7$) between them. In other words, we verify whether there is a redundancy of independent variables or whether they are representing more less the same effect over the dependent variable.

According to Table 6-15 no *multicollinearity* is detected between control variables. On the other hand, the correlation coefficients between the dependent and control variables are considerably low, thus implying that their relationship has low linearity ($|R| \ll 1$).

Table 6-15: Multi-variate correlation matrix between perception of knowledge usefulness (Q11) and control variables (age, sex, and level of attained education).

Variables	Knowledge			
	usefulness (Q11)	Age	Sex	Attained education
Knowledge usefulness (Q11)	1.000	0.185	-0.117	0.107
Age	0.185	1.000	-0.130	0.061
Sex	-0.117	-0.130	1.000	0.135
Attained education	0.107	0.061	0.135	1.000

Similarly, Table 6-16 presents the results of an OLS-regression between individuals' commitment to build an alternative model to capitalism and control variables. The t-tests show now significant correlation ($p > 0.1$) between the variables. This result suggests that individuals' commitment is not related to their age, sex, nor education level attained.

Table 6-16: Multi-variate regression (OLS) between commitment to the model (Q30) and control variables (age, sex, and level of attained education).

Variables	Coefficient (s.d.)	Pr (> t)
Age	0.001 (0.006)	0.828
Sex (Male = 0; Female = 1)	-0.068 (0.174)	0.697
Attained education	0.004 (0.025)	0.878

Significance level '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1

Table 6-17 presents the correlation coefficients of the regression between the variables analysed in Table 6-16. None of the correlation coefficients between independent variables

have absolute values greater than 0.7, thus allowing us to discard *multicollinearity*. Furthermore, the correlation coefficients between the dependent and control variables are considerably low, thus implying that the relationship has low linearity.

Table 6-17: Multi-variate correlation matrix between commitment to the model (Q30) and control variables (age, sex, and level of attained education).

Variables	Commitment (Q30)	Age	Sex	Attained education
Commitment (Q30)	1.000	0.031	-0.044	0.013
Age	0.031	1.000	-0.112	0.085
Sex	-0.044	-0.112	1.000	0.147
Attained education	0.013	0.085	0.147	1.000

The influence of control variables in the degree of trust in the government and institutions is analysed through the results presented in Table 6-18. The statistical test indicates no significant correlation ($p > 0.1$) between the variables. This result suggests that the degree of trust in the government and institutions is not affected by individuals' age, sex, nor education level attained.

Table 6-18: Multi-variate regression (OLS) between degree of trust in the government and institutions (Q38) and control variables (age, sex, and level of attained education).

Variables	Coefficient (s.d.)	Pr (> t)
Age	-0.001 (0.005)	0.855
Sex (Male = 0; Female = 1)	0.108 (0.158)	0.496
Attained education	0.024 (0.022)	0.289

Significance level '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1

The correlation matrix presented in Table 6-19 confirms that no *multicollinearity* exists between the independent variables. The correlation coefficients indicate positive and negative relationships between variables. However, as seen above, these relationships are not significant ($p > 0.1$) and possess low linearity ($|R| \ll 1$).

Table 6-19: Multi-variate correlation matrix between degree of trust in the government and institutions (Q38) and control variables (age, sex, and level of attained education).

Variables	Trust (Q38)	Age	Sex	Attained education
Trust (Q38)	1.000	-0.019	0.095	0.127
Age	-0.019	1.000	-0.112	0.085
Sex	0.095	-0.112	1.000	0.147
Attained education	0.127	0.085	0.147	1.000

Table 6-20 presents an OLS-regression analysis between individuals' perception of transparency and control variables. The statistical tests performed indicate that no significant correlation ($p > 0.1$) exist among these variables. This result suggests that human or social conditions, such as age, sex, or education-level attained do not affect individuals' perception of transparency in institutions.

Table 6-20: Multi-variate regression (OLS) between perception of transparency of institutions (Q39) and control variables (age, sex, and level of attained education).

Variables	Coefficient (s.d.)	Pr (> t)
Age	-0.004 (0.009)	0.630
Sex (Male = 0; Female = 1)	-0.020 (0.262)	0.938
Attained education	0.038 (0.037)	0.311

Significance level '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1

Table 6-21 demonstrates no *multicollinearity* between independent variables in the analysis. The values of the correlation coefficient also indicate low linearity ($|R| \ll 1$) of the relationships.

Table 6-21: Multi-variate correlation matrix between perception of transparency of institutions (Q39) and control variables (age, sex, and level of attained education).

Variables	Transparency (Q39)	Age	Sex	Attained education
Transparency (Q39)	1.000	-0.043	0.014	0.107
Age	-0.043	1.000	-0.112	0.085
Sex	0.014	-0.112	1.000	0.147
Attained education	0.107	0.085	0.147	1.000

6.5. Conceptual Map

Based on the results of this study, a conceptual map that summarises some of the main findings of this research has been elaborated. The map describes the connections of different underlying factors that affect disaster risk reduction, together with more tangible aspects deeply acknowledged within the available literature. The map also intends to organise the results in a way that clearly highlights how the research questions that motivated the study are finally answered. This is also connected to the approaches of disaster risk reduction described by Wisner et al. (2012) and Thompson and Gaviria (2004). The map is organised in three main levels, which are interconnected in different forms. Furthermore, elements at each level are also interconnected.

