**Structure and agency in development-induced forced migration:
The case of Brazil's Belo Monte Dam**

Introduction

Development projects and environmental change are key drivers of forced migration throughout the world. Economic development is tied to the expansion of hydroelectric dams, highways, mines, and urban infrastructure, and an estimated 15 million people per year are displaced to make way for such projects (Cernea and Mathur 2008). Additionally, climate-induced sea-level rise is predicted to result in the forced migration of tens of millions of people during this century (Dasgupta et al. 2009). In light of these economic and environmental changes, it is crucial to better understand the process of forced migration as well as its impacts on affected populations. Yet forced migration has remained at the periphery of migration research, which largely focuses on voluntary economic migration. As such, a number of scholars have called for greater attention to the social processes surrounding forced migration, including the roles of migrant agency and social networks (Castles 2003; Chatty and Marfleet 2013; Turton 2003). Understanding the social aspects of forced migration will better prepare us to address displacement from future infrastructure projects and climate-induced sea-level rise.

A major factor contributing to development-induced forced migration is the construction of hydroelectric dams. Approximately 50,000 large dams (at least 15 meters in height) exist throughout the world and the majority of recent dam construction has occurred in low- and middle-income countries (Scudder 2005). Hydropower is a particularly important issue in Brazil; it has been a central component of the country's energy policy for nearly 70 years and now provides 85% of Brazil's electricity (Alves et al. 2009; U.S. Energy Information Administration 2012). Existing dams in Brazil have flooded 3.4 million hectares of productive land and

displaced more than one million people (Zhouri and Oliveira 2007). Further, the Brazilian government is currently constructing or planning to construct 34 additional hydroelectric dams by 2021 to meet the country's rising demand for energy (Ministério de Minas e Energia 2012). This paper considers the case of one such project – the Belo Monte Hydroelectric Complex – which is under construction on the Xingu River in the Brazilian Amazon and will be the third largest dam in the world in installed capacity when complete in 2019. The government argues that Belo Monte is a crucial source of renewable energy, yet the dam will have substantial social and environmental impacts, displacing 20,000 people including rural farmers, urban residents, and subsistence fishermen (Eletrobrás 2009).

This paper examines how structure and agency shape the aspirations and capabilities of forced migrants. I use the case of a rural agricultural population whose homes and land will be flooded to create Belo Monte's main reservoir and associated infrastructure. Community members range from landless sharecroppers, to smallholder cacao farmers, to wealthy cattle ranchers. Many families moved to the area in the 1970's and 1980's when the Brazilian government enacted a large-scale Amazon settlement scheme, while others moved to the region more recently. The variation in wealth, income generation strategies, and duration in the community allows for the understanding of how households of diverse means, social capital, and resource bases experience forced migration. The relocated households are compensated by either money or credit for their lost land and assets, and are then responsible for finding and purchasing new property on their own. Belo Monte therefore serves as an ideal case through which to study the forced migration decision-making process, as households are faced with having to make important migration decisions in a way that those resettled in planned communities are not.

This longitudinal, qualitative analysis utilizes data from 67 semi-structured interviews conducted over the course of two years with 39 households displaced due to the dam. Baseline interviews were conducted in August 2012 with the 39 households – 28 who were waiting to be compensated and migrate at the time of data collection and 11 who had already moved. Post-migration interviews were conducted between August and October 2014 with the 28 households who had not yet moved at baseline. I use these data to examine the migration aspirations of affected households, structural constraints related to the migration process, and the factors associated with whether households were capable of achieving their aspirations.

Forced Migration, Structure, and Agency

The majority of migration theory within the demographic literature – and indeed the most influential work – focuses on voluntary economic migrants. What is common to these theories is the concept that actors, whether individuals or households, make migration decisions based on the potential for attaining new economic opportunities in other locations. These decisions are based on the characteristics of the origin, the destination, the migrants themselves, as well as a set of intervening obstacles (Lee 1966). The decision to migrate is shaped by factors such as wage differentials (Todaro 1969), the presence of migrant networks in the destination that increase the probability of finding employment and housing (Massey 1986; Massey and García España 1987), and the desire to diversify household income through sending migrants to new labor markets (Stark and Bloom 1985; Stark and Lucas 1988). Social networks play a particularly important role in all stages of the migration process, having been shown to affect both migration decisions and destination choices (Deléchat 2001; Lindstrom and Lauster 2001; Massey 1990; Winters et al. 2001). In addition, human capital theory argues that individuals who

migrate tend to be younger, better educated, or more ambitious (Taylor and Martin 2001; Todaro 1980).

The literature on voluntary migration has tended to either focus on the factors that influence an individual's decision to migrate, mentioned above, or on the structural constraints to migration (e.g. immigration policies or China's Hukou system) (Chan 2010; Massey 1999). Yet as Bakewell (2010) and Lubkemann (2004) argue, most research on forced migration privileges structure, concentrating on the contextual drivers of migration (e.g. wars, environmental degradation, or development projects) while failing to conceptualize forced migrants as exercising agency over whether, when, and where they move. Lubkemann (2004) states that generally "the explanation for patterns and effects of forced migration are sought through the analysis of the dynamics and variation in forces conceptualized as external to, and unaffected by, the agency of migrants…variation among migrants themselves in terms of their own motivations and the factors that inform those motivations, is largely neglected" (p. 372).

As such, forced migration sits on the periphery of migration research, and migration scholars have suggested the need to better integrate the forced migration process into this literature. A decade ago sociologist Stephen Castles called for the development of a sociology of forced migration, arguing that it is "linked to research on economic migration, but has its own specific research topics, methodological problems and conceptual issues… [it] needs to be analyzed as a social process in which human agency and social networks play a major part" (2003: 13). Additionally, in 2013 migration researchers Dawn Chatty and Philip Marfleet contended that "a greater awareness of general theory and greater analytical rigor is required urgently on issues that bear upon forced migration" (2013: 2). Further, anthropologist David Turton (2003) argued that the field must "encourage research that aims to understand the

situation of forced migrants at the local level, as purposive actors, embedded in particular social and historical circumstances" (p.15). These calls highlight the need to better understand agency in forced migration – namely how decisions are made and networks are utilized – social processes that have historically been overlooked when studying refugees as well as environment- and development-induced migrants.

