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Climate vulnerability in Cuba:

The role of social networks

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Sammendrag:

Cuba representerer en unik mulighet til å undersøke dynamikken innenfor klimasårbarhet. Denne artikkelen tar for seg nylige økonomiske og sosiale endringer på Cuba, og hvordan disse påvirker fordelingen av sårbarhet mellom mennesker. I møte med klimaendringer og økonomisk globalisering søker cubanske husholdninger å opprettholde eksistensen. Funn indikerer at sosiale nettverk er viktig for å takle utfordringene. Tilgangen til sosiale nettverk er på den andre siden ikke likt fordelt.

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Abstract:

The case of Cuba offers a unique opportunity to investigate the dynamism of climate vulnerability. This paper takes a closer look at recent economic and social developments in Cuba, and how these affect patterns of vulnerability. Faced with the ongoing processes of climate change and economic globalization, Cuban households are carefully trying to sustain livelihood. Findings suggest that social networks are important as means of accessing coping strategies. Their access is on the other hand not equally distributed.

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1 Introduction

Future climate change constitutes one of the main challenges to humanity. According to the Intergovernmental Panel of Climate Change (IPCC), the changes are already occurring, and have been doing so for at least a century. The warming is likely to continue also in the future. According to the IPCC, the global average temperature is projected to increase by a record high 1.4–5.8 °C in the next century compared to temperature levels in 1990 (Houghton, Ding et al. 2001). Probably more importantly from an impact perspective is the likely changes in climate variability, and frequencies and intensity of extreme climate phenomena, such as extreme warm temperatures, droughts, intense precipitation events, heavy storms, and so on.

However, climate change impacts will not be felt in isolation, but rather in the context of a number of other stressors (O'Brien and Leichenko 2000; Leichenko and O'Brien 2002). For instance, like climate change, the economic and social changes associated with recent globalization will also represent a risks as well as opportunities for people, sectors, communities and nations. Deregulation, liberalization and privatization have been taking place in more or less every part of the world. Open markets and free trade is, according to the neo-liberal tradition, going to result in convergence in world incomes and welfare. However, evidence suggests that globalization is a partial and not totalizing phenomenon (see Mittelman 2000b; Petrella 1996). It is likely that some are able to benefit from the internationalisation that is taking place, whereas others are not included in the interactions at all. Thus, multiple stresses are being put on people's livelihoods. In response to global change processes, people are continuously searching for ways to cope and adapt to the adversity. However, the ability to cope is distributed equally across society; underlying social and economic drivers determine the extent to which people will be affected, both negatively and positively, by the stress or opportunity put upon their livelihoods.

O'Brien and Leichenko (2000) argue that economic globalization is changing the context under which climate vulnerability should be assessed. However, to date there have been limited efforts to incorporate globalization into the analysis of climate vulnerability (O'Brien and Leichenko 2000). The overall aim of this paper is to contribute to an understanding of the dynamic nature of vulnerability. Using Cuba as an example, this paper considers the ways that economic changes influence vulnerability. In particular, it investigates the importance of social networks and whether their access can explain why some people gain and others lose when faced with global change processes.

This paper first discusses the concept of social vulnerability, particularly its dynamic nature, within the climate change literature. It then looks into the role of social networks, which may contribute to the improved understanding of the complexity and diversity of coping capacity and social vulnerability to global change processes. Evidence suggests that there is a relationship between network social capital and livelihood resilience and coping capacity (Semenza, Rubin et al. 1996). Seen from the policy perspective, understanding the role of networks at different scales may shed light on past and current adaptation, and potentials for creating civil society–state synergies or potential conflicting issues. Then the case of Cuba is presented. As a country highly affected by global change processes, Cuba represents a special case for examining the dynamic nature of climate vulnerability. The Cuban archipelago has shown to be vulnerable to various aspects of climate change, especially sea-level rise and a higher frequency or intensity of droughts (UNEP/INSMET 1999; O'Brien 2000). At the same time, the island has undergone dramatic economic and social changes over the last decades. Following the break-up of the Soviet Union and the disappearance of soviet trade and aid in 1991, Cuba entered a period of extreme economic hardship. Changing economic and social conditions have resulted in increased inequality, making some people increasingly vulnerable under the new economic order in Cuba.

Following this, the patterns of coping have changed considerably over the years. New markets and networks are replacing centrally organized structures as means of coping strategies. Their access is on the other hand not equally distributed.

