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Incur Debt to Adapt

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Endeudarse para adaptarse. El papel de las redes de relaciones en la construcción de la resiliencia frente a los riesgos medioambientales de las montañas del norte de Vietnam

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ABSTRACT

Drawing on an ethnographic study of housing adaptations following a historic flood in Vietnam's northern uplands, this paper examines the role of social networks in resilience. Numerous studies limit the analysis to formal groups and neglect the exploration of the web of personal relationships. Furthermore, the comparative role of social networks relative to, but also in combination with, other channels of resource circulation is seldom investigated. This paper documents and compares the various channels through which resources flow, examines their interactions, and characterizes the patterns of circulation. While state and market resources are crucial, they alone are insufficient. Social networks and indebtedness emerge as pivotal components of resilience to environmental hazards. However, they do not ensure long-term recovery for all individuals, as they may lead to over-indebtedness and dependency. Moreover, the uneven distribution of social capital contributes to disparities in adaptive capacity.

KEYWORDS

flood, social network, social capital, resilience, Vietnam

S'endetter pour s'adapter. Le rôle des réseaux de relation dans la résilience aux aléas environnementaux dans les montagnes du Nord du Viêt Nam

RÉSUMÉ

À partir d'une étude ethnographique des adaptations de l'habitat suite à une inondation historique dans les zones montagneuses du Nord du Viêt Nam, cet article explore le rôle des réseaux de relations dans la résilience. De nombreuses études limitent l'analyse aux groupes formels et négligent l'exploration fine des relations interpersonnelles. En outre, le rôle comparatif des réseaux sociaux par rapport à d'autres canaux de circulation des ressources est rarement étudié. Cet article documente les différents canaux par lesquels les ressources circulent, examine leurs interactions et caractérise les modalités de circulation. Si les ressources de l'État et du marché sont cruciales, elles sont insuffisantes. Les réseaux sociaux et l'endettement apparaissent comme des éléments essentiels pour absorber et se remettre d'un choc environnemental. Cependant, ils ne garantissent pas un rétablissement à long terme pour tous les foyers, car ils peuvent conduire au surendettement et à la dépendance. Enfin, la distribution inégale du capital social renforce les disparités dans la capacité d'adaptation.

MOTS-CLÉS

inondation, réseau social, capital social, résilience, Viêt Nam

Endeudarse para adaptarse. El papel de las redes de relaciones en la construcción de la resiliencia frente a los riesgos medioambientales de las montañas del norte de Vietnam

RESUMEN

A partir de un estudio etnográfico sobre las adaptaciones de las viviendas tras una inundación histórica en las zonas montañosas del norte de Vietnam, este artículo explora el papel de las redes de relaciones en la resiliencia de los hogares. Muchos estudios se limitan a el análisis de grupos formales y descuidan la exploración detallada de las relaciones interpersonales. Además, rara vez se estudia el papel comparativo de las redes sociales en relación con otros canales de circulación de recursos. Este artículo documenta los distintos canales por los que circulan los recursos, examina sus interacciones y caracteriza las modalidades de circulación. Esta investigación muestra que si bien los recursos estatales y de mercado son cruciales, estos resultan insuficientes. Así, las redes sociales y el endeudamiento aparecen como elementos esenciales para absorber y recuperarse de un impacto medioambiental. Sin embargo, estas no garantizan la recuperación a largo plazo de todos los hogares, ya que pueden conducir al sobreendeudamiento y la dependencia. Igualmente, la distribución desigual del capital social refuerza las disparidades en la capacidad de adaptación.

PALABRAS CLAVE

Inundación, red social, capital social, resiliencia, Vietnam

Introduction

The mountainous regions of northern Vietnam regularly experience environmental hazards that significantly affect people's livelihoods. It is not uncommon for storms to destroy rice crops in fields or carry away the roofs of houses. In periods of extreme cold, buffaloes left to graze on the hillsides can perish, just like the precious cardamom trees in the deep forests. Droughts also prevent irrigation of fields, while "blinding icy mists" (*sương mù*) wreak havoc on gardens and young rice seedlings in nurseries. The Law on Prevention and Control of Natural Disasters distinguishes nineteen types of natural hazards in Vietnam. Among these, floods and landslides are among the three most destructive threats. In terms of number of people exposed to floods, Vietnam ranks as the fourth most vulnerable country in the world (McElwee, 2017). Floods are already the most widespread natural hazard on the planet. However, with climate change, they are tending to intensify and spread to new regions, particularly in Southeast Asia (Cruz *et al.*, 2007). These predictions seem to be confirmed in the mountainous regions of northern Vietnam (Schad *et al.*, 2012; Pham *et al.*, 2019) which experienced 590 flash floods and 946 landslides between 2001 and 2019 (MARD, 2020).

In Nghia Lai commune[1], located in the northwest upland of Vietnam, floods and landslides have been occurring regularly for a long time, but they do not cause significant damage. However, in the early morning of 22 October 2018, the commune suffered an exceptional flash flood in terms of intensity and damage. Unlike the usual episodes, after a few days of continuous rain, the water rose very quickly, reaching unprecedented levels with a powerful current carrying debris that washed away houses, rice fields, roads, and bridges. According to the memories of the elders, they had never encountered such a severe flood before. As a result, the villagers labeled this event as the "historic flood" (*lũ lịch sử*).

Since 2019, we have conducted a series of ethnographic investigations in this commune to study how the local community responds to extreme climate hazards. The objective of our study, which is part of a larger research program on the impact of climate change in Vietnam,[2] was to document

1. To respect anonymity, all names (people, locations) have been changed.
2. "GEMMES Vietnam- Analysis of socio-economic impacts of climate change and adaptation strategies" funded by French Development Agency (AFD). https://www.afd.fr/en/

the community's ability to cope with climate shocks and the strategies they have adopted for adaptation. In a perspective that seeks to break away from the "catastrophe trope" our approach involves immersing ourselves in the daily lives of the inhabitants to closely observe the multiple recompositions at work on the ground (Langumier & Revet, 2011).

Using an economic anthropology approach, our study addresses the various material and immaterial resources that the local population mobilized to cope with the "historical flood" and recover their livelihoods. This analysis enables us to compare the respective importance of local social networks, state support, charitable donations, and the market in building resilience. We apply this resources-oriented analysis specifically to the case of post-flood changes in housing. Ultimately, our objective is to understand what role social networks play in local resilience compared to and in combination with other channels through which resources flow for restoration. Considering the social network as a channel that provides resources (Bourdieu, 1980; Lin, 1995), we address the literature on the effects of social capital on adaptation (Rockenbauch & Sakdapolrak, 2017). Numerous studies on this subject tend to restrict social capital to formal groups and collective action (Pelling & High, 2005), neglecting the exploration of the web of personal relationships and everyday exchanges (Baird & Gray, 2014; Cleaver, 2005). In contrast to these approaches, we document in detail the flow of resources, the pattern of their circulation, and the nature of the ties involved in order to comprehend their concrete role in household's resilience.

After providing an overview of the conceptual approach and survey methods in the first section, the second section aims to investigate which resources have been utilized from which channels to facilitate house adaptation. Following this, the third section presents three case studies that will be used in the final section to scrutinize the role of social capital in enhancing resilience and adaptive capacity. In the conclusion, we discuss how understanding resilience through a social capital lens allows linking environmental and socioeconomic vulnerabilities.