In recent decades the majority of forced migration research has focused on three main areas: refugees who move as a response to war or political unrest (e.g., Adhikari 2013; Lubkemann 2004; Ruiz and Vargas-Silva 2013), individuals who migrate temporarily or permanently due to natural disasters (e.g., Fussell et al. 2014; Fussell et al. 2010; Gray et al. 2014; Gray and Mueller 2012; Groen and Polivka 2010), or those who are displaced permanently by development projects (e.g., Downing 2002; Hwang et al. 2011; Partridge 1993; Scudder 2005). While there has historically been a divide between research on political refugees and that on development- and environment-induced resettlers, there has been a push to unite the two under one overarching framework, as all forced migrants face common experiences and challenges during the process of moving and reestablishing lives (Cernea 2006; Muggah 2003; Turton 2006).

In order to better incorporate both structure and agency into migration theory, Carling (2002) and de Haas (2009; 2010) developed the migration aspirations versus capabilities framework. de Haas (2010) argues that theories of migration should integrate both the independent preferences of migrants (aspirations) as well as the structural constraints they face, which interact to shape their migration capabilities. In addition, Carling (2002) develops and applies the aspiration/capabilities framework to the case of *involuntary immobility,* in which people aspire to migrate internationally but are prevented from doing so by restrictive

immigration policies. The aspirations/capabilities framework incorporates migration desires with the economic, social, and political constraints that potential migrants face. Migrants are therefore not simply rational actors responding to economic opportunities, but are embedded within multiple contexts that determine the extent to which they can translate aspirations into outcomes.

I apply Carling and de Haas's framework in order to examine the role of structure and agency in dam-induced forced migration. Though developed to study economic migration, this framework also provides a useful lens through which to explore the social processes associated with forced migration, as the ability for migrants to achieve aspirations may be either fostered or constrained by factors such as compensation policies, local changes in land prices, socioeconomic resources, and social capital in both origin and destination communities. While a traditional forced migration approach would focus on the impacts of the dam and its resettlement policy on migrants, I shift the focus to understand how the migrants, as purposive actors, navigate the process. I expect that wealthier households and households with stronger social networks will be better positioned to achieve their migration aspirations. I also expect that landless sharecroppers will face higher levels of constraints as compared to landowners, which will hinder their ability to achieve aspirations and improve their socioeconomic well-being.

Research Site and Study Population

The study area is located in the municipality of Vitória do Xingu, which lies in the northern Amazon region of Brazil in the state of Pará (see Figure 1). The majority of settlement in the region began in the early 1970's with the Brazilian government's National Integration Plan (PIN), which encouraged migration into the Amazon to reduce landlessness and poverty in the rest of the country as well as develop Brazil's interior (Alonso and Castro 2005; Ludewigs et al. 2009; Moran 1990; VanWey et al. 2007). As part of the PIN, the government constructed

highways crossing the region including the Transamazon Highway, which runs through Vitória do Xingu as well as the nearby city of Altamira. The PIN led to a doubling of the population of Pará between 1970 and 1996, from 2.2 million to 5.5 million (Perz 2002). Now the region houses and processes a large herd of cattle and is home to the highest productivity cacao bean farms in the country (CEPLAC 2009).

Norte Energia, a public-private partnership, is constructing the Belo Monte Hydroelectric Complex. Plans for the dam began in the 1970's, but the process experienced long delays due to concern over its environmental and social impacts. The project was redesigned a number of times to reduce potential impacts, and was pushed forward under President Luiz Inácio Lula da Silva in the 2000's as part of a national program to foster economic growth (Fearnside 2006). Construction began in 2011 and will continue until 2019, with flooding of the area upstream from the dam slated to occur in 2015 when the first turbine begins to run. According to the environmental and social impact assessment, the dam is expected to flood 516 km^2 of land and displace approximately 20,000 people – 16,400 in urban Altamira and 2,800 living in rural surrounding regions including Vitória do Xingu (Eletrobrás 2009). The Basic Environmental Plan (*Plano Básico Ambiental - PBA)* (Norte Energia S.A. 2010) addresses all social and environmental impacts, and indicates that the rural displaced population has a choice of: monetary compensation for their land and assets; assisted relocation to a property in the same region that is at least equivalent to the original property; resettlement assistance for rebuilding a home on the same property if it is partially flooded; or resettlement in a planned community in the region for smallholder farmers or those without property rights. The study population by and large received the first option: monetary compensation for landowners or credit payments for landless households that they could use to purchase titled agricultural land.

Methods

This paper uses qualitative, longitudinal data from 67 semi-structured interviews and is part of a larger mixed methods project that collected household survey data from 192 households, a near complete census of households in the affected geographic area (see property boundaries in Figure 1). In August 2012, I conducted baseline semi-structured interviews with male and/or female heads from 39 households from the study area, a subset of the 192 households surveyed. The households were selected in order to capture variation along a number of socioeconomic and demographic lines, including the amount of land owned, length of time living in the study area, and household income. In addition, the households varied in their timing of migration. At the time of baseline interviews, 28 households remained in their original homes awaiting compensation payments, while 11 households had already moved to new homes in the region. Before migration, 26% of the 39 households had electricity; median land ownership was 45 hectares (ranging from 0 to 600 hectares); median total monthly household income was R$1,704 (ranging from R$494 to R$11,008)[1]; and the median year the household head migrated to the study area was 1981 (ranging from 1952 to 2003)[2].