2 Social vulnerability and the role of networks

Vulnerability has emerged as a crucial concept in environmental and development research, as well as in the policy arena (see Sen 1981; Liverman 1990; Watts and Bohle 1993; Blaikie, Cannon et al. 1994; Dow 1992; Downing 1991; Adger 1996; Cutter 1996; Vogel 1998). One of the main contributions of the social science in the field of vulnerability research has been the insight that vulnerability is socially differentiated (Adger, Kelly et al. 2001). This assumes that the physical or technical nature of the natural events, be they storms or droughts, cannot alone explain why some groups are more at risk than others (Wisner 1993; Blaikie, Cannon et al. 1994; Cutter 1996). Vulnerability is thus viewed as a prior state, determined by the underlying political, economic and social processes (Adger 1996). In contrast, the traditional interpretation of vulnerability in climate change research refers to the net or residual impacts after adaptation takes place (O'Brien, Eriksen et al. Submitted) or the "end point" of analysis as Kelly and Adger (2000) term it. Considering vulnerability as the focal point of analysis means rather profound shifts in emphasis and range of what is of concern. Society rather than nature decides who will be adversely affected. Over the years there has been major attempts to strengthen the focus on social and institutional causes of vulnerability rather than physical indicators (see McLaughlin, P. and T. Dietz). This has also been adopted within the climate change community (Downing 1991; Bohle, Downing et al. 1994; Ribot 1996; Moss, Brenkert et al. 2001; Handmer, Dovers et al. 1999) which is largely recognized in the Third Assessment Report (TAR) of the IPCC (see McCarthy, Canziani et al. 2001). From the social perspective, vulnerability refers to the human dimension and it is determined by the ability of individuals and social groupings "to respond to, in the sense of cope with, recover from and adapt to, any external stress placed on their livelihoods and well-being" (Kelly and Adger 1999). Adger, Kelly et al. (2002) argue that all societies have adaptive capacity and that they have been adaptive at all times. However, it is evident that the ability to respond is differently distributed among people.

Research shows that communities endowed with social networks and civic associations are more likely to cope successfully with adverse situations (Moser 1996; Narayan 1997). In a climate change context, Adger (2003) argues that the inherent capacity to adapt is in many contexts strongly determined by the ability to act collectively. Collective action is in turn facilitated by social capital. Studies have shown that social capital and social networks play an important role in securing the immediate consumption needs and protection of assets for the poor when faced with adverse climate conditions (Batterbury and Warren 2001). The concept of social capital and social networks has long research traditions within sociology, economy and political science (see Woolcock 2002; Woolcock and Narayan 2000; Feldman and Assaf 1999; Woolcock 1998; Harris and de Renzio 1997). The social capital approach emerged as an answer to what Mohan and Mohan (2002), call the overdetermined theorization of links between structural forces and individual experience. It is now largely recognized that the rational choice model is only partly capable of explaining differences in empirical well-being. As reviewed by Rudd (2000), research within new institutionalism in economics, political science and sociology recognizes that social context strongly determines human choice and social and economic outcomes. Findings show that social groups have differential capacities to interact and organize themselves to generate benefits. This missing link is social capital (Grootaert 1997), and it can be viewed as the glue that holds societies together. In making a considerable contribution towards developing the theory of social capital, we find scholars such as Pierre Bourdieu (see Bourdieu 1986), Glen Loury (see Loury

1977), Douglass North (see North 1990), James Coleman (see Coleman 1988, 1990) and Robert Putnam (see Putnam 1993). According to Woolcock (2000), a summarized definition of social capital refers to the norms and networks that facilitate collective action.

Evidence suggests that networks differ considerably in terms of both form and impact. Some networks are local, others are extended. Following the terminology used by Woolcock (2002), bonding social capital refers to strong relations between family members, close friends and neighbours, whereas bridging social relations refers to the looser ties that one has to more distant associates who have somewhat different demographic characteristics but are localized. Even though both ties are sources for knowledge, sharing of economic risk and claims of reciprocity, they differ in extent and social impacts. Networks between what Narayan (2002) calls primary social groups, such as relatives, will generate benefits only to the individuals included in the group. This also relates to what Adger (2003) labels the private dimension of social capital. Social capital enables people to access resources, and the gain in personal well-being will not necessarily benefit society at large. Localized networks have proven highly efficient in societies exposed to the dual impacts of climate stresses and economic crisis. In Northern Thailand, Coxhead (2000) found that social networks between households of different kinds provided an essential safety net for households that faced the combined effects of the Thai economic crisis and the 1998 El Niño drought. In fact, these networks proved to have better explanatory power than most other variables, including measures of household wealth, ethnicity, land endowments and income sources (Coxhead 2000).