At the *first level*, the conceptual map illustrates the three main actors of the system (see Figure 6-40):

- The Government or State
- The institutions and NGOs
- The Cuban Population

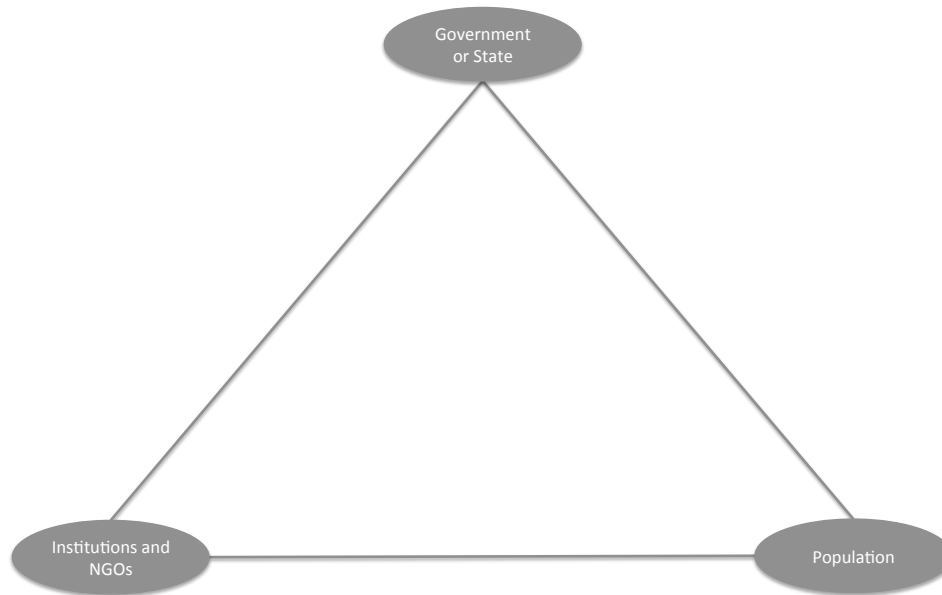


Figure 6-40: First level of the conceptual map conforming the Cuban approach to natural hazards and disaster risk reduction (Source: this author).

Subsequently, at a *second level* the *root elements* appear, which are the basis for more tangible and specific aspects influencing Cuba's DRR strategy. These elements interact with each other in a dialectical-holistic process (see Figure 6-41):

- Ideology and the socio-political model contributing to political will to reduce disasters
- Methodologies of participation in processes and decision-making
- Culture, tradition, and idiosyncrasy
- Formal/non-formal education in values such as solidarity
- Civil defence as a system (and not only an institution)

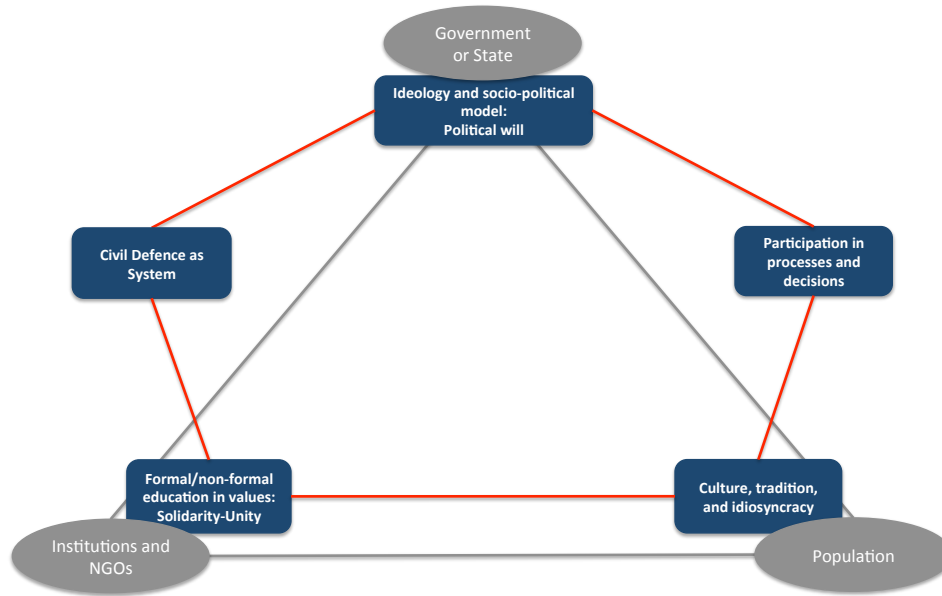


Figure 6-41: First and second levels of the conceptual map conforming the Cuban approach to natural hazards and disaster risk reduction (Source: this author).

At a third level, I added more concrete or tangible elements that are frequently analysed in the literature of natural hazards and DRR. These elements are:

- The experience facing hazards
- A stringent environmental legislation at each phase of disaster reduction (mitigation, prevention, preparedness, response, and recovery);
- The high level of formal education found in the Cuban population;
- The high social equity and equality still present in Cuba,
- High and active socio-political organisation level.

Therefore, the complete conceptual map is built with the main elements and their categorisation according to the findings of this study, thus constituting the *Cuban approach to natural hazards* through its *Disaster Risk Reduction* (DRR) model (see Figure 6-42).