Interviews averaged 30 to 60 minutes in length, and questions focused on topics including the household's history, community, and livelihoods in the study area; the compensation process; and migration aspirations and plans. I continued to interview households until I reached a point of thematic saturation, when few new themes emerged. Interviews were conducted by myself and a local Brazilian research assistant, recorded with informed verbal consent from the interviewees, and transcribed by a native Portuguese speaker. Excerpts were

[1] The 2012 Brazilian Real – US Dollar exchange rate was approximately 2:1.
[2] Five of the household heads were born in the study area.

selected and translated into English only after coding was complete to protect the integrity of the data. Ethics approval was granted my university's Institutional Review Board.

Between August and October 2014, I conducted post-migration semi-structured interviews with the 28 households who had not yet moved at baseline. I located the households in their new homes using information provided by friends or family members listed as contacts on the baseline household survey. The households migrated across the region, primarily to rural properties without access to cellular or landline service, which made identifying new residences challenging. I located and re-interviewed all 28 households, including the one household that moved outside Pará, to the neighboring state of Maranhão. Follow-up interviews focused on three main substantive areas: negotiating and receiving compensation, finding and moving to new properties, and reestablishing livelihoods and social networks in their new communities.

I analyzed the data using NVivo 10, a qualitative analysis software, coding the 67 interviews for themes. Themes were developed using a hybrid approach that included both deductive methods (creating a set of *a priori* codes based on the research questions) as well as inductive methods (generating new codes during the data analysis process) (Fereday and Muir-Cochrane 2008). Generating themes allowed me to organize the data, identify themes related to my research questions, and identify themes common to many of the respondents. In addition, I triangulated the interview data with household survey data in order to ensure that qualitative results were representative of the study population.

Results

This section begins with an overview of the compensation process, and then examines the migration aspirations of affected households, constraints to attaining aspirations, and eventual

migration capabilities in order to shed light on the roles of both migrant agency and structural constraints during the migration process.

The compensation process

In mid-2011, employees from companies contracted by Norte Energia began visiting the homes of affected households to evaluate their assets and calculate compensation amounts. Compensation was based primarily on productive assets (e.g. cacao trees, other fruit trees, and crops) as well as on pasture, homes, and infrastructure on the property. According to the dam timeline, after the initial assessment the company was required to return to the farmer with a proposal within 90 days. Many farmers were told that they should stop farming after the initial assessment because they would be vacating their land within a few months, but this first step in the compensation process often experienced long delays. After receiving the official proposal, farmers could either accept it or request a new assessment if they found that assets were not included (e.g., if the company failed to account for a portion of the cacao trees). Upon receiving the updated proposal the households had a short period of time to evaluate it before signing the agreement. If farmers did not accept the second proposal, they were told that they must go to court, an expensive and time-consuming process that few farmers chose to pursue. Among the interview sample, compensation payments ranged from R$90,000 to R$4.5 million. Those who did not own land (sharecroppers or households that lived on a relative's land) were provided with credit for R$132,000, which they could use toward buying documented land with a definitive title or public deed. In addition, farmers whose assets had been valued at less than R$132,000 could opt for this credit instead of their compensation payment.

At the beginning of the process compensation payments were made in two installments, which were deposited directly into the families' bank accounts. After signing the agreement the

households were expected to receive the first payment within 30 days. When the money was deposited the households then had 30 days to purchase a new home and vacate their property, at which time they received the second payment. As the process continued, many farmers protested to receive the entire payment at once in order to pay a property owner for the entirety of the property upon agreeing to purchase it. As a result, Norte Energia began offering payments in one installment, after which time the households were given 30 days to move. Because the money was deposited directly into the household head's bank account, he or she had to travel to the bank in Altamira to determine whether or not the payment had arrived, an additional cost both in terms of time and money. Households were responsible for finding new land, which was plentiful in the region but varied greatly in price and quality. Most households either looked for land on their own, searched with family or friends, or were brought to view properties by a real estate agent. Among those who received credit instead of monetary payments, a representative from Norte Energia would visit the property to verify if it met their criteria (i.e., legally titled land). If so, Norte Energia paid the property owner directly.

The design and implementation of the compensation policy highlights the importance of both structure and agency in the process. Households were constrained by a number of aspects of the policy including the amount of payment received, the cost of traveling to Altamira to handle the logistics of compensation, the cost of searching for new property, and the short time frame between receiving payments and having to vacate their property. Yet the process also provided ample room for agency, as migrants were free to choose a new property that suited their needs. In addition, migrants were able to utilize family and social networks to assist them in identifying and purchasing property, which I will discuss further in the section on migration capabilities.

Migration aspirations

A key component to understanding agency within forced migration is to examine the aspirations of those who face displacement. I conceptualize aspirations as ideal migration outcomes in the absence of structural constraints. First, it is important to note that most families in the study area had lived there for decades and spoke fondly of the rural, agricultural lifestyle to which they were accustomed as well as their close-knit community. As such, many households would not have aspired to migrate in the absence of Belo Monte. For example, a 57-year-old cacao farmer who had lived in the area for 30 years stated, "I always thought I would stay in this place for the rest of my life. Not to say that things are not going to go well in another place, we hope so…but we always have doubts". In addition, an elderly man who had already migrated and was living in Altamira noted, "one day a man from Norte Energia came and asked me how much the land would be if I was to sell it, and I said that I wouldn't sell it for any amount of money. If it were my choice I would leave the land to my children so that they can raise their children like I raised them". These statements highlight the attachment that many families had to their land, community, and agricultural livelihoods, particularly older individuals who had lived in Vitória do Xingu for decades.

Remaining in their original homes was not an option for most families in the region, and therefore households were forced to construct migration aspirations centered on the qualities they would seek in their new property and community. Nearly all households aspired to remain in the region, moving to rural properties off of the Transamazon Highway in the municipalities of Altamira, Brasil Novo, Medicilândia, or Anapú. These areas lie within a few hundred kilometers of Vitória do Xingu and most contain land that is favorable to cacao production. Only one household in the sample aspired to move out of the region, to the northeastern state of Maranhão where the female household head had many family members.