According to Evans (1996), all societies are endowed with at least a minimal stock of social capital in the form of family or kinship ties. However, what differentiates societies in well-being are actors, including state and private and voluntary organizations, ability to scale up the stock of social capital and create external ties or vertical networks. Such linkages are seen as important because they can give local social organizations access to resources, information and political power through engaging with state, market and other civil society actors (Warner 2001; Bebbington and Perreault 1999). As pointed out by Woolcock (2002), intra-community relations and their ability to act collectively seldom exist without the influence of the regulatory framework supplied by the state or similar organizations. Networking social capital has proven particularly important in societies where state support and structures are absent (Adger, Kelly et al. 2001). However, these more innovative networks seem to be found among those more well off in society. In contrast, the poorer share of the population seems to have limited access to these networks. This often also has a gender dimension, as Narayan (2002) suggests, men are more likely to engage in social relations outside the group than women. As linking networks are established and strengthened, they represent potential for synergies to develop. In reviewing recent efforts to integrate the state and society spheres, Evans (1996, p. 1119) argues for “the possibility of state-society synergy, that active government and mobilized communities can enhance each other developmental efforts”. This relates to the institutional view on social capital namely that the success of any social group to act collectively in the end is determined by the quality of the institutions under which they operate (Woolcock and Narayan 2000). In the following, the case of Cuba is presented. Faced with the ongoing processes of climate change and economic globalization, Cuban households are carefully trying to sustain livelihoods. Findings suggest that social networks are important as means of accessing coping strategies.

3 Multiple stressors in Cuba

History shows that Cuba has been frequently exposed to extreme environmental events such as hurricanes and droughts. According to Glantz (2001), the frequency of years with moderate and severe droughts has doubled in the last 30 years in Cuba. The phenomenon ENSO (El Niño-Southern Oscillation) is known to have strong signals in Cuba either by a cold phase known as La Niña or a warm phase known as El Niño. El Niño is known to increase winter precipitation and reduce summer precipitation in some areas. In Cuba the El Niño signal has been particularly strong during winter. Among the most severe El Niño events are that of 1982-83 and more recently 1997-98. In the latter, the dry cold season of 1997 started off with strong winds, intense rains, and thunderstorms. Only a few months later, from April to July, the most severe drought since 1941 unfolded. On average the country received only half of historical average rainfall during the month of June. Among the impacts of the 1997-98 El Niño were considerable loss of agricultural output (particularly sugar cane, potato, milk and banana), acute respiratory illnesses, and material damage to housing. The numerous hurricanes that have struck the island throughout history also demonstrate the sensitivity of Cuban society. Hurricane Michelle, for example, which hit the Matanzas area on November 4, 2001, caused substantial damage to the built environment, electrical and communications systems, and important export crops such as sugar and citrus (Ritter 2002).

Compared to many other countries in Latin America, Cuba has shown to be remarkably robust to many of these events in comparison to its neighbors in the Caribbean. Even though damage to property, industry, agriculture and infrastructure tends to be great, lives are seldom lost. Wisner (2001) argues that the impacts are low due to the social dimension of coping. Not only is the risk communication system in Cuba highly effective, even more important is the social dimension of coping with risks. At the local level, volunteers are organized and there is a sense of collectivism and trust among the population. These are core values in Cuba, and they are likely to be important as Cubans face increased risks of environmental hazards, particularly in terms of climate-related events. Whether future climate risks are within the current coping range is, however, uncertain, as climate scenarios suggest that Cuba is facing serious challenges in terms of climate stress, including sea-level rise and higher frequency or intensity of droughts (O'Brien, Sygna et al. 2000; O'Brien 2000).

Parallel to these environmental trends is that of the recent economic restructuring that has taken place in Cuba during the so-called Special Period during the 1990s. Cubans have reluctantly observed that the conditions in the international arena have shifted considerably from inward-looking tendencies towards integration and openness. Ironically, despite the reluctance towards global markets, Cuban foreign policy has by necessity been outward-looking ever since the start of the revolution. After the revolution in 1959, external trade was shifted from the United States and other capitalist countries to the Soviet Union and socialist countries. The strong relationship to the former socialist states made Cuba highly vulnerable to any shift in policies and economic performance in this trading block. The breakup of the Soviet Union in 1991 hit Cuba hard. Not only did the island lose its main trading partner, but also its main source of credit, aid and oil. In 1988 the COMECON countries accounted overall for 87% of Cuba's foreign transactions (Klepak 2001). In 1992 this had dropped to only 19%. For the first time in history, Cuba was left without the channels to connect with any global economic market. In the same time period, the US trade embargo was further tightened, and the vulnerability was further heightened by the internal economic situation. Not only were the political and administrative institutions not flexible enough to handle a sudden crisis, but the economy was also based on only a few products and thus the needed diversification in production was missing. Ever since the nationalization campaign in the 1960s, the government has virtually been the only actor in the economy: the only producer, the only importer and the only employer. The crisis was severe throughout the island. Between 1990 and 1993, Cuba's export capacity was reduced by close to 80% (Ritter 2002),

and the real GDP contracted at an average annual rate of 10% (Hernández-Catá 1999). Other effects included energy crisis, food crisis, collapse of savings and investments, increased unemployment and escalating inflationary pressure (Ritter 2002).