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1. An Ethnography of Resource Flow

1.1. Ethnographic Fieldwork

Between 2019 and 2023, we conducted ethnographic fieldwork in Nghia Lai commune (Lao Cai province), where the historic flood occurred. This commune, located in northwest Vietnam, comprises 16 villages nestled in a valley surrounded by mountains. In 2018, during the historic flood, there were 5,476 inhabitants, distributed in 1,204 households on a total surface area of 3,854 ha.[3] Among the five ethnic groups that populate the commune, 97% are registered as Tày people.[4] Villagers combine small-scale semi-subsistence farming with specialized cash crops and off-farm activities. Inhabitants cultivate wet-rice fields on 503.9 ha (2 seasons/year) with an average yield of 5.5 t/ha. During the winter crop, vegetables, corn, beans, cassava, etc. are cultivated on 132 ha. On the mountainsides, some lands are cleared to produce corn (133 ha), while other forestry lands are dedicated to tree production (cinnamon, acacia, bamboo, palm, styrax). According to the 2018 communal reports, between 2016 and 2018, the average annual income per capita was $1050.[5] After the historical flood, ten additional households were added to the list of poor households, raising the commune's poverty rate to 13.9% (158 households).[6]

The research team consisted of two anthropologists, a Vietnamese woman, and a French man. While the local language is Tày, all the interviews and informal discussions were conducted in Vietnamese, which the villagers commonly and fluently speak. Through a socio-anthropological perspective that grants a central place for micro-localized in-depth investigation, we studied the material impact of the flood, the ways in which local people experienced it, and the responses and coping strategies they subsequently adopted. The data collection combined immersion in local life, including agricultural activities, ceremonies, official meetings, and festivities. We

3. In this section, all the figures come from the commune's socioeconomic situation report in 2019 and the commune's report on "New Countryside Program" and poverty reduction achievements for 2018.
4. Officially, Vietnam includes 54 ethnic groups. The Kinh or Viet are the majority group and the Tày are the second largest.
5. 1$ = 24,700 VND.
6. Households with a monthly per capita income of less than $28 are classified as poor.

also relied on direct observation of practices, local written sources, informal conversations and semi-structured interviews. Additionally, we conducted a census on 42 households affected by the flood, focusing on damages, the resources used for reconstruction, and changes in housing and cropping systems. From 2019 to 2023, we made 10 field trips and conducted over 200 interviews, including 72 formal interviews, with villagers, village leaders, and local authorities. Before conducting the current field research, we carried out anthropological research in this commune from 2008 to 2012 to study the dynamics of social change at the local level (Pannier 2016; Pannier & Culas, 2016). Therefore, our current study benefits from a thorough and long-term relationship with the population.

1.2. Network of Social Relations, Social Capital and Resilience

This paper focuses on the role of social networks and associated resources in building resilience and adaptive capacity to extreme weather hazards.[7] It specifically examines the resilience of inhabitants, rather than the resilience of socio-ecological systems (Labeyrie *et al.*, 2024). Thus, we use the term "resilience" in a descriptive manner, referring to the capacity to bear, absorb and recover from a shock (Oliver-Smith, 2017) without prejudging a possible return to a state of equilibrium prior to the disturbance. We see adaptive capacity as closely connected to resilience, as the ability to adapt to an unpredictable climate event determines the ability to absorb a shock and vice versa (Adger *et al.*, 2005). The term "social network" refers to the web of personal relationships in which individuals and households are embedded (Forsé, 2008). There are three main reasons why it is important to consider adaptation through the lens of social network.

Firstly, the literature on the subject indicates that social networks decisively shape adaptive capacities (Adger, 2003; Crate, 2011; Rockenbauch & Sakdapolrak 2017, Roncoli *et al.*, 2009). It is argued that "the diversity of interpersonal ties that constitute social life is a fundamental resource that can facilitate individual and collective change when faced by climate change or other external pressures" (Pelling & High, 2005: 314). However, while networks, collective action, reciprocity, cooperativeness, trust, and

7. About the conceptual uses and limitations of the terms "resilience" and "adaptation", see Buchheit *et al.* (2016); Felli (2014); Oliver-Smith (2017).

solidarity are perceived as resources in themselves (Aldrich & Meyer, 2014; Phan *et al.*, 2019), few studies document in detail the concrete and various resources (goods, money, services, information, affection, know-how, etc.) that flow within these networks, the forms of circulation (exchange, gift, credit, advance, service, subsidy, compensation, etc.), and the social relationships that are involved (Baird & Gray, 2014; Schlecker, 2013). As Cleaver (2015: 894) states in the wake of Bourdieu, "it is not only enough to simply establish the presence of a network or social institution but it is also necessary to examine its contents and practices". This article adopts this perspective.

Secondly, in the case of Vietnam, it has been established that personal networks of relationships are crucial resources that facilitate the (re)production of society at the local level (Pannier, 2018). However, although their socioeconomic roles have been extensively studied (Luong, 2016; Pannier, 2015), their role in the environmental domain, particularly in relation to adaptations to climate hazards, is still an understudied topic in Vietnam. The existing studies mainly focus on the delta regions of the Red River or the Mekong (Adger, 2003; Ngo, 2022; Ha *et al.*, 2014; Tran, 2020; Phan *et al.*, 2019; Tran & Rodela, 2019), neglecting the more remote mountainous areas inhabited by ethnic groups also exposed to extreme weather hazards and vulnerable to their impacts (Beckman & Nguyen, 2015; Delisle & Turner, 2016).

Thirdly, although the significance of social networks in adapting to environmental risks is frequently highlighted, few studies demonstrate the interconnections between these interpersonal networks and other resource circulation regimes, such as the state and the market (Son & Kingsbury, 2020; Nelson *et al.*, 2009). This lack of understanding hinders the measurement of the specific impact of interpersonal networks in comparison to other resource channels. Therefore, our study examines all the resource channels mobilized for recovery after a shock and subsequently measures the proportion of resources derived from social networks and analyses their interactions with other circulation regimes.

Rockenbauch and Sakdapolrak (2017) identified three strands of research linking networks and resilience: (i) the role of networks in natural resource management and governance; (ii) the role of networks in agricultural innovation; and (iii) the role of networks in providing social support to cope

with environmental shocks. Our study is situated within the third trend. We thus employ the "social capital" approach in the context of climate change adaptation (Adger, 2003; Pelling & High, 2005). We define "social capital" at the intersection of Putnam's (2005) and Bourdieu's (1980) definitions. This combination allows us to consider both the general rules of exchange (norms, obligations, reciprocity, trustworthiness, etc.) that regulate social relationships, as proposed by Putnam, and the specific actual and potential resources that flow within more or less institutionalized personal relationships networks, as suggested by Bourdieu.

Among the three components of social capital, including the formation of social capital, the operation of social capital, and the utility of social capital (Pelling & High, 2005), we mainly deal with the second and the third ones. The dynamics of social capital over time are not addressed here. In addition, rather than using metaphorical or structural approaches to social networks, we have opted for a descriptive perspective (Bodin *et al.*, 2011). We seek to characterize social network features by considering the type and nature of relationships, the flow of resources, the rules of circulation, and the spatial extension. Regarding terminology, we qualify the channels through which resources flow as "regime of circulation" or "resources channel". We use the term "modes of circulation" to refer to the concrete way resources are transferred (gift, market exchange, subsidy, credit, compensation, etc.).

2. The Flow of Resources to Facilitate House Adaptation

According to report on the commune's socioeconomic situation in 2018, this historic flood has affected 704 households, damaged 222 houses, and destroyed shops, roads, bridges, sections of the irrigation, electric and supply water systems, as well as gardens (20 ha), rice fields (61 ha), crops on the hillsides (88 ha), and fishponds (14 ha). The economic damages have been estimated at $4 million. No one in the commune lost their lives, but the bodies of two individuals from a neighboring province were found near one of the destroyed bridges.

A range of actions were implemented after that disaster to restore and adapt, including clearing and cleaning the affected area, building an embankment, developing off-farm activities, migration, changing the cropping system, and renovating or relocating houses (Pannier & Phan, 2023). While taking into consideration all these responses, this paper focuses on adaptation related to housing.

In the commune, according to official data, among the 222 impacted houses, 59 have been destroyed or strongly damaged. Among them, 12 houses have been swept away, and 37 have been destroyed from 30% to 70% (see table 1).

Table 1: Housing Damage Census

Damages	Number of houses	%
Swept house	12	5,4
From 50-70%	15	6,8
From 30-50%	22	9,9
Less than 30%	64	28,8
Only flooded	100	45
Damaged house that need emergency move	9	4,1
Total	222	100

Source: Commune's People's Committee synthesis report of the damage caused by natural disaster on October 22, 2018 in the commune.

We have conducted a specific survey on 42 households, including all households whose houses have been swept away or deeply damaged (between 30% and 70%). Two strategies to reduce house exposure to floods have been implemented: moving the house to a safer area or enhancing the house. Among the 42 surveyed households, five households didn't change their houses because they do not have the resources to do so. Twenty-two households decided to move their homes, and 15 households have enhanced their houses in the same location. Enhancing the house involves raising the foundation and/or replacing a wooden house with a concrete house (fig. 1). Some households have also built an elevated storage area inside their house to protect important assets.

Fig. 1: Enhancing Houses to Face Flood

Source: Authors

We conducted in-depth surveys with all households that modified (moved or enhanced) their homes following the flood, specifically to assess the resources they mobilized. Our method consists of identifying and quantifying all the resources used (including immaterial ones such as mutual aid), characterizing their circulation patterns (regime and modes of circulation), and then comparing the proportion of resources provided by each resources channel.

