ICH AND NATURAL DISASTERS IN BLACK HÀ NHÌ AND RED DAO COMMUNITIES IN LÀO CAI PROVINCE, VIETNAM

Phan Phương Anh[1] and Vũ Cảnh Toàn[2]

INTRODUCTION

On the morning of 10 August 2008, I received a phone call from Dr Trần Hữu Sơn, Director of the Department of Culture, Sports and Tourism (DCST) of Lào Cai province at the time. With a very emotional voice, Dr Sơn announced the death of the 'whole Tùng Chỉn village' of the Red Dao people by a flash flood, which had occurred the night before, burying and washing away 19 houses and killing more than 20 people. I first met Dr Sơn about a year ago while, with three other colleagues from the Vietnam Institute of Culture and Art Studies (VICAS), we were visiting the region to collect data for a small research project on the application of indigenous knowledge on agricultural production in the Bát Xát district (Lào Cai province). In fact, I had conducted fieldwork in the next village (Phìn Ngan), situated about 5 km from Tùng Chỉn village at a higher altitude. Phìn Ngan did not have any human loss, but most of the paddy fields and crops were damaged, as with many other villages in the Trịnh Trường commune. Although I had learned of this news from the media before his call, I cannot describe how shocked I was when Mr Sơn called me from the site of the disaster, as my memories of the scenic landscape of the region and its wonderful people were still so fresh. He immediately raised the question about the link between the affected individuals' livelihood and the disaster. This question has followed me for many years.

The same village, Tùng Chỉn, was affected nine years later, on 26 August 2017, by another flash flood that damaged five villages in the Trịnh Tường commune. This was a small event compared to the 2008 flash flood. However, one man in this village was washed away (he was later found about 20 km away in the Red River), about 60 heads of livestock were killed, and a dozen hectares of rice fields and crops were damaged (Phương Liên, 2017). These events raise many questions, including the following:

- What is the relationship between flash floods and the livelihood (i.e. wet-rice culture in terraced rice fields) of the Dao people in mountainous areas?
- Why are the Dao people in Bát Xát more vulnerable to flash floods as compared with their neighbours, such as the Black Hà Nhì community?
- What is the link among the Dao people's knowledge, livelihood and vulnerability to natural disasters?

1 Department of Anthropology, University of Social Sciences and Humanities, Vietnam National University, Hanoi.
2 Institute for Social and Environmental Transition-International in Vietnam (ISET-Vietnam), Hanoi.

This project provides an invaluable opportunity to conduct a survey on intangible cultural heritage (ICH) preservation, disaster risk management (DRM) and disaster risk reduction (DRR). We compare the knowledge, livelihood practices and vulnerabilities of two ethnic communities (the Red Dao and the Black Hà Nhì) living at the same altitude in Lào Cai province to help elucidate the role of ICH in the DRM/DRR process. Although the focus is on two districts, including Bát Xát and Sa Pa, which have been highly exposed to natural hazards, and where there is a high concentration of these two ethnic groups, we also provide some background information about the DRM structure and process on a broader scale (i.e. at the provincial and national levels). In addition, relevant examples from other parts of the province are cited to illustrate the story.

OBJECTIVE

The overall objective of this report is to assess the current condition of ICH at the local level in relation to natural hazards. The concrete objectives of the study are as follows:

- Understand the DRM body, planning and current practices at the provincial/district/communal levels and the place of the cultural sector in this process
- Examine the importance/significance of ICH in the process of DRR in mitigating the impact of natural disasters
- Understand the impact of natural disasters on ICH
- Identify non-climate factors influencing the safeguarding of ICH, and thus the vulnerability of ethnic community groups to natural disasters, and identify gaps in ICH management in relation to DRR/DRM

METHODOLOGY

The main methods used to prepare this report included the following:

- Primary data collection about ICH in the Black Hà Nhì and Red Dao communities in the Bát Xát district from 2007
- Secondary data collection of documents, including ICH- and DRM-related polices and plans, government reports, project reports, academic literature, online newspapers and government websites
- Document review and analysis
- Interviews with ICH and DRM researchers, government officials leading ICH and culture management in Lào Cai, as well as DRM practitioners