Measured economic reforms have been enacted in response to the economic crisis, including removal of subsidies to state-owned enterprises, reopening of agricultural markets for food stuffs, establishment of incentives for foreign investments, legalization of a limited amount of private economic activity, the restructuring of state farms, and legalizing the holding of American dollar and creation of dollar stores (see Hernández-Catá 1999; Monreal 1999; Weeks 2001; Ritter 2002). During the second half of the 1990s, most of the reforms were in place and the economic restructuring began to pay off. From 1994 and onwards, Cuba witnessed positive economic growth and levels of investments and consumption began slowly to recover. The Cuban economy grew on average by 3.9% in the 1996-2000 period (Ritter 2002).

In comparison with other transition economies, Cuba has been fairly successful in re-establishing macroeconomic stabilization, at least in a short-term perspective. However, according to Brundenius and Weeks (2001) current and planned reforms are far from sufficient to bring Cuba out of its economic problems. Cuba has lost fifteen years of economic growth, and pre-crisis levels of well-being have not yet been reached. The social costs are escalating. The following section takes a closer look at how these economic changes have altered patterns of vulnerability.

4 Changing patterns of social vulnerability

The economic crisis that has unfolded in Cuba since the early 1990s and the political responses that have followed have affected the lives of the Cuban people. To some extent the economy has been recovering. However, the uneven nature of economic recuperation makes it likely that the dynamics of vulnerability will change as Cuba enters into what Monreal (1999) considers the beginning of the country's reinsertion into the international economy. The economic reforms adopted in response to the crisis have to a large extent only been partial and incoherent, resulting in a dual economy and profound social and cultural changes, including growing inequality, individualization and corruption. According to Martin (1999), one of the critical impacts of increased market orientation is the emergence of "new social forces as well as a process of internal differentiation among the country's traditional social sectors". From being a highly homogeneous society, Cuba changed during the 1980s and 1990s to become increasingly differentiated and stratified, resulting in a highly heterogeneous population of people characterized by "have" and "have not".

One of the main contributors to changing patterns of vulnerability is the unequal opportunities for income generation produced by the dual economy and the new structure of the labor market (see Pickel 1998). Although still by far the biggest employer, the state employed only 77% in 2000 compared to 94% in 1989. The economy is privatizing rapidly. More and more people are drawn to the expanding and fortunate private, mixed or cooperative sectors where the pay and working conditions are distinctly different from the traditional sectors. Many of the new economy jobs are in the tourism industry and in private national industries and agencies created to service this sector. The tourism sector has been launched as a vehicle for export earnings and economic growth. In the short run, tourism has saved the economy from total breakdown by generating highly needed hard currency and revenues to finance foreign and domestic deficits. Whether this is a sustainable strategy in the longer run remains questionable. As the tourism sector continues to expand, this will not necessarily result in economic growth and development in the entire nation. In 1998 the

industry employed 81,000 workers. This represents only 2% of the Cuban labor force (Espino 2000). Espino argues that the low value of the tourism income multiplier and poor backward and forward linkages in the economy has limited the potential of the tourism industry to become a vehicle for economic development. Thus, millions of people are excluded from taking part in what Orro (2000) calls the dictatorial capitalism. That some are included and others are excluded from the recovery can be seen from the income distribution statistics. During the revolution, the high inequality of the Batista regime was eliminated and the Gini coefficient for income fell from 0.55 in 1959 to a low 0.22 in the mid 1980s (Fabienke 2001). This deteriorated during the 1990s as the income inequality has nearly returned to its pre-revolution level (Trumbull 2000). It is not only the wages, but maybe more importantly the incentive payment put on top of the monthly pesos wage that contributes to the difference between the traditional and the emerging economies (Fabienke 2001). Both hard currency bonuses and in-kind motivations (clothes, shoes, etc.) are used to increase motivation and efficiency in high-priority sectors such as oil extraction, fishery, tourism, the steel and nickel industry, and shipyards, as well as in cement, sugar and tobacco production (Fabienke 2001; Uriarte 2002).

Further contributing to the inequality is the unequal access to dollars that the new structure provides. According to Uriarte (2002), about one-half of the population has access to dollars in some way. The majority earn them as part of self-employment, formal and informal. However, employment is not the only way of accessing dollars. Money transfers from family members abroad have also become increasingly important. The chasing of the dollar as additional income is particularly important because the subsidized ration card *la libreta* has been reduced. The rationing system that originally covered the basic needs for a month now only covers the calorie demand for approximately 10 days. The remaining 20 days of the month the Cubans are forced to turn to alternative markets where prices are 10–100 times higher than at the market for rationed goods (Fabienke 2001).