Five main sources have been identified: (1) charitable donations, ranging from $20 to $324 million; (2) State support, ranging from $161 to $1,619 per household; (3) bank loans ranging from $2,024 to $4,048; (4) funds from the market; and (5) resources from interpersonal relationship networks. Before elaborating on how these various resource channels have been concretely used by households for their housing adaptation strategies, we need to provide insights about two of them.

Support from charitable donation (*từ thiện*) is a common practice in Vietnam when disasters occur. Public figures, private companies, executives from various administrative and political bodies participate in and personally visit the locations to make these donations. This is how the commune of Nghia Lai witnessed a substantial influx of "donor groups" (*đoàn từ thiện*). Some

directly delivered them to the affected residents, while others contributed to the commune's fund, which was subsequently allocated to the villagers. The distributed goods encompassed everyday consumer items (such as instant noodles, rice, clothing, mosquito nets, tableware, etc.) as well as monetary contributions. According to the head of the "charity group reception committee" (*ban tiếp đón đoàn từ thiện*), a sum of $53,247 was distributed in cash and consumer goods, including 2 tons of paddy and a donation of $4,453 to the commune's official fund. Tensions quickly arose over the distribution of resources and the role of local authorities in managing the funds. Many villagers complained about an unequal distribution of donations, and rumors circulated about the commune authorities misappropriating part of the funds. The authorities interviewed explained that the confusion arose from the difficulty of managing the various donor groups and ensuring a fair distribution, as each group contributed different resources at different moments.

In addition to the private support that only helped fulfill basic needs after the disaster, a wide range of resources have been provided by the State based on the degree of damage. When the damage is assessed between 30% and 50% (22 households), the household receives $160. For damages between 50% and 70% (15 households), they receive $283. If the house has been completely swept away, $809 is paid by the Fatherland front[8] at Province level. Only those who have a land title for their damaged homes are eligible for this assistance, which was not the case for all affected households. As part of the risk reduction policy, a subsidy of $809 is also given to those who, located in an exposed area recognized as such by the authorities, move their houses according to the recommendations of the commune authorities. These subsidies are provided by the district people's committee and are given after the work has been completed and validated by the authorities. Finally, the Red Cross Association distributed between $80 and $283 to the affected households immediately after the disaster and then again on the occasion of the lunar new year. Households whose houses have been completely washed away (12 cases) are also eligible for a loan of $4,048 from the Vietnam Bank

8. It is an umbrella group of mass organizations aligned with the Communist Party of Vietnam. It is in charge of building up a "whole-people unity bloc" and implementing the Party's guidelines and policies, in particular social programs (https://vietnam.gov.vn/political-system-68959).

for Social Policy (VBSP) with an interest rate of 0.65% per month, repayable over 10 years. The following table present how these supports have been allocated:

Table 2: State Support Distribution

Provider	Kind of transfer	Reason	Amount ($)	Number of households	%
Red Cross Association	Grant	Post-disaster support	80 to 283	37	51.4
District people's committee	Subsidy	Relocate houses into non-exposed area	809	11	15.3
Province Fatherland front	Subsidy	House washed away	809	12	16.7
Vietnam Bank for Social Policy	Loan	House washed away	4,048	12	16.7
Total	-	-	-	72	100

Source: Authors, based on interviews and official data of the commune.

The amounts allocated by the state only cover a small portion of the costs required to repair or relocate houses, even at the highest subsidy rates. The cost of reconstructing a house can range from $4,050 to $32,380, depending on the type of house (houses on stilts, wooden houses, or concrete houses), the size of the house, the materials used, the number of workers employed. In other words, the state support covers between around 2.5% and 40% of the total amount[9]. While resources from the state are necessary and beneficial, they are not sufficient. Therefore, the household must find other resources from other channels.

3. Case Studies: The Indebted, the Connected and the Dependent

We will examine three cases that illustrate how households utilize different resource channels. These cases were selected because they encompass a wide variety of socioeconomic profiles and reflect the three main trends observed among households that have made changes to their housing: (1)

9. This calculation is an approximation based on the ratio of the maximum amount of state aid relative to the least expensive houses and the ratio of the minimum amount of aid relative to the most expensive houses.

those whose houses were washed away and are now rebuilding in a safe location; (2) those whose houses were destroyed and are rebuilding in the same spot; and (3) those whose houses were damaged but not washed away and/or are situated in a high-risk area, and have either relocated following government recommendations or voluntarily due to feeling unsafe.

3.1. Case 1: To Recover through Indebtedness and Market

At the time of the flood in October 2018, Mrs. Trang and her husband, born in 1986 and 1984, respectively, lived with their two children in a stilted house along the riverbank in the village. They settled on the family land next to the house of the two older brothers. When Mrs. Trang was worried about the water rising to the floor of the stilted house, the husband replied that he had lived on that land since he was a child and that there was no major risk. While the husband was busy sheltering the buffaloes, she went to take refuge with her children in a safer neighbors' house, and then their house was suddenly swept away, as well as the elder brother's house.

They lost everything, their personal belongings, their rice stock, chickens, ducks, and their personal savings. After the flood, they borrowed a piece of land from a neighbor where they built a temporary hut. They then rebuilt their house on a hilltop plot owned by the family. The three brothers have moved out in the same space. Two of them, including Mrs. Trang's household, built a concrete house on the ground, while the older brother moved into a stilt house. Although they are now protected from flooding, they are exposed to winds and severe storms. Mrs. Trang, who is unhappy with the new enclosed location, also confided in us that there are tombs right next door, which does not reassure her either. However, they have no choice. It is the only available safe land they can access.

To build their house, they bought building materials and hired an excavator ($186), both on credit. Mrs. Trang told us that they could not afford to hire laborers to build their house, so they built everything themselves (the husband has experience as a builder), except for a few tasks. They rented two specialized workers for $12/day and one assistant worker for a week to help with the roof. The total cost, including materials and labor, was $1,215. They mobilized the labor exchange system to get free labor for the foundation

and pillar construction. The total cost for the 90 m^2 house (on one floor) was around $4,048, instead of $12,145 if they had to hire workers for all the tasks. In addition to the house, they had expenses to restore their flooded rice fields (1,080 m^2), which cost $303 for the rental of a backhoe loader, also paid on credit from a neighbor.

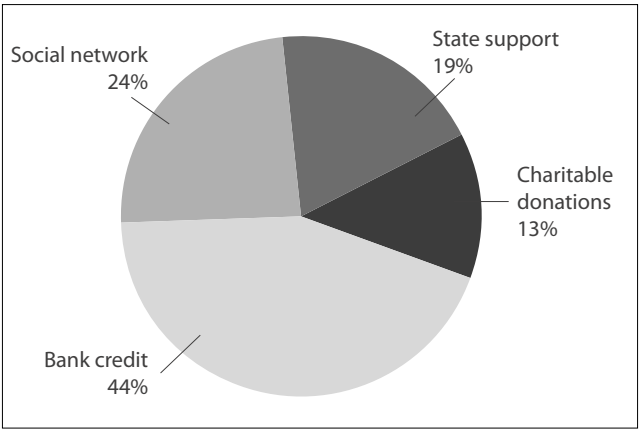
Fig. 2: Mrs Trang's new home

Source: Authors

To finance the resettlement, they received state support, but they also had to go into debt. They received $809 from the Province Fatherland front to compensate for their swept house, $809 as a subsidy from the district to relocate their home to a safe place, $80 from the Red Cross Association, and $80 from the commune as support. They also received a total of $1,214, clothing, and 20 kg of rice from charitable donations. In addition, they borrowed $4,048 from the VBSP as part of preferential rate loans for poor households whose house was taken away. Regarding social networks, in addition to the aforementioned credit purchases ($186), they also borrowed money from relatives without interest fees. The wife's mother lent them

money to restore the house.[10] They still could not pay back when we conducted our last interview in 2021. This debt is likely to become a gift. In addition, they borrowed $161 from neighbors to afford daily basic expenses. Unlike borrowing from close family, the social obligation to repay this debt within a short time is stronger. They also received gifts from relatives, especially from the wife's family from Phu Tho, when they organized the new house inauguration ceremony. Sixteen relatives came, each of them gave around $6 and $8. The following figure is an attempt to evaluate the share of each channel through which support has circulated.