UNDERSTANDING THE LOCALITY AND COMMUNITY SITUATIONS

Basic Information on Lào Cai Province

Natural conditions (geographical position, topography)

Lào Cai province is located in the mountainous northern region at the highest elevation zones of Vietnam. The province shares its borders with China in the north and other provinces, including Hà Giang, in the east, Lai Châu in the west and Yên Bái in the south. The region has a total area of about 6,384 km^2 (LSO, 2015) and had a population of 684.3

thousand people in 2016 (Lào Cai Gov, 2016). The province is divided into nine administrative units, including Lào Cai (the capital of the province) and eight rural districts (Mường Khương, Bát Xát, Bắc Hà, Bảo Thắng, Sapa, Bảo Yên, Văn Bàn and Si Ma Cai), with 164 communes and wards (Lào Cai Gov, 2016). However, the most important economic, political, cultural, social and educational activities and critical urban infrastructures are concentrated in Lào Cai. Located less than 300 km northwest of Hanoi at the gate of the Kunming (China)–Lào Cai–Hà Nội–Hải Phòng economic corridor, Lào Cai plays an important role in connecting Vietnam and member states of the Association of Southeast Asian Nations (ASEAN) countries with Yunnan and the southwest region of China.

Lào Cai province has a complex and highly diverse topography, with three types of terrain, including: (i) high mountainous and a hilly terrain with elevations above 1,500 m, accounting for about 21% of the province's natural area. This terrain covers most districts in the eastern flank area of the Hoàng Liên Sơn range in the Bát Xát, Sa Pa and Văn Bàn districts and is the highest part of the Bắc Hà district. The high elevation level makes this area the most remote and difficult to access and thus is among the least developed (Lào Cai Gov, 2016). People living in this part of the province face challenges of water scarcity and extremely low temperatures; (ii) the middle-level mountains with elevation levels between 700 m and 1,500 m, covering up to 35% of the total provincial area and distributed in districts belonging to the Hoàng Liên Sơn range, including Bát Xát, Sa Pa and the highland area of Bắc Hà; and (iii) low mountains and alluvial terrain located along rivers with elevations below 700 m, covering about 43% of the province's total natural area. Cities along the Red River and Chảy River, including Lào Cai, Cam Đường, Bảo Thắng, Bảo Yên and the east side of the Văn Bàn district are located at lower elevations, with less challenging topography, granting more convenient access to transport, markets, production activities and services. The less dangerous and less steep terrain with fields and valleys are more favourable areas for agriculture and forestry production or construction of infrastructure development.

The majority of areas in the province are about 300 m above sea level, with the highest mountain peaks reaching over 3,000 m above sea level (Fansipan is the highest peak in Vietnam at 3,143 m above sea level, followed by Tả Giàng Phìn at 2,850 m) (LSO, 2015).

Environment and population

Lào Cai province is largely covered by forests that account for up to 52% of the province's total area (LSO, 2015). The province also has rich and varied types of mineral resources, among which the most valuable include copper, molybdenum, apatite and iron. The water resources of the province are provided by roughly 107 streams (LCPPC, 2017). The main river in Lào Cai is Hong River (Red River), which originates in China and flows towards the Ha Noi, Nậm Thi and Chảy Rivers.

Lào Cai has 13 main ethnic groups (Trần Hữu Sơn, 2017).[3] The most important groups in number are the Kinh (35.9%), H'mông (22.21%), Tày (15.84%), Dao (Yao in Chinese) (14.05%), Giáy (4.7%), Nùng (4.4%) (Lào Cai Gov, 2016) and other smaller groups, including Phù Lá, Sán Chay, Hà Nhì, La Chí, Bố Y, Hoa, Mường and Thái. At the communal level, the population is comprised of different ethnic groups or sub-groups, but at the village level,

3 The province has 25 different ethnic groups in official statistics. However, some groups count only a few people or only one family and do not constitute a cultural community (Trần Hữu Sơn, 2018).

there is usually only one ethnic group (Trần Hữu Sơn, 2017).