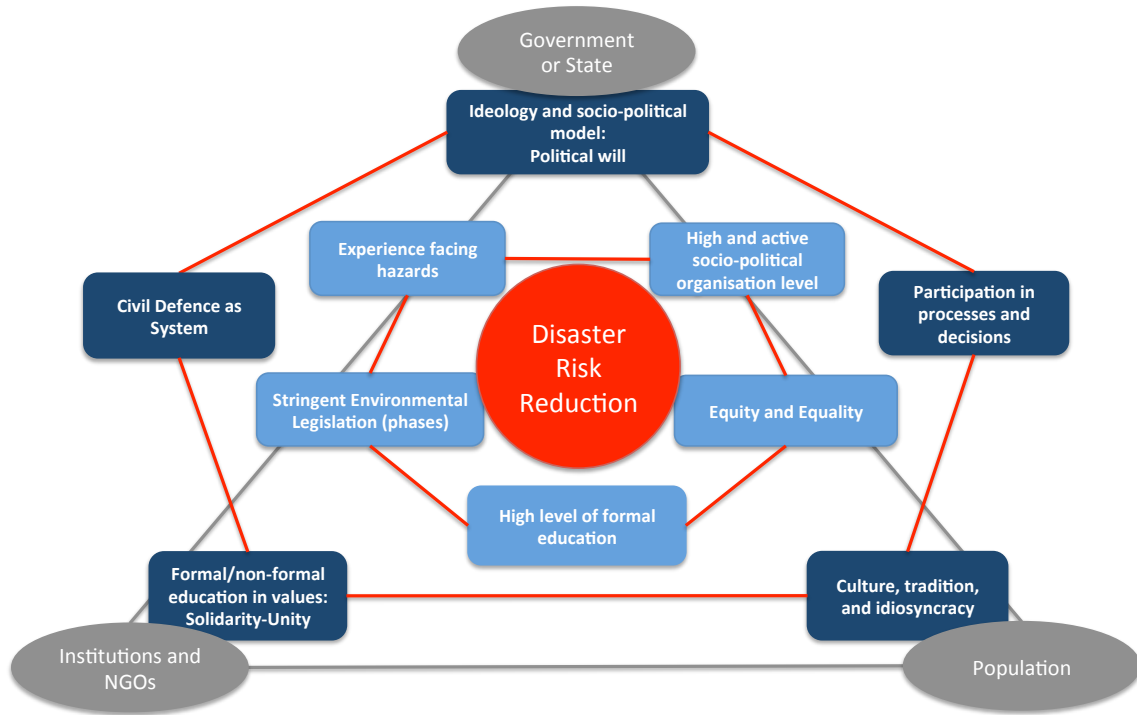


Figure 6-42: Conceptual map conforming the Cuban approach to natural hazards and disaster risk reduction (Source: this author).

The elements and interconnections of the conceptual map, and their relationship with the objectives of this thesis are discussed in the following chapter.

7. Conclusions

7.1. Conclusions on the Research Design and Methodology

It is important to bear in mind that every individual I interviewed or sampled could have provided positively or negatively biased answers in relation to the problem studied. This could have been influenced either by their perception of my intentions or by the degree of trust they had in me. My personal information and the purposes of this research were provided in both interviewer-administered and self-completed questionnaires. The degree of trust must have played an important role especially in the collection of surveys (quantitative data), whether or not I had personally performed them. Could people have thought that I was a government agent carrying an interview? Could people have thought that I was a dissident paid by the US? Although these and other cases are possible, I did not find elements demonstrating them after paying attention to interviewees' attitudes, overall views, and other remarkable details. In general, the interviews were performed in a relaxed and friendly atmosphere. In the case of the coordinated interviews (qualitative data), authorities had all the required details describing my work and myself. However, this does not imply that the answers or information they provided had no bias toward what they thought I wanted to hear. Admitting these possible sources of bias, I intended to validate the data acquired by thoroughly interpreting, correlating, triangulating, or confirming the views and information provided by individuals. To this respect, I considered important to incorporate questions that complemented or strengthened results from different perspectives. Consequently, it was also necessary to consider interviews and surveys in an overall view, instead of just analysing answers isolated from each other. For example, someone that had a very negative view toward governmental institutions in some aspects could have had, at the same time, a very positive view in other aspects. Furthermore, comparing qualitative and quantitative results was also considered relevant, since the degree of trust or mistrust must have been different in each case. Therefore, the influence of mistrust in views that were repeated in both parts of the research is likely minimised.

Besides, I also considered secondary sources to contrast or confirm the information provided by interviewees.

Regarding the methodology applied in this study, I admit the difficulty of choosing the most convenient way of presenting the data and findings, particularly in the qualitative part. Every interview I performed can be considered a debate in itself, holistically touching different key issues from different areas of knowledge, thus being worth of reproducing it completely. I decided to organise the information by questions or topics rather than by interviewee.

7.2. Conclusions on the Conceptual Map

The conceptual map presented in Chapter 6 – section 6.5 provides a summary of the main concepts I explored during this research process. The results are related to elements that Wisner et al. (2012) classify as *root causes* and *dynamic pressures*, which may increase or decrease vulnerabilities. The conceptual map draws on elements that affect both national and local levels of Cuban society, since interviewees referred to efforts, practices, or policies being applied at all levels. The main actors that this study considers are the Cuban government or the state, Cuban institutions and/or NGOs, and Cuban population in general. Cuba in particular is a case where these three (groups of) actors overlap. The connection between the state and government with civil society can be noticed, for example, when analysing the processes of representation. As explained above, following socialist principles, the state and government in Cuba intend to come as close as possible to civil society —although some may argue that this is still far from reality. The possibility that ordinary Cuban citizens have —for example— to become candidates and be elected as members of their local and/or national assembly is greater than in other countries. The latter since the Cuban model does not allow competition through political campaigns. Therefore, the enormous amounts of money spent in political campaigns in other countries are not necessary in Cuba. Consequently, no candidates are favoured or disfavoured other than by their own social merits. Besides, neither delegates of the local government nor national