There is no doubt that the economic reforms have increased social differences in the Cuban society. At the same time, people are facing deteriorating social safety nets. Even though the state originally sought to distribute the negative effect of the crisis equally among the population by keeping up the social spending (in 1996 the social expenditures reached 22.4% of GDP), reduction in social spending in real terms has been unavoidable. More importantly, the demand for governmental support and benefits escalated during this period as people were left behind. One of the main development goals of the Cuban revolution was to eliminate the economic and social differences between people under the Batista regime. Following a decentralization process in 1978, local government was formed to fulfill these social and regional equity goals of the revolutionary program. These bodies succeeded to a large extent in eliminating the gap between rich and poor. However, local governments have been operating based on three assumptions – namely that the government had access to abundant resources from the Soviet block, that the government could control the flow of resources, and that there was a huge asymmetry between a powerful state and a poorly structured civil society (see Dilla 2001). Through the 1990s the conditions have changed considerably. As much else in Cuba, also these structures were highly vulnerable to shifts in Soviet relations and flow of resources. As the crisis unfolded, the power of these local government bodies were constrained as the flow of resources was drastically reduced. However, maybe more importantly, the power relation between the state and civil society changed considerably. The state no longer had a monopoly on assigning resources because communities were linking directly to the world capitalist market. Various enterprises had a growing impact on people whereas local government structures have become increasingly ineffective. The government was not able to follow the spread at which society changed and they failed to incorporate the growing diversity of Cuba's population as it adapted to the new economic context. Consequently, unequal development is appearing across Cuba as some areas prosper in the new economy while other areas are contracting. As a consequence of the

unequal development across the country, people are migrating from poor regions to more prosperous areas (Dilla 2001). The flow of people from the southeastern region and provinces such as Granma, Santiago and Guantánamo in particular to the western provinces has been tremendous.

It is evident that the Cuban model of socialism has been influenced by the effects of the economic crisis, including decreased standards of living and a growing underground economy. Simultaneously, responses to the crisis, such as increased market capitalism, also represent large social and economic changes. There are those arguing that Castro has traded economic problems for social and ideological problems (Trumbull 2000).

5 Networks as ways of coping

History shows that Cubans have been highly adaptable to hardship in the past. This past record has left them with a variety of coping strategies they can draw from in facing current problems of growing income inequality and a deteriorating welfare system. Networks have been shown to be important channels for accessing resources. Faced with a drastically reduced standard of living during the 1990s, people have turned to the market economy and black-market transactions to get by. Some workers are shifting from the traditional sectors to the emerging dollar sector (McFadyen 1995). This is the legal side of the second economy, which is under close supervision of the state. In addition, people have started to enhance their insufficient salaries through other sources. People are increasingly engaged in the informal market and semi-legal or illegal transactions, including stealing, pilfering, prostitution and black market activities (Rosendahl 2001). This implies that people have to use more time to “chase” additional income. They have thus become more dependent on personal income. This has been particularly problematic in rural areas where alternative sources of income are hard to find. The opportunity to find sources of income is also unequally distributed between generations. Uriarte (2002) reports that there is a growing authority problem between the governmental working parents and the dollar-earning children.

Another widely used coping strategy is that of emigration. According to (Uriarte 2002), there has been an abrupt rise in emigration, particularly to the United States, since the 1990s. Family ties are thus extended across scale. Evidence suggests that these networks are particularly important to poor people during periods of stress (Mittelman 2000b). In Cuba, the remittances received from abroad were estimated to be \$US 720 million in the year 2000. It is worth mentioning that approximately half the population had access to this source of additional income.

There is a strong history of participation and voluntarism in Cuba. However, this participation has mostly been focused on centrally designed initiatives. The paternalistic-clientelistic structure, universal policies and centralized initiatives worked well for Cuba as long as the resources were abundant, vertical linkages remained strong, and most importantly as long as the population remained relatively homogenous. Following the major transformations of the Cuban society, including increased complexity and differentiation, provincial and municipal level governments have great difficulties matching central policies to local needs and steering resources to local problems. Faced with lack of information, services and solutions to local problems, local communities have shown promise in organizing themselves to complement current models of public service delivery (Uriarte 2002). Social relations have become particularly vital for sustaining livelihoods at the local level. Faced with unsolved local problems, ties between relatives and neighbors, and reciprocity and sharing have become increasingly important for sustaining livelihoods as the

crisis has unfolded. These ties have resulted in barter trade, sharing of goods, swapping of information about the location of available goods, and so on.

At the same time, linkages to power and resources at higher scales have become increasingly important in Cuba. As pointed out by Pretty (forthcoming), there is a danger that poor people will not be included as community initiations and networks are established. Evidence suggests the poor and marginalized often have strong local and horizontal ties, although almost no diffuse and linking social capital (Woolcock 2002). In Cuba, the term *sociolismo* refers to a situation where a person with access to scarce resources enters into relationship with someone in need of these resources. One form of such *sociolismo* is the Party patronage phenomenon, in which employment and material rewards are based on linkages to the Communist Party (Ritter 2002). During the Special Period, this form of corruption also spread to other arenas. Linkages to those within the emerging sector, those with access to hard currency or other goods and services that had become scarce, became increasingly important (see Rosendahl 2001; Ritter 2002).