In addition to an important number of Kinh people[4] who work in administration, services and businesses in valleys and lowland areas, most of the population lives off of rice planting and forest exploitation. Different ethnic groups living at various altitudes have distinctive farming practices according to the geographical area. In the valleys and along rivers and streams (from about 100 m to 400 m above sea level), rice fields and crops usually belong to the Kinh, Tày, Thái, Nùng and Giáy peoples. The ethnic groups have some narrow rice fields along streams in the Mường Khương, Bắc Hà, Bảo Yên and Bảo Thắng districts but also have larger rice fields along the Red River in the Bát Xát district. From 700 m to more than 1,000 m, there is one group of Xà Phó (a branch of the Phù Lá group) and some branches of the Dao people (Dao họ, Dao Làn Tiẻn). They live near water sources and cultivate terraced rice fields. At more than 700 m to 800 m above sea level, there are three main groups: the Hmông, Hà Nhì and Dao. They work terraced rice fields when they can find water sources. Otherwise, they practice shifting cultivation and forest exploitation.

Climate and natural hazards

The two seasons in Lào Cai are the rainy season, from April to September, and the dry season, from October to March of the following year. The province can be divided into two climate regions: i) above 700 m: the annual average temperature ranges from 15°C to 20°C, and annual rainfall is about 1,800 mm to 2,000 mm; and ii) the lowland region: temperatures vary from 23°C to 29°C and rainfall from 1,400 mm to 1,700 mm (LSO, 2015). A high degree of variation exists between regions and seasons. For instance, in some elevated mountainous areas in the Mường Khương and Bát Xát districts, the average annual temperature is 15°C, while it is about 22.8°C in Lào Cai. Similarly, nearly eight degrees of difference in the average temperature of the coldest month (i.e. May) exist between Sa Pa and Lào Cai. The precipitation variation is likewise significant between areas. For example, the annual precipitation in the east flank area of the Hoàng Liên Sơn range, such as the southeast Si Ma Cai district, Bảo Yên district and northeast of the Bắc Hà district, is greater than 2,500 mm, while it is only 1,700 mm in other areas, such as the Mường Khương and Bảo Thắng districts and Lào Cai (LSO, 2015).

Regarding natural hazards, as a mountainous province characterised by high and sloping terrains, Lào Cai province has suffered various types of hazards, such as flash floods, landslides, inundation, lightning, thunderstorms, tornadoes and extreme cold temperatures and heat waves. Among these, flash floods and landslides are considered the most dangerous. Additionally, fog and frost are common phenomena in the province, especially during winter (Lào Cai Gov, 2016). The most vulnerable populations are ethnic minorities living in high altitudes. The present study focuses on two groups, the Black Hà Nhì and the Red Dao peoples, and we limit our investigation to the two districts of Bát Xát and Sa Pa, where these groups, with the Hmông group,[5] form the majority of the population at high altitudes (more than 700 m above sea level). The natural area of these districts (with the Văn Bàn district to the south) is on the eastern flank area of the Hoàng Liên Sơn range and limited on the west by the highest part of the mountain range, which is also the natural border with Lai Châu province and on the east by the Red River. In recent years, this area

4 Kinh people represent more than 80% of the Vietnamese population.

5 In this report, we exclude investigation of the Hmông group.

has had the highest incidence of flash flooding and landslides as well as damaging cold temperatures and droughts (see the following section).

Studied Communities: the Black Hà Nhì, Red Dao people in the Bát Xát and Sa Pa districts

The Hà Nhì and Dao peoples were some of the first inhabitants of the region (Đặng Nghiêm Vạn et al., 2000). Both ethnic groups originated in China and immigrated to Vietnam at least 200 years ago. Hà Nhì is a small group (under 5,000 people) that settled only in Bát Xát. The Hmong and Dao are the largest groups in these two districts. The total population is 75,145 people for Bát Xát and 59,214 for Sa Pa (LSO, 2015).