A primary aspiration for most households was to find land that already contained cacao trees, because the strict deforestation laws enacted by Brazil's Environment Ministry would make it difficult for them to clear land to plant new trees and because cacao trees take four years to reach maturity. In addition, many families desired land suitable for cattle ranching, land close to the Transamazon highway in order to easily reach nearby cities, as well as land with a good quality house, electricity, access to rivers or streams, piped water, and schools nearby. Moreover, a number of families expressed the desire to move nearby to family members and friends in order to maintain a portion of their existing social networks.

Several families had not formed migration aspirations at the time of the interviews, stating that they did not know where they would move because they were waiting to receive compensation payments before beginning the planning process. Others were limited by a lack of knowledge of potential destinations. When asked if she knew where she would like to move, a female cacao farmer stated, "I have no idea because I only know Vitória do Xingu, where I have lived for my entire life". Her husband added, "I also don't know anything past Altamira. It's terrible to go looking for land without knowing how the neighbors are, without knowing the region." As such, families without extensive connections beyond Vitória do Xingu faced additional challenges to finding new land due to a lack of knowledge of their migration options.

Structural constraints

This section examines how structural factors constrain migrant agency within dam-induced forced migration. de Haas (2009) notes that "people's motivations to migrate can be expected to be higher when they face relatively high social, economic and/or political constraints in the places, regions, or countries where they live" (p. 3). In the case of Belo Monte, those with the most to potentially gain from displacement – landless sharecroppers – were precisely those

who were likely to face the greatest challenges in successfully finding and purchasing productive land. Sharecroppers were constrained by both low compensation amounts as well as the fact that they were compensated in credit that had to be used toward land with a legal title, which was scarce and expensive in the region. For example, a farmer who owned a small plot of land and also worked as a sharecropper on his father's land, chose to receive R$90,000 in compensation for his land instead of the R$132,000 credit he could have accepted for working as a sharecropper. He argued that even though the credit was R$40,000 more, it was difficult to find titled land for that amount, and cash compensation could be used in a more flexible manner.

Further, a man who lived with his wife and small child on the property of his father noted that he would like to move to Assurini because it was close to Altamira, had high quality land, and his parents already owned land there. Yet he did not expect to find titled land there that he could afford. He stated, "we went to INCRA [the government organization that manages land in the area] and discovered that there are 78 documented plots in Assurini, but there are many people looking to buy the land and because of that the value has gone up a lot. A piece of property without anything on it costs R$300,000". This indicates that demand for land made certain destinations prohibitively expensive, particularly for those who received credit payments.

As mentioned above, rising land prices had become an increasingly critical issue in restricting a household's ability to find suitable land. Prices for land and rent in the region rose rapidly after dam construction began as a result of growing demand. A cacao farmer and cattle rancher stated "at the start they paid everyone well, it was enough to buy land and survive. But today they are paying almost the same values, but land is more expensive. I've already looked a lot – in Brasil Novo, Setenta, Anapú. I can't buy land there because land that was R$250,000 is now R$800,000 or R$1 million". This issue, mentioned by many respondents, highlights the

concern that rising land prices may prevent them from purchasing agricultural land of equal or greater value than their current land.

An additional constraint – delays in receiving compensation payments as well as uncertainty as to when the payments would arrive – exacerbated the impact of rising land prices on farmers' ability to purchase high quality land. This discouraged many households from proactively looking for new land because of the inability to pay for new property before receiving compensation. For example, when asked whether her family had begun searching for land, a farmer who lived with her husband and four children said, "No…we only want to look when we have the money in our hands. There are many people who received their proposal and thought that the money would be deposited in their accounts immediately. They went and saw land and negotiated to pay after two or three months, but months passed and nothing". This issue forced many households to delay procuring land until after they received compensation payments. Rising land prices combined with payment delays may have led to the greatest challenges for households who received their payments last. Because many community members recognized this, farmers noted that they believed the relocation process would have been greatly improved if all households were compensated within a short time frame, early in the dam construction process. This would have increased the probability that households could access land before prices rose, and would have enabled households to leave the region before disruptive construction activities began.

Lastly, many respondents discussed a lack of power to negotiate with Norte Energia over receiving higher compensation amounts. A number of farmers stated that while their community association had four lawyers, Norte Energia had more than one hundred. They felt powerless against the corporation's large and well-funded legal team, which discouraged households from

attempting to negotiate for greater monetary compensation. A young farmer with two small children noted, "they don't negotiate with us…the lawyer told us that if we appealed the proposal, they would send it to another stricter company to evaluate and that they would lower the value, so we didn't do anything". In addition, a poor cacao farmer stated, "the man brought the proposal and I didn't accept it…he said we would have to go to court, and we can't, we're not able to. They have lawyers and we don't. So we accepted the value of R$108,000". Given that land prices had risen greatly between the period when assets were evaluated (mid-2011) and the period when most payments were remitted (mid-2012 to mid-2013), the ability for households to negotiate higher compensation would have eased financial constraints associated with purchasing new property.

Migration destinations

By the time of follow-up interviews in 2014, all 39 households had migrated from their original homes. Migration destinations included urban Altamira as well as rural properties in the regional municipalities of Altamira, Brasil Novo, Medicilândia, Anapú, Senador José Porfírio, and Vitória do Xingu (see Figure 2). In addition, one household migrated to a rural property in the northeastern state of Maranhão. All but two households used their compensation or credit to purchase rural agricultural land, and ten households purchased urban homes in addition to rural property. Thirty households received cash compensation, and eight households received the R$132,000 credit. One household, who received a credit payment but could not find land that met its expectations after two years of searching, was given the opportunity to be resettled within the original study area by Norte Energia. This option was provided late in the process, as Norte Energia determined that a small portion of land acquired from farmers would not actually be affected by the dam. This land was offered to a limited number of families who had not yet

succeeded in finding new property. The resettlement plot contained 75-hectares, 30,000 cacao trees, pasture, a house with electricity, and other amenities – a desirable option that would likely have been chosen by many households had it been available at the beginning of the process.