6 Concluding remarks

One of the main contributions of social science in the field of vulnerability research has been the insight that patterns of vulnerability are socially differentiated and dynamic in nature. The world hosts a myriad of characteristics, phenomena and processes that influence the levels of vulnerability. At the same time, people are constantly adjusting their behavior in response to environmental and societal stressors and thus changing their levels of vulnerability. Networks have proven to be important safety nets and channels for accessing coping mechanisms when households face difficulties, whether they originate from environmental or societal stressors. Despite this recognition, there are surprisingly few vulnerability-adaptation studies taking such an approach.

The case of Cuba offers a unique opportunity to examine how coping and vulnerability is shaped by social and economic conditions. It is evident that the Cuban way of coping with hardship has changed considerably over the years. There has been increased market integration, and at the same time social inequalities are increasing. According to Dilla (2001), the increased social inequality in Cuba is likely to lead to declining social cohesion, threatening the civicness and egalitarianism once built and strongly maintained by the revolution (see Hernandez and Dilla 1991). Pickel (1998) argues that the current structure of Cuban economy is increasingly promoting a shift from collective action to individualistic behavior. Current local mobilization is in contrast to the socialist norm, more a result of social diversity and distinct social identities, as well as the local government lack of managing social differentiation. As a consequence, Cubans are increasingly operating outside the socialist norms to get by from day to day. As concluded by Rosendahl (2001) and others, the second economy, including the market driven economy and the illegal gray/black market, has become the most important part of the household economy. The Cuban state allows the informal economy to play a central role in providing the population with food commodities. This policy may not be a result of economic logic, but rather a necessity to maintain the social peace among the majority excluded from the formal market and thus legitimacy of the socialist system. According to Rosendahl (2001), the second economy had only a limited role prior to the Special Period, as the planned economy was generally viewed as an adequate provider, at least of necessary goods. According to Uriarte (2002, p. 28), the most vulnerable households are those that depend solely on fixed incomes either from low-paid state work or transfers of social assistance, and at the same time don't have the means to increase incomes through private enterprise.

Various forms of network participation has supplied sections of the Cuban population with highly needed means for sustaining well-being, while at the same time this has also generated increased inequalities and differential vulnerabilities among Cuban people. The importance of informal and illegal safety nets mean both that it is likely that those most deprived are hidden in aggregate social and economic statistics and that trust is a vital part of reciprocity in Cuba (Rosendahl 2001). Identifying existing networks is therefore difficult in a country such as Cuba. Nevertheless, identifying those without access to established networks will be important towards identifying those most vulnerable and finally when developing strategies for long term adaptation. It is likely that local level coping mechanisms will play an important role in reducing vulnerability. One critical question is whether the Cuban government will tolerate the strengthening of the “decentralized” civiness, collective action and participation (Uriarte 2002).

References

- Adger, N. (1996). Approaches to Vulnerability to Climate Change. Norwich, Centre for Social and Economic Research on the Global Environment - CSERGE: 1-63.
- Adger, N. W. (2001). Social Capital and Climate Change. Norwich, Tyndall Centre for Climate Change Research: 15.
- Adger, N. W. (2003). "Social Capital, Collective Action and Adaptation to Climate Change." Economic Geography **79**(4): 387-404.
- Adger, W. N. (1996). Approaches to Vulnerability to Climate Change. Norwich, Centre for Social and Economic Research on the Global Environment: 1-63.
- Adger, W. N. (1999). "Social Vulnerability to Climate Change and Extremes in Coastal Vietnam." World Development **27**(2): 249-269.
- Adger, W. N., P. M. Kelly, et al., Eds. (2001). Living with Environmental Change: Social Resilience, Adaptation and Vulnerability in Vietnam. London, Routledge.
- Adger, W. N., P. M. Kelly, et al. (2002). "Migration, Remittances, Livelihood Trajectories, and Social Resilience." Ambio **31**(4): 358-366.
- Batterbury, S. and A. Warren (2001). "The African Sahel 25 Years After the Great Drought." Global Environmental Change **11**(1): 1-96.
- Bebbington, A. J. and T. Perreault (1999). "Social Capital, Development and Access to Resources in Highland Ecuador." Economic Geography **75**: 395-418.
- Berkes, F. and D. Jolly (2001). "Adapting to Climate Change: Social-Ecological Resilience in a Canadian Western Arctic Community." Conservation Ecology **5**(2): Article 18.
- Blaikie, P., T. Cannon, et al. (1994). At Risk: Natural Hazards, People's Vulnerability, and Disasters. London, Routledge.
- Bohle, H. G., T. E. Downing, et al. (1994). "Climate Change and Social Vulnerability - Toward a Sociology and Geography of Food Insecurity." Global Environmental Change **4**(1): 37-48.
- Bourdieu, P. (1986). The Forms of Capital. Handbook of Theory and Research for the Sociology of Education. J. Richardson. Westport, CT, Greenwood Press.
- Brundenius, C. and J. Weeks (2001). Globalization and Third World Socialism. New York, PALGRAVE.
- Coleman, J. (1988). "Social Capital in the Creation of Human Capital." American Journal of Sociology **94**: 95-120.
- Coleman, J. (1990). Foundations of Social Theory. Cambridge, Harvard University Press.