The Hà Nhì community

The Hà Nhì population in Vietnam numbers 21,725 (GSO, 2010) and is divided into two branches: the Hà Nhì Hoa (Flower) and the Hà Nhì Đen (Black), according to their traditional customs. These branches belong to the Sino-Tibetan language group. In Vietnam, they settled mostly in the Lai Châu, Lào Cai and Điện Biên provinces. In Lào Cai, there are 4,026 Black Hà Nhì people settling in the Ý Tý, Nậm Pung, Ngải Thầu, A Lù and Trịnh Tường communes of Bát Xát. Hà Nhì people in Vietnam migrated from Yunnan about 300 years ago (Chu Thuỳ Liên, 2004).

The Red Dao people

The Dao population in Vietnam numbers 751,067 (GSO, 2010). This population belongs to the Hmông-Dao language group. In Lào Cai, the Dao people are divided into three sub-groups: the Red Dao, Dao Tuyển (of Dao Làn Tiẻn) and Dao Họ (Dao Quần Trắng, 'white pants') (Trần Hữu Sơn, 2017). They live in 114 communes in Lào Cai in the Bảo Yên, Bảo Thắng, Bảo Yên and Bắc Hà districts. The Red Dao represent 66.7% of the Dao people in Lào Cai, and most of the Dao people settled in Sa Pa belong to this group; Bát Xát contains both the Red Dao and Dao Tuyển groups. They form the second largest group in Bát Xát and Sa Pa districts, closely following the Hmông people. In Bát Xát, the groups represent 26.73% of the population in the district, which is equivalent to 3,277 families and 17,599 people, present in 17 out of 23 communes and wards. In three of them (i.e. Tòng Sành, Dền Sáng and Phìn Ngan), the groups form the totality of the population (Phan Phương Anh, 2008). In Sa Pa, the groups represent 23.04% of the population (Sa Pa Gov, 2017) and are concentrated in Bản Hồ, Bản Phùng, Tả Phìn, Tả Van and Thanh Kim. Most of the individuals belong to the Red Dao group. Dao people in Vietnam came from Yunnan during the eighteenth century (Nguyễn Trường Giang, 2015).

Living at the same altitude, these two groups have the same type of livelihood: forest exploitation for essential needs (firewood, housing, picking and hunting) and wet-rice farming. However, the Black Hà Nhì have developed terraced rice fields for hundreds of years, whereas the Dao people have a long tradition of swidden cultivation, though they have changed more and more to wet-rice cultivation in the last decades. Each group has similar and dissimilar behaviours towards the ecological environment that triggers different degrees of vulnerability to natural disaster.

DRM Structure and Process in Vietnam and in Lào Cai Province

The DRM process in practice, a top-down approach

In Vietnam, the DRM system has been dominated by a top-down approach. A system coordinated and led by the Central Steering Committee for Natural Disaster Prevention and Control (CSC-NDPC) has been established from the national level to the commune level (see Figure 1). The CSC-NDPC is a multi- and cross-sector agency headed by the Minister of Agriculture and Rural Development (Minister of Agriculture and Rural Development, 1999), with members as senior leaders of relevant national level agencies/ministries. The same structure is applied at the provincial and district levels. The ministry of culture and department/division of culture (i.e. agencies in charge of cultural heritage management) at the local level are members of national and provincial/district committees. However, they often have limited roles in the disaster planning processes. At the commune level, in addition to the government officials, heads of villages are also mobilised and appointed as members of the Commune Committee. The national committee is responsible for organising and directing all important activities linked to natural disaster prevention and control. The CSC-NDPC also guides and supervises ministries and provinces in the building and implementation of action plans, projects and programmes on DRR. Additionally, the CSC-NDPC plays an important role in mobilising financial resources to support recovery activities.