deputies receive salaries. Conversely, they continue in their previous daily occupation (students, workers, etc.) and do not jump to a status of a “political class” separated from civil society —as seen in other countries. The latter may favour relations based on trust between civil society and its political representatives at different levels. In the case of institutions and NGOs, it is also noticed a considerable degree of trust. Trust in institutions may be developed as a result of their transparency and the participatory implementation of projects. Transparency is, however, something that according to some authorities and ordinary citizens needs to be improved. Moreover, the interaction between NGOs and public institutions on the one side, and the state and the government on the other side is also evident. Institutions and NGOs operating in the country, despite their autonomy, reflect to a greater or lesser extent the *government interest* by following public policies. Therefore, yet separated, these three actors overlap and in some cases closely interact with each other. Trust and proximity between these actors, favours the interaction processes involved in Cuba’s DRR strategy.

The elements at the second level of the conceptual map, which are supported and reproduced by the elements at the first level, are also interconnected. The promotion of ethical principles and social values is an essential aspect of the socialist ideology guiding the Cuban model. The responsibility of reproducing and spreading social values according to socialism is placed on the Communist Party (PCC) and the Union of Young Communists (UJC). Ideology is —nevertheless— something “delicate” to measure, since questions asking directly about someone’s ideology are seen with scepticism by anybody. Therefore, I focused on examining people’s concepts, views, and values suggesting the existence of an ideology. An example is given by the concept of democracy described by the interviewees. As seen, interviewees’ views demonstrate that these concepts may differ significantly in a society whose value-system prioritises social over material success. Furthermore, the interviewees’ perceptions of the concept of democracy reflect features of a *participatory model* of democracy being developed in the country. On the other hand, socialist ideology and revolutionary ethical-principles may also be evident in Cubans’ altruism in hypothetical or experienced extreme situations. As seen, many claim to be capable of risking their lives to save the lives of others —if needed. However, such altruism should be

balanced with education in DRR, since irresponsible altruism may risk even more lives. The Cuban socio-political model, based on socialist ideology, has evidenced a political will to prevent disasters. This political will is not only reflected in the legislation (see the third level of the map) or in historical results, but also in people's perceptions.

Social values in Cuba are reproduced and transmitted through formal and informal channels. For example, solidarity and unity are emphasised within contents of formal education and also promoted by mass organisations such as the CDRs. On the other hand, many agree that solidarity and other values are features of Cubans and their *idiosyncrasy* or *cubanía*. Therefore, socialist ideology and the ethics of the revolution would emphasise “pre-existing” values. These values are essential in every one of the phases of disaster management, particularly in the recovery phase.

Moreover, social consensus as a source of *unity*, *social cohesiveness*, and *legitimacy* would be essential for the success of environmental policies and DRR strategies. A considerable degree of social consensus is evidenced in the perception of the NCD system and Cuba's environmental governance. This consensus would be related to people's trust resulting from their perception of public transparency and social protection. The PCC and the UJC have the ultimate responsibility for promoting consensus in different aspects of the Cuban model.

Another relationship illustrated at the second level is that between participation and ideology and the socio-political model this ideology has created. Broad participation in social processes and decision-making instances is considered essential by socialist theory. Socialist principles advocate the superior role of *the masses* in the revolutionary process to build socialism. Cuban authorities, institutions, and Cuban society in general have recognised deficiencies in participation mechanisms and the necessity to broaden them. Broadening participation mechanisms as measured by socialist standards, constitute a permanent process that should follow popular demands. Past and current efforts in this direction are evidenced in multiple areas of the Cuban model, including the sphere of environmental governance. *Popular education* methodologies—for example—are used to

implement public policies to raise environmental consciousness. These methodologies incorporate broad non-hierarchical participation in examining social problems and in finding their solutions. However, these methodologies are not yet sufficiently applied within formal education in Cuba. On the other hand, although broad participatory-debates and participatory implementation of policies are frequent practices in Cuba, increasing popular participation in decision-making processes remains a necessity. Broadening participation in this direction would contribute to the legitimacy of the Cuban democracy model. On the other hand, the existence of practices or rights that Cubans consider necessary for a democracy may provide another source of legitimacy. As seen above, Cubans placed considerable importance on the existence of rights which are absent in Western or hegemonic models of democracy. Examples of these are the right to recall leaders who do not fulfil their duties or to demand accountability of leaders and institutions in different issues. Although established in law, these rights may not be properly exercised, and thus have great potential to be improved. This requires enforcing existing laws and abolishing practices that obstruct them. Ultimately, citizens may also share responsibility in the malfunctioning of participation and control mechanisms, since some groups lack interest in getting politically involved.