- Coxhead, I. (2000). Social Capital, Vulnerability and Resilience: A Closer look.
- Cutter, S. L. (1996). "Vulnerability to environmental hazards." Progress in Human Geography **20**: 529-39.
- Dilla, H. (2001). Local Government and Economic and Social Change in Cuba, FOCAL.
- Dow, K. (1992). "Exploring Differences in Our Common Future(s): the Meaning of Vulnerability to Global Environmental Change." Geoforum **23**(3): 417-436.
- Downing, T. E. (1991). "Vulnerability to Hunger in Africa - a Climate Change Perspective." Global Environmental Change-Human And Policy Dimensions **1**: 365-380.
- Espino, M. D. (2000). Cuban Tourism During the Special Period. Cuba in Transition, Florida.
- Evans, P. (1996). "Government Action, Soical Capital and Development: Reviewing the Evidence on Synergy." World Development **24**(6): 1119-1132.
- Fabienke, R. (2001). Labour Markets and Income Distribution during Crisis and Reform. Globalization and Third World Socialism. C. Brundenius and J. Weeks, Palgrave.
- Feldman, T. R. and S. Assaf (1999). Social Capital: Conceptual Frameworks and Empirical Evidence. Washington, The World Bank, Social Development Department, Social Capital Working Paper Series: 39.
- Glantz, M. H., Ed. (2001). Once Burned, Twice Shy? Lessons Learned from the 1997-98 El Niño, The United Nations University.
- Grootaert, C. (1997). Social Capital: The Missing Link? Washington, The World Bank, Social Development Department: 24.
- Handmer, J. W., S. R. Dovers, et al. (1999). "Societal Vulnerability to Climate Change and Variability." Mitigation and Adaptation Strategies for Global Change **4**(3-4): 267-281.
- Harris, J. and P. de Renzio (1997). "'Missing Link' or Analytically Missing? The Concept of Social Capital. An Introductory Bibliographic Essay." Journal of International Development **9**(7): 919-937.
- Hernandez, R. and H. Dilla (1991). "Political Culture and Popular Participation in Cuba." Latin American Perspectives **18**: 38-54.
- Hernández-Catá, E. (1999). Globalization, Transition and the Outlook for the Cuban Economy. Eight Annual Meeting, Biltmore Hotel, Coral Gables, Florida, Association for the Study of the Cuban Economy (ASCE).
- Houghton, J. T., Y. Ding, et al. (2001). Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge.
- Kelly, M. and N. W. Adger (1999). Assessing Vulnerability to Climate Change and Facilitating Adaptation. Norwich, CSERGE: 1-32.
- Kelly, P. M. and W. N. Adger (2000). "Theory and Practice of Assessing Vulnerability to Climate Change and Facilitating Adaptation." Climatic Change **47**: 325-352.
- Klepak, H. (2001). Cuba's foreign and defence policies in the "special period", FOCAL.
- Leichenko, R. M. and K. L. O'Brien (2002). "The Dynamics of Rural Vulnerability to Global Change: The Case of southern Africa." Mitigation and Adaptation Strategies for Global Change **7**(1): 1-18.
- Liverman, D. M. (1990). "Drought Impacts in Mexico: Climate, Agriculture, Technology, and Land Tenure in Sonora and Puebla." Annals of the Association of American Geographers **80**(49-72).
- Loury, G. C. (1977). A Dynamic Theory of Racial Income Differences. Women, Minorities and Employment Discrimination. P. A. Wallace and A. M. La Mond. Lexington, MA: 153-186.
- McCarthy, J. J., O. F. Canziani, et al. (2001). Climate Change 2001: Impacts, Adaptation, and Vulnerability. Cambridge, Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change: 1032.