Regarding the disaster planning process, every spring, the CSC-NDPC develops a national DRM plan and a detailed report containing two components. The first component focuses on reviewing all disasters that occurred in the country in the previous year and actions taken and experiences of dealing with those disasters, as well as lessons learned for the

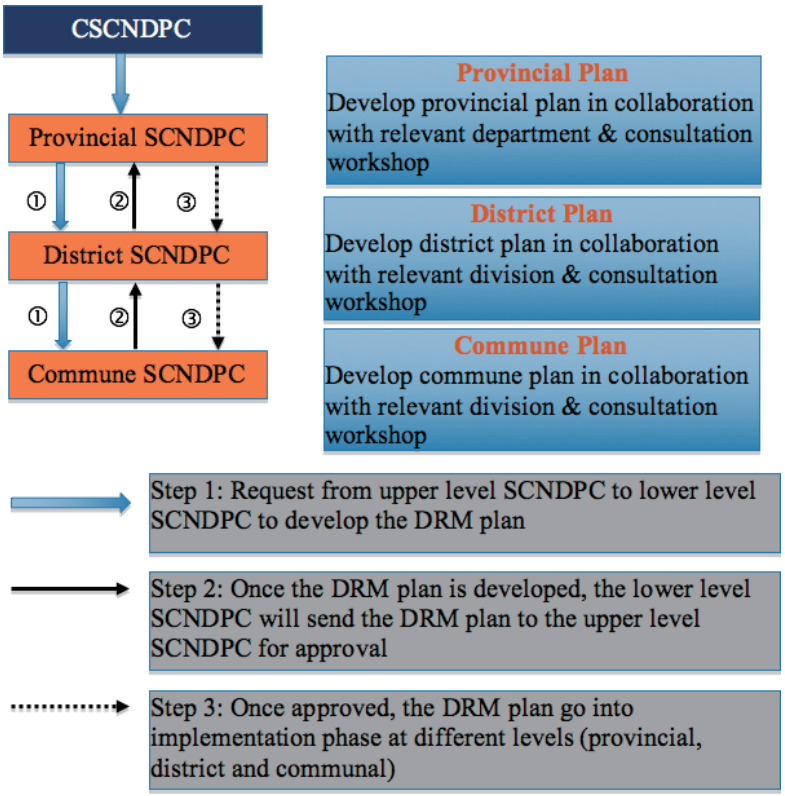

Figure 1
Traditional disaster risk management planning (Adapted from Bach Tan Sinh et al., 2013, p. 48)

coming year. The second component specifies the future forecast of natural disasters in the coming years, identifies the main risks and proposes approaches and plans to reduce these risks. These documents serve as main guidelines for the Provincial Committee for Natural Disaster Prevention and Control to develop provincial-level reports and plans. The same procedure is applied to the district and commune-level committees, and each step follows roughly the same template as those at the national level (see Figure 1 for the entire process, from the national to the commune levels).

In these conventional disaster management planning approaches and practices, community and other related stakeholders have limited opportunity to participate. They are only consulted when draft DRM plans have already been developed. Additionally, the guidelines from higher level agencies are often perceived as strict guidance that must be followed by lower levels and thus does not encourage feedback. Furthermore, most decision making and budgeting power is in the hands of the national and provincial levels. The district and commune levels only have a small role in the implementation phase.

DRM planning in Lào Cai province

Traditionally, the disaster management and planning in Lào Cai applies the same approach as mentioned above. However, recognising the limitation of the conventional top-down planning and the values and knowledge of local peoples obtained from a long tradition of coping with national disasters, the Community Based Disaster Risk Reduction (CBDRM) Program was approved by the national government in 2001. The enactment of this programme has promoted a bottom-up DRM planning approach. Specifically, the CBDRM approach places community needs and knowledge at the centre of DRM practices. Thus, a disaster planning process starts at the community (i.e. village and commune) level instead of the national level. Once completed, commune disaster management plans serve as inputs for the preparation of the district plan. In turn, the district plans contribute to the development of provincial plans. Since 2008, 23 provinces frequently affected by natural disasters, including Lào Cai, have implemented the CBDRM policy (Bach Tan Sinh et al., 2013).