Capabilities

Despite the numerous constraints experienced during the process, most households succeeded in meeting their migration aspirations. Results from the baseline and follow-up interviews indicate that there are key economic, social, demographic, and temporal factors associated with attaining aspirations. Figure 3 presents a conceptual model of the factors that influence the structure/agency balance within development-induced forced migration, and therefore the extent to which households may exceed, meet, or fail to meet their aspirations. On a temporal scale, those who were able to move earlier in the process accessed land while prices remained low, while those who received compensation later faced additional challenges associated with land prices and availability. On an economic scale, wealthier landowners received higher compensation, which eased constraints associated with land prices, while those without land received credit that was both low in value and restricted in that it could only be used to purchase documented land. On a social scale, the key factor that mitigated both temporal and economic constraints was strong social and familial networks, which aided many households in achieving their aspirations. Lastly, on a demographic scale, older and sicker households were more vulnerable in terms of attaining aspirations and rebuilding agricultural livelihoods as compared to younger, healthier households. I will discuss each of these four factors in more detail below.

First, the timing of migration was an important component in the ability to attain aspirations, as the timeline for receiving payments ranged from early-2012 to early-2014. Many

interviewees suggested that Norte Energia compensated community leaders first in order to weaken community mobilization. For example, one respondent founded a local community association, which worked to mobilize community members affected by the dam. She received R$810,000 in compensation in January 2012, which enabled her to purchase triple the amount of land she had owned previously. Yet she was highly critical of the process and noted that even she experienced delays in receiving her payments. She stated that "even for us to receive the money it wasn't easy…we signed the proposal in December 2011, but although they said it would take 21 days, it took 40 days, because they didn't comply with the timeline. After going three times to complain about the delay they didn't resolve the issue, so I went to file a report at the *Ministério Público*[3]. The prosecutor asked me to officially file the report, and he determined that they should pay in five days, and on the fourth day they paid us". She noted that while she was able to fight for her payment because she knows her rights, many others did not understand the laws and therefore could not "play the game" with Norte Energia. Here we see the direct interaction between agency and structure, as exemplified by the experience of community leaders who were accustomed to interacting with the legal system and corporate entities.

Another example comes from a farmer who received R$1.1 million in compensation. He and his family moved in May 2012 to a large house on the Transamazon highway near Brasil Novo, and he noted that relocation greatly benefited his family socioeconomically. After migration he owned 300 head of cattle when he used to own 50, had two properties when he used to own one, and purchased a car, which he had never expected to afford. He attributed the ability

[3] Brazil's *Ministério Público* is an autonomous body of prosecutors at the federal and state levels whose purpose is to monitor compliance with laws that defend the national heritage as well as social and individual interests; regulate police activity; foster public criminal proceedings, and expedite the provision of public services (Governo do Brasil 2010).

to improve his livelihood to being compensated early, as land prices were still low when he purchased his new property. When asked why he thought that he was able to receive his payment early while so many others are still waiting, he stated that "many people are negligent, many signed the proposal before me, but I was at [Norte Energia] every week, and the others forgot to do that. If you don't go there they are going to give priority to other things…if you don't put pressure on them it takes a long time". The above statements highlight the persistence needed to pressure Norte Energia to remit payments quickly. This enabled these households to purchase new homes while land remained inexpensive. Yet many households did not have the time or money to travel from their farms to Altamira repeatedly, nor the power and knowledge to consult with the employees of Norte Energia over the details of their compensation schedule.

Second, pre-migration wealth, which translated into higher compensation payments due to more valuable assets on the original property, also impacted the ability to attain aspirations. High compensation amounts (above R$400,000) provided households with flexibility when searching for new properties. In contrast, low compensation amounts limited some families from attaining aspirations. For example, a household that received R$150,000 in compensation as well as a credit for one of their sons was not able to attain their aspiration of remaining close to Vitória do Xingu. The female household head stated, "I wanted to buy [there] because…I was born and raised in that municipality. I never thought I'd come here, so far away…my relatives live there, mother, father, everyone…but because we received little we had to go farther because land closer was expensive". They purchased a property in Medicilândia for R$155,000 (using their son's credit as well as a portion of their compensation payment), yet the property was located far from their family and children, far from a school and health post, had no running water, and had no house on the land when they purchased it. At the time of follow-up data

collection, the six household members had been living in an open-air wooden structure for over a year while constructing a new home with money earned from selling their four cows.

Third, strong family and social networks proved essential in countering the constraints associated with timing and low compensation amounts, even among the poorest households. In a number of cases, households succeeded in coordinating their property search with other households facing displacement in order to purchase land nearby one another. In addition, a number of households were able to move nearby to family members who already lived in a particular community. For example, one family who received R$137,000 was able to move to the same road as four of the household head's brothers. The brothers had already moved to the area, and when an inexpensive property became available that met the household's aspirations (cacao trees, ample water sources, and a nearby school) they informed their brother who was then able to purchase it. Another household moved to a community in Anapú where the female head's father had already lived for 13 years. He helped his daughter and her family find land, and in turn, the family helped other households from their old community locate property on the same road. She stated, "I already knew this area and [my friend] didn't. So we said to him 'want to buy good land? Go there to [the road we are moving to] where there is a lot of land that people want to sell. There is the type of land you like, with cacao and space for livestock', so he went and bought. And then a friend of his went afterward and bought too".

Further, many credit-receiving households joined together with other households to collectively purchase a property that they would not have been able to afford on their own. There were few documented properties available that could be bought with the R$132,000 credit, so joining with another household to buy one property for R$200,000 or R$250,000 and then subsequently dividing it eased financial constraints on poorer households. In addition, there were

several cases in which family members provided monetary assistance to households who received credit in order to help them purchase and invest in their land. One respondent joined his credit with that of his brother to purchase a property in Vitória do Xingu, though this did not leave him with additional money to invest in the property. His father then gave him R$200,000 from his own compensation, which enabled the respondent to construct a house, purchase cattle for the property, and purchase a small home in Altamira. These cases indicate that networks were essential in easing financial constraints among households who had not owned land in the original community.