Fig. 3: Post-Flood Support Case 1



Source: Authors

We can notice that many of the support reported by this household are debt, being formal (bank) or informal (social capital). To pay back these debts but also to afford daily needs, this household get resources from the market. They sold a young buffalo ($404) that the husband's mother gave to the household a few months ago. They also have had to get involved in the labor market. The first time we visited the house, we could not meet the husband because he worked in the district as a daily laborer to earn some income for day-to-day life and to pay off debts. The boss, with whom he has worked for many years, agreed to pay his salary in advance to support the family. "But, lamented our informant, it is not with $12 per day that we will be

10. The amount was not specified. We estimate it to $404.

able to pay for our children's meals and education, electricity, interest rates, debts… not to mention the expenses [gift-giving] related to the banquets and ceremonies to which we are invited. We can't not honor all these invitations; now when someone comes to visit us, we are afraid it will be to invite us" (interview, 06/12/2019). During our second visit in July 2020, Mrs. Trang went to work in an electronic factory in Binh Duong province (south of Vietnam) for a salary between $190 to $364 per month, depending on the number of overtime hours she works. She was introduced to this job thanks to a relative already working in that factory. When the wife was far away, the husband stayed at home to take care of their daughter and worked as a builder around the commune. "When I stay in the village and I don't go to work far away, there are a lot of social events here, weddings, new houses, funerals, etc., and it costs a lot of money to participate," explained the husband (interview, 04/11/2020). Finally, after one year, the wife stopped working in the factory in southern Vietnam because she suffered from being away from her family to earn a small income with difficult working conditions.

For this household, as well as all the households we encountered, income from off-farm jobs is vital for recovering livelihoods after the flood, particularly for paying off debts. However, it should not overshadow the significant support obtained from social networks, which accounts for approximately a quarter of the total resources they mobilized to rebuild their home after the historic flood (fig. 3). In the figure, social capital is underestimated. When we also consider the land received from family assets to built their new home, the young buffalo and the piece of land donated by their respective mothers, the job opportunities for both the husband and wife, and the salary advance, all of which rely on personal social networks, the role of social capital in the household's resilience becomes even more crucial. Nevertheless, as we will demonstrate, this particular household is not among the best endowed with social capital.

3.2. Case 2: To Recover thanks to Strong Social Capital

Mr. Binh, who was born sin 1962, is a Kinh from the Red River Delta. He settled in the commune about twenty years ago because his wife had a teaching job there. She is now the director of an elementary school in a neighboring municipality. Prior to working in a road construction company, Mr. Binh

served as a soldier and also worked as a meat trader. However, he stopped working in road construction around three years ago in order to pass the job on to his son. Fortunately, he and his wife were not at home when the flood swept away their house on stilts. They rebuilt a two-level concrete house on a high and sturdy foundation. He firmly believes that this new house will be able to withstand a future flood of similar intensity.

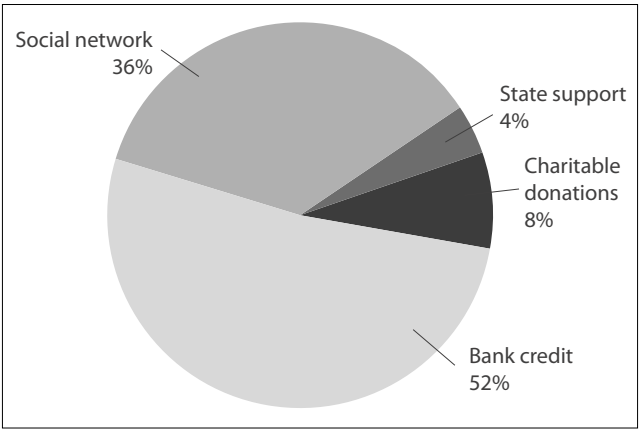
Fig. 4: M. Binh's new home

Source: Authors

It cost him a total of $28,340, including $5,263 for workers' salaries. He declared that he received a total of $2,834 from various official supports, apart from those coming from personal relationships. The Fatherland Front of the Province provided $809, which was given to all the households whose houses were swept away. Mr. Binh also received $161 from the Red Cross and $80 from the District People's Council. Additionally, he received support from various organizations, individuals, and companies through charitable donations. For example, the Nam Dinh Soccer Club made a $80 contribution.

Regarding their network of personal relationships, the couple received support from teachers and colleagues at the wife's school.[11] Furthermore, they received $202 from former colleagues at the road construction company, and $202 from classmates at the school of economics in Vinh Phuc. At the family level, the wife's three brothers each loaned $2,024. Mr. Binh clarified that although this payment was presented as a loan to avoid inconveniencing the recipients, it is actually a gift, as the lender is financially well-off and does not expect to be reimbursed. On the husband's side, his younger brother and the wife of his deceased older brother gave $202 and $80, respectively. He mentioned that he has turned down several cash support offers from his relatives because they would expect help in return when they are in need, and he prefers to avoid multiplying this type of mutual indebtedness.

Fig. 5: Post-Flood Supports Case 2



Source: Authors

Like other severely impacted households, they were able to benefit from a preferential rate loan of $4,048 from the VBSP. In addition, they obtained a credit indexed to the wife's salary at another commercial bank.[12] Finally, they benefited from a substantial reduction, around "several tens of million of VND", he said, in transportation costs for construction materials, thanks to a cousin who runs a construction store in Việt Trì. The figure 5 illustrates the percentage distribution of support received through each channel.

11. The amount was not specified. We estimate it to $400.
12. We estimate the amount of the loan at $8,000.

In addition to the importance of formal credit, which represents half of the total resources they mobilized to restore their home, this highlights the relative significance of resources obtained from social networks, such as gifts or informal credits. As Mr. Binh stated, "We have a lot of connections, so we have been able to benefit from a lot of support" (interview, 18/07/2020). Moreover, they have a stable income from the wife's job, which not only grants them access to formal credit but also reduces the pressure to repay debts and reassure their contacts that they will be able to reciprocate when needed. As we will show, having a stable income and a high borrowing capacity is not always the case in this farming community, where most villagers rely on a semi-subsistence economy.

3.3. Case 3: To Recover thanks to Family Support

Mrs. Linh, born in 1968, has been divorced three times and has no children. She currently lives alone. Before the historic flood, her old house on stilts was frequently flooded. The water would sometimes rise up to her bed, and she lived in fear of snakes. However, in 2018, her entire house and all her belongings were swept away, except for the house structure itself. She told us that she regrets that the house hasn't been completely swept away, as she would have been eligible for more state support. Her case is not unique. Many villagers have seen their houses completely destroyed but not swept away. Therefore, they could not benefit from the $809 from the Province's Fatherland Front, like those who did not have proper property titles. These rigid compensation criteria have been subject to strong criticism and contribute to disparities in adaptative capacity.

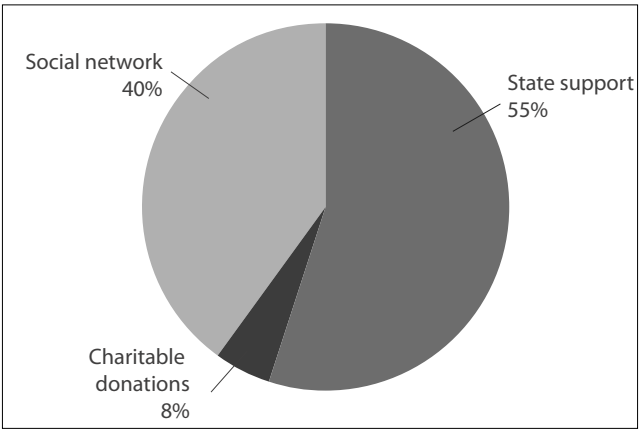
Being exposed, the commune authorities advised her to relocate her house and provided her with $809 in assistance. Initially, she had planned to use this sum to purchase a hillside plot of land for $404. However, her brother offered her a piece of land for free to rebuild her new house. Mrs. Linh gave her brother the $809 from the state, and he took care of everything. As a house builder, her brother completed the work himself with the support of neighbours and young people from their lineage. Thanks to this work exchange system, they reconstructed a small house with a wooden structure and concrete walls. According to the brother's wife, the total expenses for meals for the unpaid labor force, the wooden structure ($202), and all the building materials amounted to $607.

Fig. 6: Mrs. Linh's new home

Source: Authors

Mrs. Linh also received 50 kg of rice, $60 in cash, clothes, and food as part of the charitable donations. For her livelihood, she owns 360 m^2 of rice field, but it is insufficient to meet her annual rice needs. She earns $2 per day by registering informal lottery bets (*chơi đề*) on behalf of a wealthy villager. She would like to follow the people in the village who sometimes do daily work to earn more money, but they no longer invite her because according to them she is too old for this type of hard work. Finally, she explained, "I have to rely entirely on my brother and sister" (interview, 15/07/2020). The following figure, which summarizes the share of each kind of support she has received after the flood, confirms this statement, and also emphasizes the role of state support.