Moreover, the concept of civil defence in Cuba, and its functioning as a system where everyone is considered part of it, is also related to each of the other elements at the second level of the map. The ethics and principles of the revolution consider preserving human lives as the most important task. For example, this is evidenced in the legislation (see the third level of the map), which ensures that every necessary resource in the country is available to save lives. As discussed above, this is not only necessary but also possible in a society following socialist principles. In such a society, the absence of private interests does not hinder the availability of resources, as it happens in other societies. Furthermore, the second level of the map also illustrates the role of formal and non-formal education. These education mechanisms share a focus on social values within their contents. However, these mechanisms differ in the existence of participatory methodologies, which become more evident within non-formal environmental education. Environmental and DRR strategies incorporate popular education mechanisms, thus ensuring participation of the different

social-actors in these issues. In addition, these processes consider local knowledge as an important contribution to knowledge. Experiences of educational workshops organised by CITMA and its dependent institutions (AMA, CLAMED, INSMET, etc.) and the conscious inclusion of popular education methods in the activities of institutions like the *GTE-HB*⁶⁹, *Plan Maestro*⁷⁰, the NGO *Patrimonio, Comunidad, y Medio Ambiente* (PCMA)⁷¹ or the *Antonio Núñez Jiménez Foundation* (FANJ) privilege the knowledge of the community and the collective learning. The individuals I interviewed claim to have the possibility of participating with their views in these processes —if wanted. Ultimately, the NCD system would benefit from Cubans’ unity and inherent solidarity, which according to them is not only promoted by the revolution but also part of their culture. Cuban culture, together with the ideology and principles of the revolution would encourage Cubans to participate and contribute to Cuba’s DRR strategy.

The elements at the third level of the map are those most addressed in the available literature on natural hazards and DRR. These elements are interconnected and also influenced by the previous two levels. Considerable experience in natural hazards —and particularly experience in hurricanes— has developed what is referred to as Cuba’s “culture of hurricanes.” Literature, music, religion, movies, and daily activities in general explicitly or implicitly include these extreme phenomena within their contents. This experience and culture make people inevitably aware of the threat posed by hurricanes. This awareness is favoured by people’s level of education. The education in Cuba not only includes direct contents of DRR methodologies, but also provides tools allowing an active participation in social processes. Moreover, a stringent environmental legislation takes advantage of the human capital provided by formal education. In addition, the NCD system and the legislation underpinning it benefit from the social capital provided by the high and active involvement socio-political organisations. Moreover, despite increasing inequalities brought about by the tourism industry and other changes in the model, a considerable

⁶⁹ GTE-HB: Grupo de Trabajo Estatal Bahía de la Habana (State Working Group of Havana Bay)

⁷⁰ Plan Maestro de la Oficina del historiador (Master Plan of the Historian Office)

⁷¹ Heritage, Community, and Environment. NGO’s in Cuba are juridically called “civil societies” (sociedad civil) or “Civil Associations” (asociaciones civiles) (see http://www.ecured.cu/index.php/Sociedad_Civil_en_Cuba)

degree of equity and equality is still observed. These aspects contribute to maintain a degree of consensus and legitimacy of the Cuban participatory-democracy model.

Consequently the elements included in the conceptual map presented above, contribute to reduce dynamic pressures and root causes of vulnerabilities within the Cuban development model.

7.3. Beyond Natural Hazards and Disaster Risk Reduction

The problem of natural hazards and DRR should not be analysed with minimalist technocratic approaches. These approaches consider economical or technological conditions as the decisive elements explaining the success or failure of countries in coping with these problems. These approaches give the impression that poor countries have no hope of improving their performance in DRR. On the contrary, the findings of this thesis confirm that much broader approaches provide better expectations for the improving capacity countries have. These solutions are feasible to low-, middle- and high-income countries, as long as these countries set political priority to change root causes and dynamic pressures of their systems. Cuba has advantages over other countries, especially in the early stages of intervention in reducing disaster risk, as these —unlike stages of recovery or reconstruction— do not imply high economic expenditure. Another advantage of the Cuban model is evidenced in the reduced political isolation or marginalisation of Cuban citizens. According to Wisner et al. (2012), political isolation or marginalisation increases vulnerabilities or decreases capacities to cope with disasters. In contrast, structures of local government and mass organisations existing from the household to the national level in Cuba would ensure political representativeness. The CDRs, for example, are established in every street and block throughout the whole country. However, as discussed above, mass organisations and local or national government structures are considered to be under-used and to lack ability to solve people's problems. This inability is favoured by the persisting economic crisis of the country. Nevertheless, evidence shows that despite the economic crisis, Cuba has ensured access to basic needs and collective rights to its people. At the

same time, ecological pathways of development have been strengthened rather than abandoned amidst difficulties. Both efforts contribute to what is understood as *sustainable development*. A difficulty connected to implementing these pathways lies in knowing the sustainable solutions that will benefit the whole society. The findings of this thesis show that mechanisms of participation in detecting and solving problems at a community level in Cuba are a frequent practice. In the same way, participatory implementation of projects and policies is also evident. According to the interviews performed, when referring to environmental issues the levels of participation are recognized with greater consensus. Furthermore, the interviewees showed considerable trust in the work of the Cuban NCD and a high degree of identification with its labour. However, broadening channels of participation —particularly in decision-making processes— remains a necessity. Participatory decision-making processes should be permanently developed, despite the persisting external threats to the revolution. Broadening decision-making mechanisms, as an essential requirement of a participatory democracy model, contributes to improve the ability of institutions to solve people's problems. Nevertheless, it is necessary to note that people have multiple ways of understanding participation, from the simplest to the broadest ones. Therefore, although improving participation is something generally aimed for, this goal could be limited due to ignorance or misconceptions rather than intentionality. It is thus necessary to permanently educate and maintain debates on the concept of participation in every institutional and non-institutional sphere in Cuba. These processes would help making people subjects of Cuba's development model and not only objects of executed measures.