Lastly, demographic factors such as age and health were also important determinants of the ability to attain migration aspirations. Moving to a new agricultural property often required labor intensive investments – building or renovating a house, clearing land for pasture, constructing fences and corrals, or restoring abandoned cacao plantations. While young, healthy households could easily undertake these tasks, elderly or unhealthy individuals faced challenges in reestablishing livelihoods. For example, one middle-aged couple was able to attain their aspiration of finding land in Vitória do Xingu, but struggled to prepare their new land for cacao and cattle production. The female household head stated, "my husband is very sick…[in our old home] we had every little thing to sustain our family…everything was done and here it isn't. Here he has to do it all and he is sick. He is in bad shape, with ten herniated disks and osteoarthritis". In addition, a 60-year-old former sharecropper with health problems was removed from his home near the dam site before receiving his credit payment. Though he aspired to purchase rural property and farm cacao, he borrowed money from a friend to purchase a small home in Altamira while he searched for land. After discovering that he could only afford property very far from Altamira, he decided to remain in the urban house he purchased, using the

credit to repay his friend. He stated, "I am not satisfied, because there I had a tranquil, healthy life and here I live in worry…my income here is too small, I don't have a job…I am just living life with courage alone". Thus, poor health and old age constrained some of the households from their aspiration of reestablishing pre-migration livelihoods in their new homes.

Conclusions

In Brazil, as well as many other low- and middle-income countries, economic development and environmental change act as key drivers of forced migration. It is therefore crucial to understand its underlying social processes. Past research on forced migration has tended to overlook the role of agency, instead concentrating on the structural forces that drive migrants from their origin communities (Bakewell 2010; Castles 2003; Lubkemann 2004). The displacement of rural farmers associated with the Belo Monte Dam serves as an ideal case through which to examine the roles of both structure and agency in the forced migration process. This analysis demonstrates that agency is a key component of development-induced forced migration, as migrants mobilized knowledge, resources, and social networks to navigate the substantial constraints that characterize displacement.

Utilizing the migration aspirations versus capabilities framework (Carling 2002; de Haas 2009, 2010), this paper focuses on the migration objectives of those affected, aspects of the compensation process that may have hindered the ability to achieve these objectives, and their ultimate migration capabilities. Baseline interview data demonstrated that the majority of community members aspired to move to farmland within the region that contained existing cacao plantations and/or cattle pasture. Nearly all families sought to move to another rural property as opposed to the city in order to maintain their agricultural livelihoods, and many aspired to find

property with a well-constructed house, access to electricity and paved roads, and located nearby to schools. In addition, many families sought to procure property nearby family or friends.

Recognizing the role of structural constraints in shaping forced migration outcomes is an important component of the migration aspirations/capabilities framework. In the case of Belo Monte, a number of characteristics of the compensation process constrained households, including the requirement that those who received credit purchase legally titled land, rapidly rising land prices in the region, long delays in receiving proposals and compensation payments as well as uncertainties as to when they would arrive, and the lack of power to negotiate with Norte Energia over compensation prices. Despite facing these constraints, most households were able to attain migration aspirations. A key factor is that households were able to capitalize on family and community networks for social and financial support during the process of procuring new land. Many households relied on their social networks to aid them in finding suitable properties, to purchase land they would not have been able to afford on their own, and to recreate communities. Another factor was the fact that compensation amounts often proved sufficient to purchase land in the region. In addition, poor, elderly, or sick households faced greater challenges in meeting their aspirations and rebuilding their sources of income than those who were relatively wealthy, young, and/or in good health.

This study indicates that findings from research on voluntary economic migration – namely that social networks play a critical role in the process (Deléchat 2001; Lindstrom and Lauster 2001; Massey 1986; Massey 1990; Massey and García España 1987; Winters et al. 2001) and that demographic and human capital factors are key (Taylor and Martin 2001; Todaro 1980) – are applicable within forced migration as well. In addition, it contributes to migration theory by revealing the multidimensional relationship between structure, agency, aspirations, and

capabilities. In both voluntary and forced migration, potential migrants face an array of political, economic, social, demographic, and environmental conditions which interact to structure their migration objectives, experiences during the course of migration, and eventual outcomes. Examining migration longitudinally and qualitatively provides a lens into how structure and agency interact during all stages of the process. This is a key step in better understanding the sociology of migration, as it can help shed light on the experiences of all types of migrants – from those moving internationally to access better employment opportunities to those who move internally in order to adapt to degrading environmental conditions.

Further, these results provide empirical evidence in support of Castles' (2003) argument that forced migration should be conceptualized as a process in which actors exhibit choice and utilize social networks. Contrary to some expectations, vulnerable populations should not be viewed as lacking agency, as they can often be quite effective at navigating complex structural constraints given the right opportunities. Identifying factors that enable displaced households to achieve migration aspirations as well as those that prevent them from doing so can help to inform and improve relocation policy and resettlement programs for future dams, other infrastructure projects, as well as resettlement due to sea-level rise. A relocation process that effectively enhances migration capabilities will ensure that forced migration results in the improvement of livelihoods rather than in the declines of socioeconomic and psychological well-being. This analysis demonstrates that many rural households displaced due the Belo Monte Dam – even the most economically vulnerable – were buffered from livelihood decline through strong social and family networks. In fact, social capital proved a more critical resource for poorer households who faced greater financial constraints. This is a promising finding and suggests that the design of future resettlement policies associated with development projects or environmental change

should target poorer, older, and less healthy households as well as those with limited support networks for assistance during the migration process.