IDENTIFYING KNOWN NATURAL HAZARDS AND RISKS IN THE AREA

Natural disasters are defined by the *Law on Natural Disaster Prevention and Control 2013* (LNDPC) as 'abnormal natural phenomena which may cause damage to human life, property, the environment, living conditions and socio-economic activities' (Art. 3), and include:

> typhoons, tropical low pressure, whirlwinds, lightning, heavy rain, floods, flash floods, inundation, landslides and land subsidence due to floods or water currents, water rise, seawater intrusion, extremely hot weather, droughts, damaging cold, hail, hoarfrosts, earthquakes, tsunamis and other types of natural disasters (SRV, 2013).

Varieties of Natural Hazards (Types, Severity, Frequency)

Lào Cai is exposed to many of the disasters listed above by the LNDPC. The most damaging elements from this list include landslides, flash floods, whirlwinds, lightning, heavy rain, floods, hail, hoarfrosts, damaging cold and droughts (LCPPC, 2017).

Flash floods *(lũ ống, lũ quét)*: as explained above, the natural topography of Lào Cai embraces two large mountain ranges, the Hoàng Liên mountain range in the west and the Elephant Range in the east, with divided terrain, steep slopes, many valleys and deep streams. Floods associated with mud and rocks often lead to **landslides**. The most affected districts include Sa Pa, Bát Xát, Văn Bàn and Mường Khương, with 7 points identified for flash floods and 445 points for landslides in 2017. Particularly, the 71 points for landslides identified in Bát Xát are at the highest level of rock and mud quantities (LCPPC, 2017). They occur from June to October and are especially strong from July to September.

River floods *(lũ sông):* roughly four to five heavy rainfalls occur every year, with more than 100 mm each time. Rainfall can combine with converging water from upstream in China and the small streams in the surrounding areas to cause river flooding. However, the water withdraws quickly. The most significant damage is to agricultural production along the riverside. The affected zones include the Bảo Yên, Bảo Thắng and Văn Bàn districts, Lào Cai and the communes in the lowlands of the Bát Xát and Mường Khương districts.

Whirlwinds *(lốc xoáy)*, **hail** *(mưa đá)* and **lightning** *(giông sét)*: these events occur from March to June, accompanying storms and rainfall. Many whirlwinds of level seven and eight appear in Mường Khương, Bát Xát, Bắc Hà, Si Ma Cai and Bảo Yên. The frequency of whirlwinds is roughly 10 to 15 times per year, lightning 20 to 30 times per year (accompanied by rainfall and whirlwinds) and hail 2 to 3 times per year.

In addition, there are types of slow-onset hazards, such as **drought** *(hạn hán)* and **cold weather damage** *(rét đậm rét hại)*, which do not have direct impacts on infrastructure but seriously affect the livelihoods of the people dependent on livestock, poultry, rice fields and crops. Drought can happen during the periods after March to April or after October to November. Severe droughts occur every 20 to 22 years. However, since 1980, extreme droughts are much more frequent. For instance, five substantial droughts were recorded from 1983 to 1999 (late 1983 to early 1984; 1985 to 1986; 1990 to 1991; 1993 to 1994; and 1998 to 1999) (Lào Cai DARD, 2015). The most recent event was in April to May 2014, during which nearly 2,000 ha of rice fields and crops were damaged.

Cold weather damage occurs from December to February of the following year, affecting mostly the Sa Pa, Bát Xát, Si Ma Cai, Bắc Hà, Văn Bàn and Mường Khương districts. The damage mostly affects livestock and human health (see below).