Moreover, the role citizens have as subjects that conduct processes is affected, to a certain degree, by their socio-political consciousness. During conversations with ordinary Cuban citizens, I noticed that there is a kind of idealisation of what life is like in capitalist or consumerist societies. Some people ignore, neglect, or underestimate the cost of living in the latter countries and the enormous economic pressures that their citizens have. For example, home mortgages being utilised by financial institutions in most countries do not exist in Cuba. Law prohibits state financial-institutions in Cuba to threaten people's livelihoods. Also related to financial pressures is a tendency I discovered in several of my

conversations with Cuban citizens. Some interviewees considered having access to basic needs or rights as something granted, thus not noticing their existence as something once achieved. This suggests that some people tend to appreciate the existence of social rights once they are gone. Research carried out in former “socialist” societies concludes that people have begun to yearn for free (or low-cost) access to basic services and cultural opportunities they lost due to privatisation of the economy (see, for example, Balabanova et al., 2004). Regardless how likely are these paths in Cuba, its society must be aware of the advantages and disadvantages involved in each. As I observed at different instances, these issues constitute permanent debates within Cuban society.

Cuba has a significant legal base, social and human capital, and an organisational level that gives the country enormous advantages that might not be found in any other country in the world. If these advantages are further developed, success in aspects such as disaster risk reduction is likely to continue. However, it remains a challenge to replicate these successful pathways in other aspects of the Cuban development model. Additionally, the state must improve channels of communication to make these efforts evident to the whole society. This communication would allow avoiding the loss of trust in the government and institutions by making people aware of good practices applied in their benefit. Deepening channels of a much broader participation, according to the high intellectual level of the country, should become daily efforts. These efforts should not imply abandoning necessary national-defence policies due to Cuba’s delicate geopolitical context.

In the same way, Cuba has great potential of propagating good results obtained in pilot projects such as those carried out by CITMA and other institutions or organisations. These "experiments" have utilised participatory mechanisms, such as *popular education*, as a systematic practice. These mechanisms have generated confidence, commitment, and responsibility within the groups involved. Therefore, expanding these channels of participation to the daily agency of socio-political and mass organisations existing throughout the country becomes a major challenge and a necessity.

As discussed above, other factors contributing to the great potential of Cuba's DRR strategy are subjective elements such as cooperation, unity, and solidarity. These elements have been emphasised in hazardous situations and have contributed to preserve life. However, one may wonder about the relative weight that these elements have compared to tangible or objective elements available for the authorities, such as legislation or technology. According to specialists, cooperation and values such as solidarity are essential but not decisive for the Cuban DRR model. Therefore, if people lose solidarity this would indeed affect the system, but not up to a level that the system cannot work any longer. This applies also to the *recovery phase* after extreme phenomena. In this phase people's cooperation is also essential but not decisive. For example, Cubans normally help in collecting debris and clearing the streets after a hurricane or other extreme event has hit the country. People also cooperate in these tasks because they know that if they wait until this is carried out by the state, it will take longer. According to specialists, this is a kind of knowledge or consciousness transmitted between individuals.

Regarding how the material difficulties may affect the Cuban system of DRR, it is interesting to analyse the existence of contra-incentives that may play against people's preparedness to disasters. For example, in the case of dengue fever, the habit that people have in saving water at home in case of water shortages may stimulate the proliferation of the mosquito that causes dengue fever. Specialists explained that this is in fact possible, not only in this case, but also in other examples. However, the government is apparently aware of these habits and tries to face them with permanent education in these issues.

Although Cuba opted long ago for the path of self-improvement, it will not be easy to maintain the necessary elements of sustainable development already achieved. Among these achievements, the DRR strategy is prominent. Self-improvement is clearly exemplified by the evolution of the Cuban approach to natural hazards and the DRR strategy adopted. Nevertheless, the geopolitical situation provides enough evidence to assume that Cuba will remain subjugated to the violation of its rights to self-determination and sovereignty. Only determined claims of justice and increasing international solidarity can stop, or at least reduce, the impact of this situation. The violation of such collective-

rights represents by itself an imposed-risk of disaster to a society that, on the contrary, has taught and helped the world to avoid disasters.

8. Further Research

Based on the findings and ideas that emerged during the research process, some possible paths for future research can be recognised. The recommended paths are briefly described below.

A first path that would involve a larger time-period and higher costs would be to compare two different societies (from different countries) affected by natural hazards. Particularly differences should be sought in terms of the recognised value structure and perhaps the dominating ideology of these societies. Sampling people deeply committed to each of the socio-political systems studied could exaggerate the differences. Control groups could be still selected in both societies from, for example, less-politically-involved individuals. This process would allow emphasising the role of values, ideology, and principles and their connection to DRR models and practices.

Another interesting aspect to study is the influence of socio-economic strata in the perception of risk, their social consciousness and the expected social behaviour in hazardous situations. This alternative study would try to emphasise differences of value-structures that can be possibly emphasised according income strata. These analyses can be carried out within societies with high inequalities. In such societies, control groups could be chosen from middle-class people, whereas the study groups would be chosen from the lower and upper classes. On the other hand, one may consider comparing societies with considerably different income levels, such as Cuba and Norway.

Moreover, if the emphasis is placed on the role of ideology in the perception of risk and the social behaviour extreme situations, individuals having opposing ideologies within the same society could be selected. Therefore, the role played by ideology could be more deeply studied, considering that the rest of the variables are more or less maintained equal.

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Appendices

Appendix I

List of the main activities and interviews performed, and the institutions visited during the research process of this thesis.

- i. Latin American Centre of Disaster Medicine (CLAMED, for its Spanish acronym):*
 - December 17, 2013: DRR workshop: participant observation
 - December 18, 2013: Interview to Luis Sauchay, specialist at CLAMED.