- McFadyen, D. (1995). "The Social Repercussions of the Crisis. In Cuba adapting to a Post-Soviet World." **10**(2).
- McLaughlin, P. and T. Dietz (2002). The Dynamics of Vulnerability: An Evolutionary Perspective. Global Environmental Change: Understanding the Social Dimensions. A. Diekmann, T. Dietz, C. Jaeger and E. Rosa, MIT Press.
- Mittelman, J. H. (2000b). The Globalization Syndrome. New Jersey, Princeton University Press.
- Mohan, G. and J. Mohan (2002). "Placing Social Capital." PROGRESS IN HUMAN GEOGRAPHY **26**(2): 191-210.
- Monreal, P. (1999). "Sea Changes: The New Cuban Economy. In Cuba adapting to a Post-Soviet World." **10**(5): 21-29.
- Moser, C. (1996). Confronting Crisis: A Comparative Study of Household Responses to Poverty and Vulnerability in Four Poor Urban Communities. Washington, The World Bank.
- Moss, R. H., A. L. Brenkert, et al. (2001). Vulnerability to Climate Change. A Quantitative Approach, Pacific Northwest National Laboratory: 70.
- Narayan, D. (1997). Voices of the Poor: Poverty and Social Capital in Tanzania. Washington, The World Bank.
- Narayan, D. (2002). Bonds and Bridges: Social Capital and Poverty. Social Capital and Economic Development. Well-being in Developing Countries. J. Isham, T. Kelly and S. Ramaswamy. Cheltenham and Northampton, Edward Elgar: 58-81.
- North, D. (1990). Institutions, Institutional Change and Economic Performance. New York, Cambridge University Press.
- O'Brien, K., S. Eriksen, et al. (Submitted). "What's in a word? Conflicting interpretations of vulnerability in climate change research."
- O'Brien, K., L. Sygna, et al. (2000). Is information enough? User responses to seasonal climate forecasts in Southern Africa. Oslo, Norway, CICERO.
- O'Brien, K. L., Ed. (2000). Developing Strategies for Climate Change: The UNEP Country Studies on Climate Change Impacts and Adaptations Assessment. Report. Oslo, Center for International Climate and Environmental Research.
- O'Brien, K. L. and R. M. Leichenko (2000). "Double Exposure: Assessing the Impacts of Climate Change within the Context of Economic Globalization." Global Environmental Change **10**: 221-232.
- Orro, R. (2000). Has Cuba Definitely Found the Path to Economic Growth? Cuba in Transition, Florida.
- Paldam, M. and G. T. Svendsen (2000). "Missing Social Capital and the Transition in Eastern Europe." Journal for Institutional Innovation, Development and Transition **forthcoming**.
- Petrella, R. (1996). Globalization and Internationalization: The Dynamics of the Emerging World Order. States Against Markets: The Limits of Globalization. R. Boyer and D. Drache. London and New York, Routledge: 62-83.
- Pickel, A. (1998). "Is Cuba Different? Regime Stability, Social Change, and the Problem of Reform Strategy." Communist and Post-Communist Studies **31**(1): 75-90.
- Pretty, J. (Forthcoming). "People, Livelihoods and Collective Actions in Biodiversity Management."
- Putnam, R. D. (1993). Making Democracy Work: Civic Transition in Modern Italy. Princeton, Princeton University Press.
- Ribot, J. C. (1996). Climate Variability, Climate Change and Vulnerability: Moving Forward by Looking Back. Climate Variability, Climate Change and Social Vulnerability in the Semi-arid Tropics. J. C. Ribot, A. R. Magalhães and S. S. Panagides. Cambridge, Cambridge University Press.
- Ritter, A. R. M. (2002). Cuba's Economic Performance and the Challenges Ahead. Ottawa, Canadian Foundation for the Americas (FOCAL): 11.

- Rosendahl, M. (2001). Household Economy and Morality during the Special Period. Globalization and Third World Socialism. C. Brundenius and J. Weeks, Palgrave: 86-101.
- Semenza, J. C., C. H. Rubin, et al. (1996). "Heat Related Deaths During the July 1995 Heat Wave in Chicago." New England Journal of Medicine **335**: 84-90.
- Sen, A. K. (1981). Poverty and Famines: An Essay on Entitlement and Deprivation. Oxford, Clarendon.
- Trumbull, C. (2000). Economic Reforms and Social Contradictions in Cuba. Cuba in Transition, Florida.
- UNEP/INSMET (1999). Estudio sobre Cambios Climáticos Globales y sus efectos en el uso de la tierra y los asentamientos humanos.
- Uriarte, M. (2002). Cuba. Social Policy at the Crossroads: Maintaining Priorities, Transforming Practice, Oxfam America: 68.
- Vogel, C. (1998). "Vulnerability and Global Environmental Change." LUCC Newsletter **3**: 15-19.
- Warner, M. (2001). "Building Social Capital: The Role of Local Government." Journal of Socio-Economics **30**: 187-192.
- Watts, M. J. and H. G. Bohle (1993). "The Space of Vulnerability: the Causal Structure of Hunger and Famine." Progress in Human Geography **17**: 43-67.
- Weeks, J. (2001). A Tale of Two Transitions. Globalization and Third World Socialism. C. Brundenius and J. Weeks, Palgrave: 18-40.
- Wisner, B. (1993). Disaster Vulnerability. Geographical Scale and Existential Reality.
- Woolcock, M. (1998). "Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework." Theory and Society **27**: 151-208.
- Woolcock, M. (2002). Social Capital in Theory and Practice: Where do We Stand? Social Capital and Economic Development. Well-being in Developing Countries. J. Isham, T. Kelly and S. Ramaswamy. Cheltenham and Northampton, Edward Elgar: 18-39.
- Woolcock, M. and D. Narayan (2000). "Social Capital: Implications for Development Theory, Research and Policy." World Bank Research Observer **15**: 225-249.