Fig. 7: Post-Flood Supports Case 3



Source: Authors

4. The Role of Social Capital in Resilience and Adaptive Capacity

4.1. Juggling with Resources and the Importance of Social Networks

Our three case studies demonstrate how households "juggle" (Guérin, 2014) with different resources (material, financial, social) from various channels (state, market, social networks, banks, charitable donations) and through different modes of circulation (gift, subsidy, credit, advances, market exchange, etc.). Our case echoes other studies showing how the diversification of resources and channels (Adger 2003; Aldrich & Meyer, 2014) but also modes of circulation (Baird & Gray, 2014) strengthen adaptive capacity. However, instead of viewing these channels and type of transfer as separate and operating independently, our study explores their interactions. For example, as demonstrated in our case studies, personal connections secure access to employment opportunities (case 1) or allow for the purchase of building materials on credit (cases 1 and 2): social networks are combined with the market. Bank credits are also connected to a network of personal relationships. For instance, some credits used to build a house are provided if there is a former personal connection to reinforce trust beyond collateral. In certain cases, households that are classified as "poor" according to the commune ranking system, and therefore eligible for a low-interest state loan

scheme, apply for a credit and then make it available to their relatives in need to rebuild their homes. Finally, post-flood resource flows also illustrate interactions between the market, public sphere, and gift-giving practices. Private companies, for instance, provide resources gained from the market to the People's Committee (state) through charitable donations (gift-giving) to support the post-flood restoration process.

In addition to the household capacity to "juggle" with resources provided by various interconnected channels, our cases highlight the relative importance of social networks compared to other channel resources. In the three cases we examined, support through personal connections accounted for approximately one quarter to almost half of the total forms of support households could access after the shock (fig. 3, 5 and 7). The following table presents the absolute values of what each of our cases has received, comparing these amounts to the costs of housing changes. The row labelled "total value of the new house" assesses the cost of the house if the households had not mobilized support from their social networks (land, materials, and labor).

Table 3: Amount of Various Support Received ($)

Household	Case n° 1	Case n° 2	Case n° 3
Social network	2235	8583	607
Bank credit	4049	12146	-
Charitable donations	1215	1781	81
State support	1781	1053	810
Total	**9279**	**23563**	**1498**
Total value of the new house	12146	28340	2834
Real expense for house reconstruction	4049	28340	607

Source: Authors, based on interviews.

The table indicates that the combination of resources from various channels covers most costs associated with home reconstruction and, in some instances, even exceeds these expenses (cases 1 and 3). This "surplus," as the villagers explained, is used to address daily expenditures during the home rebuilding phase, a time when they cannot take time off work to generate income. Furthermore, the table illustrates that, except for bank credits that require full repayment and a limited number of marginalized households

with low social capital, the network of personal relationships represents the most substantial resource channels in terms of absolute amounts. When comparing the actual expenses incurred for home reconstruction with the total value of the house without support from social networks (see the last two rows of table 3), the significance of social capital becomes even more apparent. These numbers as well as the three cases studies reflect data we have collected from our 42 cases of households that have changed their houses after the flood.

On one end of the spectrum, there are households with limited social capital. Case 3 exemplifies this trend in which socially isolated low-income households rely heavily on state subsidies and assistance from direct relatives (parents, siblings). Specifically, these households receive unilateral transfers from their network that are not expected to be reciprocated, thus remaining limited. Although these transfers prevent individuals from falling into poverty, they also create dependency among recipients.

At the other end of the spectrum, there are households with highly developed social capital that can raise significant amounts of money through a combination of gifts (both cash and in-kind), bank loans, and loans from relatives. Case 2 exemplifies this type of well-connected household. The social status of the household members, their belonging to the majority ethnic group, and their life course during which they forged various connections across different social spheres, contribute to the strength of their social capital and their solvency to borrow money.

Between these two extremes, the proportions of resources from the state, impersonal charitable donations, the market, banks, and interpersonal networks vary. However, the common point is that most of households depend on their networks of relationships to recover from the shock. As stated before, even to access resources from other channels such as the state, the market, the banks, etc., the social network is a crucial asset. Case 1 is one example among others. Their strategy is to borrow from various sources and in various ways and stay involved in the gift-giving system, even if it becomes a burden for them. During our discussion, both the husband and wife stressed the cost of cash transfers linked to frequent social events (see 3.1). The obligation to give when invited is strong, as is the obligation to

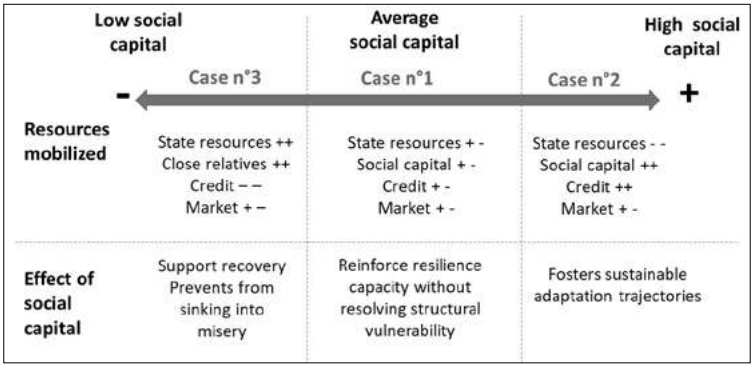
reciprocate. So, what they pay will mostly be received back later on, or it is the return of what they have already received before. Through this process of reciprocity based on mutual aid, this system builds and maintains social and moral obligations of support and solidifies trust (Pannier, 2018). In short, they constitute the basis for developing social capital (Luong, 2016). The various forms of support that this household benefited from their social network after the disaster (loans, labor, gifts, land, job access) were possible thanks to the web of obligations they are embedded in and continue to cultivate even if they are in a difficult situation.

Mutual support and gift-giving practices ingrained in everyday life create a reservoir of obligations that can be activated during times of crisis, whether due to environmental stress, as exemplified in this case, or other forms of shocks (Fischer *et al.*, 2011; Pannier & Pulliat, 2016). Therefore, we argue that what matters is not the nature of the shock (environmental, economic, political or social) but rather the extent and impact of the shock on individuals and the community. When an individual encounters a significant shock that severely jeopardizes its socioeconomic stability, the social network, meticulously cultivated on a daily basis, is activated to serve as a safety net (Beuchelt & Fischer, 2006). When the entire community is affected, the resources available from local social networks become constrained (Murdoch, 1999; Son & Kingsbury, 2020). However, in our case, although many households have been impacted, only a portion has been severely affected, particularly those who have lost their homes and, consequently, have received support from their social networks.

What we assert about the crucial role of social networks in post-flood resilience extends well beyond mere housing adaptation. We have recorded a wide range of material and immaterial resources that households have mobilized from their network of relationships following the flood. This repertoire is quite extensive. These include emergency support during the flood, providing shelter for disaster victims, providing food and daily consumer goods, assisting with clearing rice fields and repairing destroyed buildings, as well as exchanging rice seeds, providing cash loans, organizing informal rotating savings and credit groups, facilitating land arrangements, providing support in finding employment, sharing information on new farming techniques, and so on. In this context, recourse to the network of relationships

is not anecdotal. For some, it prevents them from sinking into misery, for others, it reinforces resilience without resolving their vulnerability, and for some, it fosters sustainable adaptation trajectories (fig. 8). In all cases, however, social capital remains important for coping with shocks in general and climate hazards in particular. While it confirms some studies conducted in Vietnam (Delisle & Turner, 2016; Fischer *et al.*, 2011; Hoang *et al.*, 2021; Son & Kingsbury, 2020) and beyond (Pelling & High, 2005; Aldrich & Meyer, 2014; Baird & Gray, 2014), our detailed examination of the network's content (types of resources, forms of circulation, and social relationships) allows us to delve deeper into the different levels of social capital according to socioeconomic inequalities (Bourdieu, 1980; Cleaver, 2005).