Lastly, it is important to note that the relative roles of structure and agency vary greatly between different populations facing forced migration. The Brazilian Amazon serves as a unique case, as much of its current population migrated to the region through the government's Amazon settlement scheme in the 1970's and 1980's, which led to sizable rural population growth as well as the development of urban areas (Alonso and Castro 2005; Browder and Godfrey 1997; Moran 1990; Perz 2002). As a result, many households in the study area had prior migration experience as well as social networks that extended to other rural areas as well as to the city of Altamira. Indeed, this history of recent migration has shaped migration dynamics in Altamira more generally, as social networks were found to play a more important role in Altamira than in the nearby city of Santarém, which has an older settlement history (Randell and VanWey 2014). In the case of Belo Monte, this extensive web of local networks enabled members of the population to utilize a high degree of agency in order to meet their aspirations. A population with a more embedded history in a particular location, and thus fewer connections in potential destinations, may not have the social capital to achieve this. In cases such as this, a more planned resettlement program in which the population is settled collectively in a new location may achieve better outcomes. Thus, during the planning phase for future situations of forced migration, it is key to assess factors that enhance agency among the population (e.g. social capital and economic resources) as well as potential structural constraints (e.g. poverty, lack of migration experience, or the shortage of available land) in order to design a resettlement program that is effective in fostering migration capabilities and improving livelihoods.