- ii. Cuban National Civil Defence Joint Staff (EMNDC, for its Spanish acronym):*
 - February 25, 2014: Interview to Mariling Foyo Abreu - Head of International Cooperation Department, Cuban NCD Staff.
 - February 25, 2014: Interview to Marbelis Rodríguez Azahares - Specialist of the Disaster Reduction Department, Cuban NCD Staff.

- iii. Institute of Meteorology (INSMET, for its Spanish acronym):*
 - December 10, 2013: Interview to Miriam Yanes – Specialist.
 - December 10, 2013: participant observation in the *weather forecast* emission at INSMET.

- iv. State Work Group in Havana Bay (GTE-BH, for its Spanish acronym)*
 - January 9, 2014: Ailyn Rivero – specialist
 - January 9, 2014: Estela Pérez – specialist
 - January 9, 2014: Johana Socarrás – director of environmental education, community work, and communication.

- v. Environment Agency (AMA, for its Spanish acronym)*

- December 5, 2013: Herminia Serrano – environmental management specialist, advisor to the presidential adviser for the Environment Agency.
- vi. *Participation, Community, and Environment – NGO (PCMA, for its Spanish acronym)*
- February 4, 2014: Sandra Delgado Pérez – specialist
 - February 4, 2014: Ulice Acosta Llanes – specialist
- vii. *Master Plan – NGO (Plan Maestro)*
- February 4, 2014: Noemí Álvarez – Hydraulic structures planning and environmental management
 - February 6, 2014: Marta Oneida – Head of research group
- viii. *Oxfam International – NGO*
- February 27, 2014: Benjamin Deblois – specialist.
- ix. *Civil Defence Department – University of Havana*
- December 3, 2013: Focus group with Ángel, Rosell, Roberto, and two students fulfilling social service.
- x. *International scientific-workshop for the bilateral cooperation project between Cuba and Norway and other related activities.*
- November 25-27, 2013.
- xi. *Centre for Local and Community Development (CEDEL, for its Spanish acronym)*
- December 23, 2013: Ricardo Berriz – Specialist.
- xii. *Federation of University Students (FEU, for its Spanish acronym)*
- January 3, 2014: Roydes Gamboa – Head of FEU’s History Commission at the Havana University.

- xiii. *Interview with Aurelio Alonso*
- February 11, 2014
- xiv. *Interview with Juan Valdés Paz*
- February 28, 2014
- xv. *Information, Management, and Education Centre of the Ministry of Science, Technology and Environment (CIGEA, for its Spanish acronym)*
- December 20, 2013: Lídice Castro Serrano – specialist
- xvi. *Antonio Núñez Jiménez Foundation of Nature and Humanity (FANJ, for its Spanish acronym)*
- February 18, 2014: María Caridad Cruz – director of the local sustainable-development programme; main coordinator of the 11th International Permaculture Congress (IPC11) in Cuba.
- xvii. *Cuban Ministry of Science, Technology, and Environment in Holguín (CITMA, for its Spanish acronym):*
- January 23, 2014: Rolber Reyes, provincial coordinator of vulnerability studies in Holguín province.
 - January 23, 2014: María Eugenia Torres, specialist from *Cubasolar*⁷².
 - January 23, 2014: Ismael Columbie, chief of the *Manager Centre for Management and Risk Reduction* (CGRR, for its Spanish acronym), Holguín Province.
- xviii. *National Seismological Research Centre (CENAIIS, for its Spanish) in Santiago de Cuba:*

⁷² Cuban NGO promoting renewable energy sources, energy efficiency, and environmental respect (<http://www.cubasolar.cu/>)

- January 21, 2014: Ibia Vega Cuza, researcher; Darío Candebat Sánchez (researcher); Sandra Rosabal-Domínguez, researcher; Ricardo Oliva Álvarez, researcher, member of the national committee for elaborating the Cuban seismic code; and Madelín Villalón-Semanat, researcher).
- xix. Cuban Workers Federation (CTC, for its Spanish acronym):*
- February 12, 2014: Mercedes Lugo Bertot – Coordinator for the European Section at the International Relations Department
- xx. Research Centre of the World Economy (CIEM, for its Spanish acronym):*
- December 18, 2013: Ramón Pichs Madruga, director of CIEM.
- xxi. Public Talk with Frei Betto*
- February 14, 2014.
- xxii. Public Debates organised by Flacso – (Balcón Flacso)*
- December 11, 2013
 - January 15, 2014
- xxiii. Colloquium of Environment: “Climate change and environmental education for the protection of natural resources.” Cuban Association of the United Nations (ACNU, for its Spanish acronym).*
- February 21, 2014: Climate change, impacts for Cuba and adaptation measures – Eduardo Planos Gutiérrez, from the Climate Centre, Institute of Meteorology.
- xxiv. Psychological and Sociological Research Centre (CIPS, for its Spanish acronym):*
- February 28, 2014: Juan Carlos Campos – Scientific Sub-Director and researcher of the Group for Social Work Studies.

xxv. *Richard Levins' lecture*

- February 21, 2014.

xxvi. *Nuestra América socio-cultural group: Several meetings and activities.*

xxvii. *Congress of Higher Education – CLACSO*

- February 11, 2014.

Appendix II

Anonymous questionnaire to Cuban citizens to be used in thesis:

"Popular Power and Environmental Governance: The Cuban approach to natural hazards and disaster risk reduction."