Fig. 8: Role of Social Capital in Household Resilience



Source: Authors

4.2. Social Capital Inequalities

Factors such as socioeconomic status, gender, and ethnicity play a role in determining the ability to leverage social networks and associated resources (Cleaver, 2005; Lin, 2001; Putnam, 2000). Table 3 (see above) illustrates how the absolute value of resources acquired differs significantly among households. Case 2 acquires a total of fifteen times more resources than case 3, and fourteen times more resources from the relationship network. In the case of this well-connected Kinh household (case 2), the wife's position as a primary school principal, along with their social status and ethnicity, explains their stronger social capital. Ethnicity affects access to credit and financial services as demonstrated by McElwee (2010: 19) who

states that "Kinh report more loans and larger bank loans than minorities on average, while ethnic minorities report a higher need for credit." More broadly, many studies show how the network of Kinh people typically allows them to benefit from more resources for daily economic activities but also to cope with shocks (Hoang *et al.*, 2021). In our case, their personal network is not only much broader than that of most villagers, but also more diverse. It includes individuals from various occupations and locations connected to the household through a range of ties (strong, weak, kinship, professional, neighbors, colleagues, etc.). Furthermore, their professional and personal connections consist of many individuals with high socioeconomic status. All of this strengthens the social capital of the household (Lin, 1995, 2001) and thus the household's resilience (Berrou & Gondard-Delcroix, 2011). In other words, to measure social capital and its effect on resilience, it is not only the number of connections or the network structure that matter, but also, and especially, the composition of the network, the geographical extension, the available resources, and the nature of the links and obligations (Forsé, 2001).

In comparison, Mrs. Linh (case 3) is a poor female Tày farmer with a narrow and localized social network. She has been divorced three times and has no children, which restricts the extent of her kinship and alliance network, and positions her on the margins of dominant norms. Her unusual situation leads to isolation and prejudice within the village. In addition, her low standard of living and status as a single woman exclude her from large support networks that require significant material and social investment to fulfill reciprocal obligations, which are often displayed during festive meals centered around male socializing and rice wine consumption. The comparison of our three cases and the examination of the patterns of resources circulation highlight that "networks are not always readily available but involve time and resources to maintain" (Rockenbauch & Sakdapolrak, 2017: 10). It stands in contrast to studies that view the presence of a network, trust or cooperativeness as a proxy for social capital and, by extension, adaptive capacity. The varying degrees of villagers' embeddedness within social networks, along with the uneven distribution of social capital among households, reflect broader socioeconomic inequalities and largely account for differences in individual resilience in Vietnam (Fischer *et al.*, 2011) and beyond (Berrou & Gondard-Delcroix, 2011; Cleaver, 2005).

4.3. Resilience: A Matter of Debt

To gather resources in order to restore their livelihoods, households multiply and combine the various channels to which they have access. However, all households resort to formal and informal debt. As shown, bank loans account a large proportion of the mobilized resources (between 44% and 55%, see figures 2, 3 and 4) and represent the largest amounts in absolute value (see table 3). Additionally, resources obtained through social networks flow through various forms of transfers, including cash gifts, interest-free loans, loans with interest, credit purchases, in-kind support, labor exchange, salary advances, and land arrangements. Most of these supports involve a strong obligation to return, creating a financial and/or moral debt.

Case 1 reflects a common situation. A year after the flood, the wife stated they still had not finished paying off their debts. "I'll have to postpone paying back the bank loan," she said, "because my creditors, the backhoe owner, are demanding what they owe" (interview, 06/12/2019). In 2021, while they repaid a part of the informal interest-free credits, they still owed the bank and had to pay monthly interest. The wife explained: "We need at least one [off-farm] worker to cover the monthly interest to the bank [...] the bank has already given us payment terms, but I just want to reimburse them to avoid paying too much interest. [...] To pay off all our debts and meet our daily needs, we would need two sources of income, but only one of us works to cover these two expenses" (interview, 03/12/2021). The husband tries to convince his wife to entrust their daughter to someone so that both of them can go far away to work and pay off debts more quickly. However, the wife does not want to leave their four-year-old daughter. Finally, she mentioned the labor they still owe to those who helped them build their home: "Many of them haven't built new homes, so we haven't reimbursed them yet, but we need to remember that when they build a new house, we have to help them" (interview, 03/12/2021).

The use of various forms of borrowing to address extreme weather hazards is also mentioned in other studies in Vietnam northern upland (Delisle & Turner, 2016; Son & Kingsbury, 2020), but they do not delve further into how adaptation and resilience are intrinsically linked to issues of debt. Households often find themselves "juggling with debt" (Guérin, 2014), borrowing from one source to repay another. Cases 1 and 2 exemplify this

phenomenon. They use bank funds and salary advances to pay off their most pressing debts, contracting new obligations to settle old ones. Case 1's complaints regarding the persistent financial and moral debts that remain unresolved three years after the flood, alongside their concern about the gift-giving expenses needed to maintain their network of relationships, reflect the dual nature of debt: it enables households to recover from the shock while concurrently imposing a significant burden. This can even lead to a cycle of over-indebtedness, particularly for the poorest and less connected households. This is especially true when, in addition to interest-free loans from family members, individuals "juggle" with loans from banks, professional private lenders, loan sharks, and digital finance, most of which demand high interest rates (Adger, 2003; Lainez, 2014; Lainez *et al.*, 2021; Son & Kingsbury, 2020). Finally, as demonstrated in case 3, moral or financial indebtedness associated with a closed, homogeneous network can perpetuate relationships of dependency – a phenomenon observed in various contexts, such as Africa (Berrou & Gondard-Delcroix, 2011; Cleaver, 2005).

Regarding the intensity and variety of debt relations exemplified by our case and beyond (Delisle & Turner, 2016; Fischer *et al.*, 2011; Son & Kingsbury, 2020; Pannier & Pulliat, 2016), we argue that in Vietnam adaptation and resilience are ultimately matters of debt. Indebtedness enables the restoration of livelihoods and the fostering of social integration, but can also lead to over-indebtedness, dependency, and increase vulnerabilities.

Conclusion

Drawing on an ethnographic study of housing adaptations after a historic flood in Vietnam's northern uplands, this paper illustrates the inhabitants' ability to recover from a climatic hazard. In this sense, they demonstrate resilience understood as the capacity to absorb and recover from a shock. However, during our interviews, when we asked what you would do if a similar long-run rain with the risk of flashflood occur, many villagers responded: "There is nothing to do except run and escape". A similar answer was given by the Vice President of the Committee for Natural Disaster Prevention and Control at the commune level. This raises the issue of resilience dynamics: to what extent has resilience evolved and potentially improved through

adaptation? The housing adaptations undertaken after the historic flood (elevation and relocation) and the state policy that provide annual funding to relocate houses at risk effectively reduce households' exposure and, therefore, their vulnerability, at least in physical terms. This has been confirmed by a recent climatic hazard. In September 2024, Storm Yagi struck northern Vietnam, causing significant flooding and landslides in the mountainous regions. More than 300 people lost their lives. Estimates put the damage at $3.31 billion, including $268 million for Lao Cai Province (Viet Tuan, 2024). Nghia Lai was not spared: two women are missing, one person is injured, 16 houses were completely destroyed, 42 houses were damaged, 69 households in risky locations were relocated in an emergency, and 183 households (1061 individuals) situated in exposed areas are urged to move. Agricultural areas and infrastructure were also severely damaged. However, the houses destroyed by the historic flood of 2018, particularly those of the 3 households detailed here, were not damaged. This serves as an indicator of the resilience dynamics of the inhabitants, which appear to improve through their adaptations. Indeed, while the storm of 2024 did not cause flooding of the same nature or intensity as the 2018 flashflood, it remains the most powerful storm Vietnam has experienced in the last 30 years (Vietnam+, 2024), as confirmed by the villagers, who consider this climate hazard to be much more violent than that of 2018.

Nevertheless, resilience must also consider dimensions beyond exposure, particularly socioeconomic dimensions (Aldrich & Meyer, 2014; Oliver-Smith, 2017). Our study of the resources mobilized for recovery from the shock reflects this perspective. The results indicate that both state and market resources play essential roles in addressing environmental hazards and strengthening resilience. However, resources from these two channels are not sufficient. Social networks of personal relationships emerge as a crucial channel, not only for recovering from environmental hazards but also for reducing vulnerabilities to risks more broadly. Contrary to what is observed elsewhere (Baird & Gray, 2014), in Vietnam the state and market regimes of circulation have not supplanted the web of local solidarities and interpersonal obligations. Instead, households multiply and combine resource channels to cope with risks.