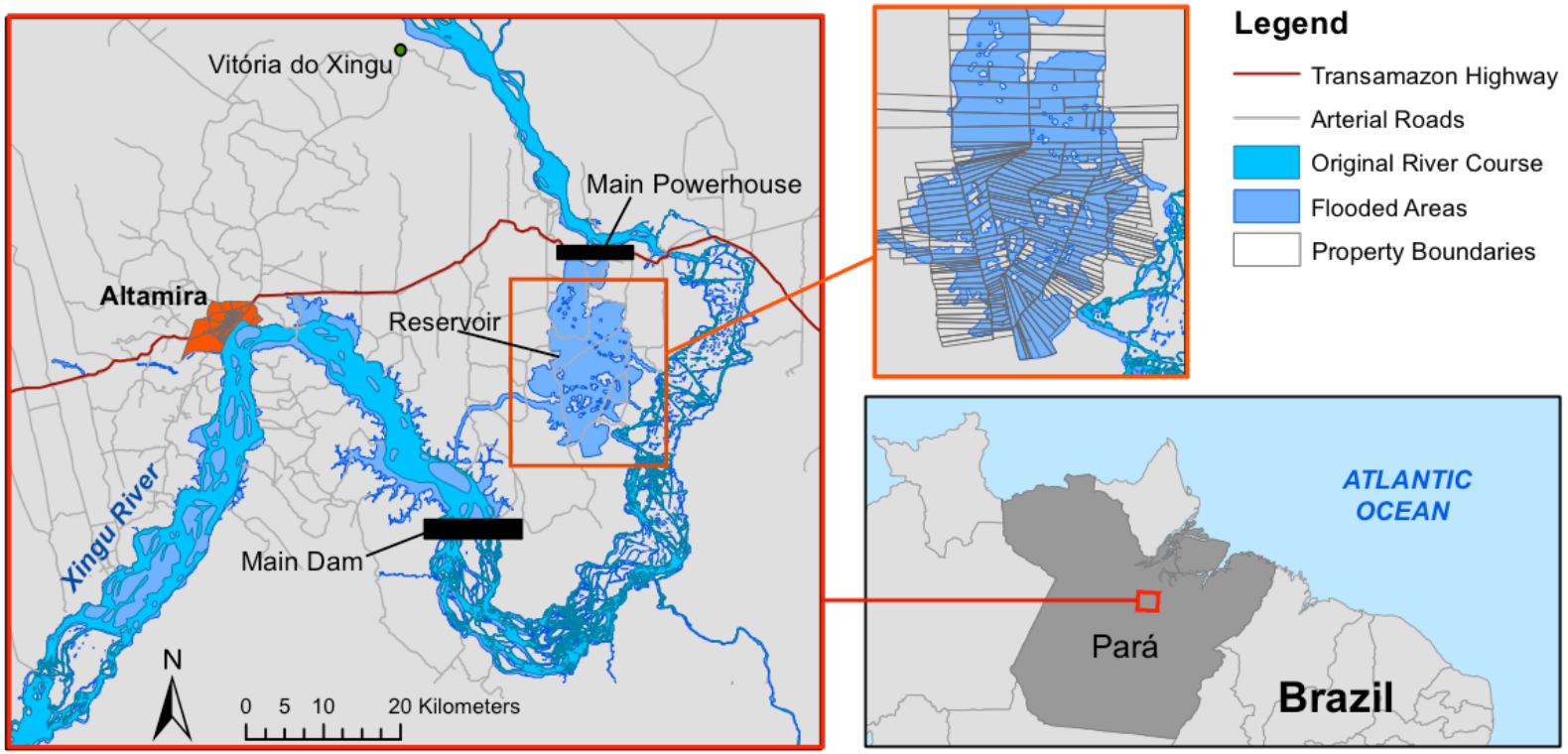

Figure 1. Map of study area including property boundaries and area to be flooded

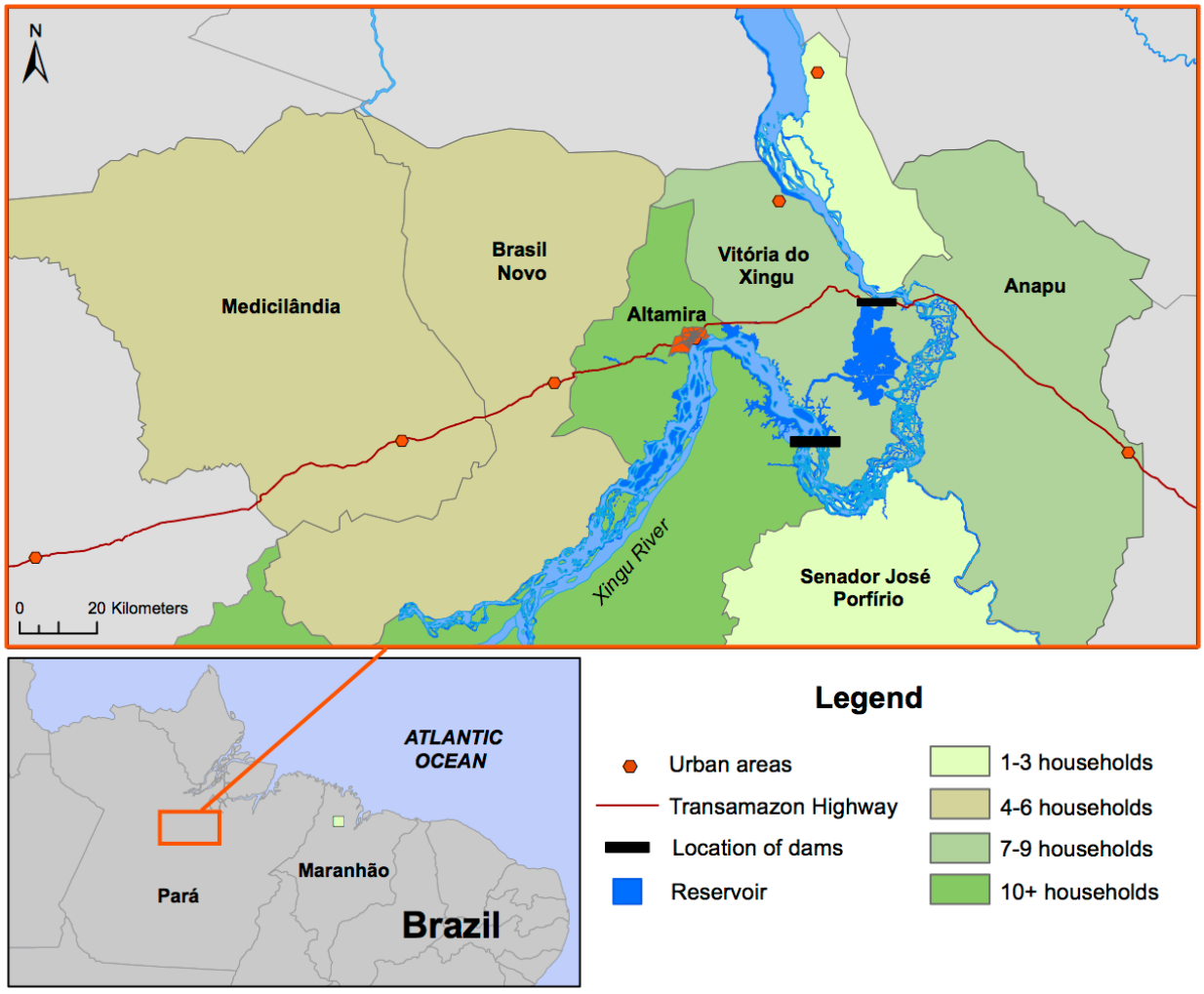

Figure 2. Migration destinations

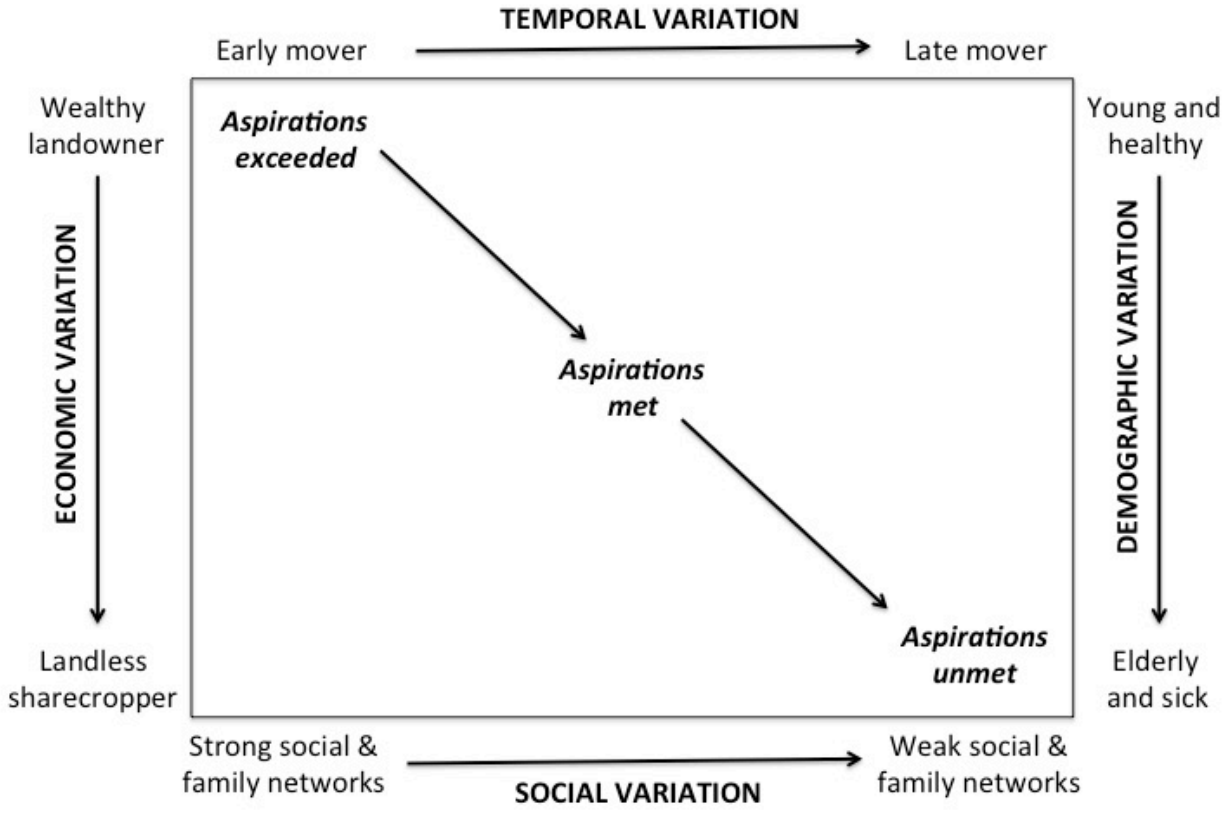

Figure 3. Conceptual model of factors associated with attaining forced migration aspirations

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