Author: Javier Sandoval Guzman. FLACSO-Cuba.

Initial Information:

Date: _____ Municipality or neighbourhood: _____

Age: _____ Level of attained studies: _____

Sex: Female Male Occupation or current activity: _____

Questions

(For multiple choice questions please check ONLY ONE of them. Thanks!)

Question 1: How frequent have natural phenomena such as cyclones, hurricanes, earthquakes, wildfires, droughts occurred near you?

Never Once Two to three times Four to five times Every year

Question 2: If possible, please write down names and type of phenomena or on what dates these phenomena occurred (e.g. Flora, Lilly, drought, fire, etc.)

Question 3: In which cities or provinces were you at when these phenomena occurred?

Question 4: How much information or education about climate change, disaster prevention, sustainable development, and/or environmental care have you received?

Nothing A little Some Much Permanently

Question 5: by what means have you mostly received the above mentioned information?

e.g.: Brochures, magazines, radio, TV, megaphone, workshops, study location, job, other? _____

Question 6: How often do you make efforts to take care of the environment?

Never Few times Sometimes Very often Permanently

Question 7: How many times have you participated in mock drills such as the "Meteoro"?

Never Once Two to three times Four to five times Every year

Question 8: Where were these drills performed? (e.g.: neighbourhood, place of study, workplace, etc.) _____

Question 9: Was it possible or would it be possible to contribute with your own knowledge, opinions, experience in environmental workshops, or disaster mock drills?

No, it is not possible Yes, it is possible

Question 10: Which character did the drills in which you participated have: General character (on various natural phenomena) or specific character (addressing only one type of phenomenon) General Specific.

Question 11: How useful your current knowledge was or would it be in disaster situations?

Useless Little useful Uncertain Very useful Extremely useful

Question 12: How safe do you feel with your knowledge and the Cuban NCD to face a disaster situation?

Completely unsafe A little unsafe Uncertain Very safe Extremely safe

Question 13: Have you received any responsibility or role to perform during situations of danger or disaster? No Yes

Question 14: What did you feel or would have felt when receiving a formal task or role in DRR?(e.g., concern, disagreement, nervousness, happiness, other?)

Question 15: What were your roles and responsibilities?

Question 16: How much did/would you get involved in helping others during a disaster occurrence?

Would not help A little Uncertain Very much Would even risk my life to help

Question 17: Did you or your family suffer from injuries or physical harm caused by a disaster?

Nothing Almost nothing Minor injuries Serious injuries Risk of death

Question 18: Did you or your family receive state aid for recovery? No Yes

Question 19: Did you or your family suffer from psychological disorder caused by a disaster?

Nothing Almost nothing Minor disorders Serious disorders Permanent disorders

Question 20: Did you or your family receive state aid for counselling? ___No ___No

Question 21: Did you or your family suffer from material damage and/or property loss resulting from a disaster?

___Nothing ___Almost nothing ___Minor damages ___Serious damages ___Total loss of goods

Question 22: Did you or your family receive state aid to recover/restore your property?

___No ___Yes

Question 23: What elements allow Cuba to have such an outstanding preparedness and response to natural hazards? _____

Question 24: Why do Cubans cooperate that much in disaster risk situations?

Question 25: How important are human values such as solidarity in these and other issues?

___Not important ___Little important ___Uncertain ___Very important ___Extremely important

Question 26: Does Cuban society possess these values?

___Not at all ___A little ___Uncertain ___Yes, but not enough ___Absolutely

Question 27: Who or which entities allow creating or must create human values?(e.g., the family, the state, the school? Other?) _____

Question 28: Has this been the case of Cuba?

___No ___Yes

Question 29: Do you think that Cubans hold—in general—a desire and commitment of building a model different from world capitalism?

___Not at all ___A little ___Uncertain ___Yes, but not much ___Yes, it exists in general

Question 30: Do you feel a desire and commitment to build a model different from world capitalism?

___Not at all ___A little ___Uncertain ___Yes, but not much ___A lot

Question 31: Which are, according to you, the most important conditions that should exist in any country in the world to have democracy in that place?

Question 32: How important are accountability and revocability of leaders who do not comply in a democracy?

Not important Little important Uncertain Very important Extremely important

Question 33: How important is citizens' right to evaluate and control the agency of institutions for good performance in disaster management and other issues?

Not important Little important Uncertain Very important Extremely important

Question 34: How much do Cubans use mechanisms to control the agency of leaders and institutions?

Not utilised A little Uncertain Utilised, but not enough A lot

Question 35: How important is popular participation in policy development and decision-making are important for the proper management of disasters and other issues?

Not important Little important Uncertain Very important Extremely important

Question 36: Do Cubans use mechanisms of popular participation in policy– and decision-making in disaster management and other issues?

Not at all A little Uncertain Yes, but not much A lot

Question 37: How do you assess environmental policy of the Cuban government and institutions related (e.g., environmental protection, disaster prevention, etc.)?

Awful Poor Fair Good Excellent

Question 38: Do you trust in the government and public institutions?

Not at all A little Uncertain Yes, but not much Yes, a lot

Question 39: Is there transparency in the agency and decisions of the institutions and the government in environmental matters?

Not at all Very little Uncertain Yes, but not enough Yes, a lot

Question 40: Have you ever given comments or put complaints regarding policies or management at the municipal, provincial, or national government level?

No Yes

Question 41: Do you think your comments or complaints were or would be considered by the respective political representation?

Not at all A little Uncertain Yes, but not much Yes, a lot



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