Doing so, households "juggle" with resources, but they also "juggle with debt" (Guérin, 2014). By focusing on pattern of circulation, we have shown that resorting to financial, immaterial and moral debt is a key component of household strategy to cope with shocks. In short, in Vietnam households incur debt to adapt. Therefore, we argue that, in parallel or in combination with the state and the market, the resources obtained through the network of relationships in general, and through debt relationships in particular, significantly contribute to resilience. However, when considering resilience from a dynamic perspective, it does not guarantee long-term recovery in every case. First, it can lead to over-indebtedness or dependency. Second, while social capital is efficient for idiosyncratic shocks, it is not the case for repeated and covariate shocks (Murdoch, 1999). Third, not all households have the same level of social capital. Socioeconomic inequalities translate into an uneven distribution of social capital, leading to disparities in households' access to resources for recovery and adaptation. In other words, our focus on the functioning, role, and distribution of social capital in post-disaster resilience allows us to link environmental vulnerability with socioeconomic vulnerability (McElwee, 2017; Oliver-Smith, 2017). However, to comprehensively understand the causal relationship between social networks and resilience, it is insufficient to merely explore "network snapshots" (Rockenbauch & Sakdapolrak, 2017). A thorough investigation into the dynamics of social capital would bolster our conclusions on the significance of considering the repertoire of interpersonal exchanges and everyday arrangements occurring outside but in connection with the official institutions.

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Recent publications

Pannier, E., & Bruckert, M. (2024). Social Regulatory Regimes in Northern Vietnam: How Interpersonal Network Norms, State Laws, and Market Rules Interact. In Facal, G., Lafaye de Micheaux, E., & Norén-Nilsson, A. (Eds.). *The Palgrave Handbook of Political Norms in Southeast Asia* (393-414). Palgrave Macmillan.

Lainez, N., & Pannier, E. (2024). Trial-and-Error: Securing Field Access for Qualitative Research in Vietnam. *Australian Journal of Anthropology,* 1-19.

Pannier, E., & Duteurtre, G. (2022). The Hybrid Nature of the Vietnamese Market Economy: Personal Relationships and Debt in the Dairy and Maize Sectors. In Tran, T. A.-D. (Ed.). *Rethinking Asian Capitalism. The Achievements and Challenges of Vietnam Under Doi Moi* (59-91). Palgrave MacMillan/Springer Nature.

Bouté, V., Huard, S., & Pannier, E. (Eds.) (2021). Transferts non marchands en Asie du Sud-Est et au-delà. Diversité des échanges et dynamiques des rapports sociaux. *Moussons*, numéro spécial, 37.

Pannier E. (2021). Land Tenure and Irrigation in North Vietnam's Mountainous Regions. Rights outside the Law?. In Frezet, E., Goetzmann, M., & Mason, L.. *Spaces of Law and Custom* (46-65). Routledge.

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Recent publications

Pannier, E., & Phan T. K. T. (2023). Post-Flash-Flood Responses in the Northern Highlands of Vietnam: Embracing Adaptation Practices through the Continuum Approach. *Anthropology Review*, Selection Volume: Responses to Environmental Hazard at the Local Level, *236*(2), 12-34.

Anh, P. P., Pannier, E., Nhat Anh, N., & Phan, T. K. T. (2023). Diversity in Post-Disaster Residential and Livelihoods Responses in the Northern Highlands of Vietnam: The Case of Tung Chin Village, Trinh Tuong Commune, Bat Xat District, Lao Cai Province. *Anthropology Review*, Selection Volume: Responses to Environmental Hazard at the Local Level, *236*(2), 35-51.

Phan, T. K. T. (2021). Khau Tan Don glutinous Rice Variety in Tham Duong: From Building a Geographical Indication to the Process of "Identity Creation" of a Local Landrace. *Journal of Vietnam Culture Studies*, *195*(3), 37-45.

BIBLIOGRAPHY

Adger, W. N. (2003). Social Capital, Collective Action, and Adaptation to Climate Change. *Economic Geography*, 79, 387-404. DOI : 10.1111/j.1944-8287.2003.tb00220.x

Adger, W. N., & Vincent K. (2005). Uncertainty in adaptive capacity. *Geoscience, 337*(4), 399-410. DOI : 10.1016/j.crte.2004.11.004

Aldrich, D. P., & Meyer, M. A. (2014) Social Capital and Community Resilience. *American Behavioral Scientist 59*(2), 254-269. DOI : 10.1177/0002764214550299

Baird, T. D., & Gray, C. L. (2014) Livelihood Diversification and Shifting Social Networks of Exchange: A Social Network Transition?. *World Development*, 60, 14-30. DOI : 10.1016/j.worlddev.2014.02.002

Beckman, M., & Nguyen, M. V. T. (2015). Upland Development, Climate-Related Risk and Institutional Conditions for Adaptation in Vietnam. *Climate and Development*, *8*(5), 413-422. DOI : 10.1080/17565529.2015.1067178

Berrou, J.-P., & Gondard-Delcroix, C. (2011). Dynamique des réseaux sociaux et résilience socio-économique des micro-entrepreneurs informels en milieu urbain africain. *Mondes en développement*, *156*(4), 73-88. DOI : 10.3917/med.156.0073

Beuchelt, T., & Fischer I. (2006). "What Do Vietnamese Farmers Do when a Crisis Occurs? Covering Lack of Resources through Social Networks". In Buchenrieder, G., & Dufhues, T. (Eds.). *Making Rural Households' Livelihoods more Resilient – The Importance of Social Capital and the Underlying Social Networks* (45-57). Leibniz-Institute of Agricultural Development in Central and Eastern Europe.

Bourdieu, P. (1980). Le capital social. Notes provisoires. *Actes de la Recherche en sciences sociales*, 31, 2-3. https://www.persee.fr/doc/arss_0335-5322_1980_num_31_1_2069

Bodin, O., Ramirez-Sanchez, S., Ernstson H., & Prell C. (2011). A Social Relational Approach to Natural Resource Governance. In Bodin, O., & Prell, C. (Eds.). *Social Networks and Natural Resource Management: Uncovering the Social Fabric of Environmental Governance* (3-28). Cambridge University Press.

Buchheit, P., d'Aquino, P., & Ducourtieux, O. (2016). Cadres théoriques mobilisant les concepts de résilience et de vulnérabilité. *VertigO*, *16*(1). DOI : 10.4000/vertigo.17131

Cleaver F. (2005). The Inequality of Social Capital and the Reproduction of Chronic Poverty. *World Development*, *33*(6), 893-906. DOI : 10.1016/j.worlddev.2004.09.015

Crate, S. A. (2011). Climate and Culture: Anthropology in the Era of Contemporary Climate Change. *Annual Review of Anthropology*, 40, 175-194. DOI : 10.1146/annurev.anthro.012809.104925

Cruz, R. V., Harasawa, H., Lal, M., Wu, S., Anokhin, Y., Punsalmaa, B., Honda, Y., Jafari, M., Li, C., & Ninh, N. H. (2007). *Climate Change 2007: Impacts, Adaption and Vulnerability. Contribution of Working*

Group II to the Fourth Assessment Report of the IPCC, 496-506. IPCC. https://archive.ipcc.ch/publications_and_data/ar4/wg2/en/ch10.html

Delisle, S., & Turner, S. (2016). "The Weather Is like the Game We Play": Coping and Adaptation Strategies for Extreme Weather Events Among Ethnic Minority Groups in Upland Northern Vietnam. *Asia Pacific Viewpoint*, 57, 351-364. DOI : 10.1111/apv.12131

Felli, R. (2014). Adaptation et résilience : critique de la nouvelle éthique de la politique environnementale internationale. *Éthique publique*, *16*(1). DOI : 10.4000/ethiquepublique.1371

Fischer, I., Beuchelt, T., Dufhues, T., & Buchenrieder, G. (2011). Risk Management Networks of Ethnic Minorities in Viet Nam. *Asia Pacific Devolpment Journal*, *17*(2), 93-118. DOI : 10.18356/6487d1bb-en

Forsé, M. (2001). Rôle spécifique et croissance du capital social. *Revue de l'OFCE*, *76*(1), 189-216. DOI : 10.3917/reof.076.0189

Forsé M. (2008). Définir et analyser les réseaux sociaux. Les enjeux de l'analyse structurale. *Informations Sociales*, *147*(3), 10-19. DOI : 10.3917/inso.147.0010

Guérin, I. (2014). Juggling with Debt, Social Ties, and Values: The Everyday Use of Microcredit in Rural South India. *Current Anthropology, 55*(S9), S40-S50. DOI : 10.1086/675929

Ha, D. Q., Dizon, J., Quimbo, M., Rola, A., & Pintor L. L. (2014). Climate Change Adaptation and Social Capital: The Case of Red River Delta Biological Reserve, Vietnam. *International Journal of Ecology and Conservation*, *7*(1), 57-69.