Influence of Climate Change

Lào Cai has low exposure to natural disasters compared to provinces in other parts of Vietnam, such as the central region and the Mekong Delta (Mai Thanh Sơn et al., 2011). Therefore, intervention and support of climate change adaptation for the population in the province has received less attention than the regions listed above. This also explains why the region has received less attention in academic research and why fewer project reports have been produced on Lào Cai's relation to climate-related risks. Recent research shows that over the past several years, the sum total loss of human life and material goods in the Mekong Delta is definitively higher than in the northern mountainous area; however, when we look more closely at the proportion of the loss of total revenue and population, the loss in the northern mountainous region is not less and maybe even more significant than in other parts of the country that are more exposed to climate change (Mai Thanh Sơn et al., 2011). Since 2008, the situation has changed due to the extreme events of those years

(see below). Climate change and natural disasters are identified as major causes of poverty in the population among the ethnic minorities in the northern mountainous region, and during recent years, the region has been more prone to climate change exposure due to the growing number of extreme weather events. Additionally, the population's heavy reliance on agricultural livelihoods that are highly susceptible to changes in weather increases their vulnerability. Additionally, the high sensitivity of the northern mountainous region in general, and of Lào Cai province in particular, to climate change is rooted in the region's main social vulnerabilities. For instance, communes in Lào Cai have the lowest per capita income, and the province has the highest population density compared with other provinces in the northern mountainous area (Trang Do et al., 2013). Lào Cai also has high illiteracy rates, large families among ethnic minorities and low rates of female education (World Bank, 2010; McElwee, 2010; Trang Do et al., 2013).

History of Recent Disaster Events that have Affected the Community

Some typical flash flood and landslide events in Lào Cai

Flash floods and landslides are the most common disasters registered in Lào Cai (Nguyễn Trọng Yêm, 2006). Over the past 20 years, in the area populated by the Dao people, including Bát Xát, Bắc Hà and Sa Pa, more than 40 severe flash floods and landslide events occurred (Trần Hữu Sơn, 2017). Below are some examples of the extreme events and their impacts:

- On the evening of 13 September 2004, in the Sùng Hoảng village, Phìn Ngan commune, Bát Xát district, a major landslide after heavy rainfall buried 4 families out of 23 Dao people. In 2004, in total, Lào Cai province lost 38 people, 5 were injured and 58 houses were destroyed and washed away.
- On the night of 8 August 2008, heavy rainfall over a large area led to flash floods, landslides and inundation in many locations of the province. A flash flood with mud and rock, considered to be the largest flash flood in the history of Lào Cai, killed 66 people (missing and dead). The majority of the main roads were blocked, local water supply works were destroyed and many buildings, houses, paddies, etc., were heavily damaged. Hundreds of hectares of rice and vegetable fields in the Trịnh Tường commune were lost and washed away. In particular, the flood of mud and rock wiped out the village of Tùng Chỉn (in the Bát Xát district) and buried and washed away 22 people (Trần Thục and Koos Neefjes (ed.), 2015).[6] In total, the flood season has killed 103 people in the province (76 dead and 27 missing), collapsed and damaged 904 houses, with 1,626 other houses damaged slightly, while 2,206 households had to move out of dangerous areas. 5,415 ha of rice fields and crops were damaged. Other losses in infrastructure were also significant. The total loss caused by natural disasters for 2008 (including the heavy loss in livestock caused by damaging cold in the beginning of the year, see below) is estimated to be 1,024 billion Vietnamese Dong (VND) (Lào Cai DARD, 2008).
- In August 2012, due to the influence of a tropical depression combined with the convergence of high winds, the eastern districts of the province had an average rainfall of more than 45 mm, particularly in the area of Bắc Hà, and local rainfall

6 The number of dead is not the same according to different sources: they number 24 according to Trần Hữu Sơn (2017), and many electronic newspapers state 19 people.

totalled more than 200 mm and lasted for several hours. On the night of 31 August 2012, a severe flash flood swept through the residential area of the Nậm Lù and Nậm Cang villages and the Nậm Lúc commune in the Bắc Hà district and killed 11 people, injured 10 and washed away 12 houses of Dao people (Trần Hữu Sơn, 2017). The flood flattened 10 ha of land, paddy fields and gardens. More than 6 km of inter-village roads near Nậm Lúc village were completely paralysed and buried under tens of thousands of cubic metres of rock and mud; the wireline communication network was damaged, and contact between the affected village and the provincial steering Central Committee for Flood and Storm Control (CCFSC) and Search and Rescue (SAR) had to rely entirely on unstable mobile phone connections (Trần Thục and Koos Neefjes, 2015).