Hoang, Q., Pasquier-Doumer, L., & Saint--Macary, C. (2021). Ethnicity and Risk Sharing Network Formation: Evidence from Rural Vietnam. *The Journal of Development Studies*, *58*(2), 370-387. DOI : 10.1080/00220388.2021.1971652

Luong, H. V. (2016). Social Relations, Regional Variation, and Economic Inequality in Contemporary Vietnam: A View from Two Vietnamese Rural Communities. In Taylor, P. (Ed.). *Connected and disconnected in Viet Nam: Remaking Social Relations in a Post-Socialist Nation* (41-72). ANU Press.

Labeyrie, V., Ouadah, S., & Raimond, C. (2024). Social Network Analysis: Which Contributions to the Analysis of Agricultural Systems Resilience?. *Agricultural Systems*, 215, 103832. DOI : 10.1016/j.agsy.2023.103832

Lainez, N. (2014). Informal Credit in Vietnam A Necessity Rather Than an Evil. *Journal of Southeast Asian Economies*, *31*(1), 147-54.

Lainez, N., Bui, T. T. D., Trinh, P. K., Le, T. L., To, T. P., & Pannier, E. (2021, August 24). Financial Inclusion and Consumer Finance in Vietnam: Challenges and Approaches to Credit Scoring. *Perspective,* 112, ISEAS, Yusof Ishak Institute.

Langumier, J., & Revet, S. (2011). Une ethnographie des catastrophes est-elle possible? Coulées de boue et inondations au Venezuela et en France. *Cahier d'anthropologie sociale*, *7*(1), 77-90. DOI : 10.3917/cas.007.0077

Lin, N. (1995). Les ressources sociales : une théorie du capital social. *Revue française de sociologie*, *36*(4), 685-704. https://www.persee.fr/doc/rfsoc_0035-2969_1995_num_36_4_4424

Lin, N. (2001). *Social Capital. A Theory of Social Structure and Action*. Cambridge University Press.

MARD (Ministry of Agriculture and Rural Development/Steering Committee for Natural Disaster Prevention and Control) (2020). Những bài học kinh nghiệm ứng phó với các trận lũ quét, sạt lở đất điển hình từ năm 2000-2019 [Lessons of adaptation experiences to some typical flash floods and landslides from 2001 to 2019]. http://phongchongthientai.mard.gov.vn/Pages/nhung-bai-hoc-kinh-nghiem-ung-pho-voi-cac-tran-lu-quet-sat-lo-dat-dien-hinh-20-nam-.aspx

McElwee, P. (Ed.) (2010). *The Social Dimension of Adaptation to Climate Change in Vietnam*. Discussion paper No. 17. World Bank.

McElwee, P. (2017). Vietnam's Urgent Task: Adapting to Climate Change. *Current History*, *116*(791), 223-229. DOI : 10.1525/curh.2017.116.791.223

Murdoch J. (1999). Between the Market and State: Can Informal Insurance Patch the Safety Net?. *World Bank Research Observer*, *14*(2), 187-207.

Nelson, D. R., West, C. T., & Finan, T. J. (2009). Introduction to "In Focus: Global Change and Adaptation in Local Places." *American Anthropologist, 111*(3), 271-274. DOI : 10.1111/j.1548-1433.2009.01131.x

Ngo, T.P.L. (2022). *Farmers' Perspectives on Risks and Social Capital in the Mekong Delta: From Rice to Shrimp*. Cambridge Scholars Publishing.

Oliver-Smith A., 2017, Adaptation, Vulnerability, and Resilience. Contested concepts in the anthropology of climate change. In Kopnina, H., & Shoreman-Ouimet, E. (Eds.). *Routledge Handbook of Environmental Anthropology* (206-218). Routledge.

Pannier, E. (2015). *Seule la réciprocité. Circulation non marchande et relations sociales dans un village du nord du Vietnam*. Connaissances et Savoirs.

Pannier, E. (2016). « Édifier un mode de vie civilisé » dans une commune tày du nord du Vietnam : assimilations, adaptations et accommodements ». *Moussons*, 28, 89-122. https://moussons.revues.org/3650

Pannier, E., & Culas, C. (2016) Expérience de dialogue entre l'anthropologie et une situation de développement au Vietnam : de la position d'observateur à celle de médiateur. *Anthropologie et développement*, 43, 123-148. https://journals.openedition.org/anthropodev/511

Pannier, E., & Pulliat, G. (2016). Échanges, dons et dettes. Réseaux sociaux et résilience dans le Vietnam d'aujourd'hui. *Revue Tiers Monde*, 226-227, 95-121.

Pannier, E. (2018). Place et rôle de la circulation non marchande en milieu rural au nord du Viêt Nam : un élément central de la société ? », *Revue du MAUSS,* 52, 201-213.

Pannier, E., & Phan, T. K. T. (2023). Ứng phó sau lũ quét ở miền núi phía Bắc Việt Nam: Nắm bắt các thực hành thích ứng thông qua tiếp cận chuỗi liên tục [Post-flood responses in Vietnam Northern upland: capture adaptation practices through a continuum approach]. *Tạp chí dân tộc học (Anthropology Review)*, 2(236), 12-34. https://vjol.info.vn/index.php/tapchiviendantochoc/article/view/103505/87263

Pelling, M., & High, C. (2005). Understanding Adaptation: What Can Social Capital Offer Assessments of Adaptive Capacity?. *Global Environmental Change*, *15*(4), 308-319. DOI : 10.1016/j.gloenvcha.2005.02.001

Pham, N.T.T., Nong, D., & Garschagen, M. (2019). Farmers' Decisions to Adapt to Flash Floods and Landslides in the Northern Mountainous Regions of Vietnam. *Journal of Environmental Management*, 252, 109672. DOI : 10.1016/j.jenvman.2019.109672

Phan, L. T., Jou, S. C., Lin, J.-H. (2019). Gender Inequality and Adaptive Capacity: The Role of Social Capital on the Impacts of Climate Change in Vietnam. *Sustainability, 11*(5), 1257. DOI : 10.3390/su11051257

Putnam, R. D. (2000). *Bowling Alone: The Collapse and Revival of American Community*. Simon & Schuster.

Rockenbauch, T., & Sakdapolrak, P. (2017). Social Networks and the Resilience of Rural Communities in the Global South: A Critical Review and Conceptual Reflections. *Ecology & Society*, *22*(1), 10. DOI : 10.5751/ES-09009-220110

Roncoli, C., Crane, T. A., Orlove, B. (2009) Fielding Climate Change in Cultural Anthropology. In Crate, S. A., Nuttall, M. (Eds). *Anthropology and Climate Change: From Encounters to Actions* (87-115). Left Coast Press.

Schad, I., Schmitter, P., Saint-Macary, C., Neef, A., Lamers, M., Nguyen, L., Hilger, T., & Hoffmann, V. (2012). Why Do People not Learn from Flood Disasters? Evidence from Vietnam's Northwestern Mountains. *Natural Hazards*, 62, 221-241. DOI : 10.1007/s11069-011-9992-4

Schlecker, M. (2013). Introduction. In Schlecker, M., & Fleischer, F. (Eds). *Ethnographies of Social Support* (1-15). Palgrave Macmillan.

Son, H., & Kingsbury, A. (2020). Community Adaptation and Climate Change in the Northern Mountainous Region of Vietnam: A Case Study of Ethnic Minority People in Bac Kan Province. *Asian Geographer*, *37*(1), 33-51. DOI : 10.1080/10225706.2019.1701507

Tran, T. A. (2020). Learning as an Everyday Adaptation Practice in the Rural Vietnamese Mekong Delta. *Climate and Development, 12*(7), 610-613. DOI : 10.1080/17565529.2019.1664974

Tran, T. A., & Rodela, R. (2019). Integrating Farmers' Adaptive Knowledge into Flood Management and Adaptation Policies in the Vietnamese Mekong Delta: A Social Learning Perspective. *Global Environmental Change*, 55, 84-96. DOI : 10.1016/j.gloenvcha.2019.02.004

Vietnam+ (September 2024). Những điểm bất thường của bão Yagi - cơn bão mạnh nhất 30 năm qua [Les aspects anormaux de la tempête Yagi – La tempête la plus forte depuis 30 ans]. *Vietnam+.* https://www.vietnamplus.vn/nhung-diem-bat-thuong-cua-bao-yagi-con-bao-manh-nhat-30-nam-qua-post977216.vnp

Viet Tuan (September 2024). Thiệt hại kinh tế do bão Yagi tăng lên 81.500 tỉ đồng [Les dégâts économiques de la tempête Yagi s'élèvent à 81 500 milliards de dông]. *VNExpress*. https://vnexpress.net/thiet-hai-kinh-te-do-bao-yagi-tang-len-81-500-ty-dong-4798004.html