- A very recent event occurred in August 2016: the influence of storms (number 1, 2 and 3 from July 27 to August 5 and from August 18 to 20), caused whirlwinds, lightning and heavy rainfall (with an average rainfall of 100 to 152 mm and 160 mm in some areas on August 5). This triggered flash flooding and a landslide that killed 27 people (missing and dead) and injured 14. There were 1,558 houses damaged. 530 houses were evacuated during the storms. The event caused 10,599 ha of paddy fields and crops to be destroyed and flooded. The event also caused 10,980 cattle and poultry to be killed and washed away. The total loss in agriculture is estimated to be more than 200 billion VND. Seven suspension bridges were washed away, and 40 others were damaged; many locations on national roads 279, 4D, 32, provincial roads 151, 152, 153, 154, 156, 157, 158, 159, 160 and many district, communal and village roads were damaged and flooded out; 5 small hydropower dams were damaged; 14 schools were damaged; the water supply system was damaged for eight communes, and the Phìn Ngan commune was without electricity for many days. The total loss is estimated to be more than 680 billion VND.
- The two districts mostly affected were Bát Xát and Sa Pa, with 11 people killed (dead and missing) and 7 injured. Once again, a Dao village, Sùng Hoảng 2 (in the same area of the 2004 event) was destroyed, with 3 people killed and 16 houses washed away. Some other villages have been evacuated, including Van Hồ (34 houses) in the Phìn Ngan commune, Bát Xát district (LCPPC, 2016). They all belong to the Red Dao people.

Recovery, difficulties and challenges

After flash floods and landslide events in the past, Lào Cai authorities have provided a significant amount of support to affected people; however, in remote areas with limited access to resources, people are forced to rely on themselves post-disaster. Therefore, organisation of post-disaster recovery under the 'four on-the-spots' motto (leadership on the spot, human resources and forces on the spot, materials and logistics on the spot) is very important. Government efforts focus on SAR, restoring infrastructure (roads, schools, medical centres, etc.) and relocating affected people. Support from the government also includes money for damaged households and for food and water for people in flooded zones and agriculture seed for affected farming families. People have to rebuild their own lives. For the Dao people who have lost their houses, they are usually relocated to a safer place that is chosen by local authorities. One of the most significant challenges is restoring their livelihood, as the productive land is reduced or as people are relocated far from their homeland. For example, one year after the 2016 flash flood in Bát Xát, the village of Sùng

Hoảng 2 was totally rebuilt with 35 households (about 180 peoples) in a new settlement on top of a hill 10 km away from the older location. In July 2017, these individuals still did not have electricity, clean water or a road to connect them to other facilities and villages. In particular, there were no water sources in the new location to develop rice fields, and as a consequence, about a dozen families rebuilt shelters in the older village to be able to work in the fields. This, again, makes them vulnerable to flash flooding in the future. Only a few families stayed in the new settlement, most of whom consisted of the elderly and children (see Figure 2 in the following section).

Historical freezing and the damaging cold event of 2008

The historical freezing and damaging cold event that lasted for 38 days, from 15 January to 21 February 2008, was an historic event in the Northern Delta and Midlands and led to very serious damages and losses. During this cold event, the minimum temperature dropped to record lows in Sa Pa of -1.6°C (on February 14). Ice, snow and frost lasted for many days in high mountainous areas of Lào Cai, such as in Bát Xát, Mường Khương, Bắc Hà, Si Ma Cai and Sa Pa. This year experienced the longest duration of damaging cold and the largest areas of ice and snow on record in Vietnam. The losses recorded in Lào Cai were the most severe compared with other provinces, including 18,760 livestock, and most of the winter/spring rice and crops were lost (Lào Cai DARD, 2008).

Recovery, difficulties and challenges

Researchers have pointed out that local authorities in many areas usually pay less attention to slow-onset hazards such as damaging cold. However, the Dao and Hmong people rely heavily on agriculture and free-feeding practices (for livestock and poultry), which are strongly affected by extreme and extended cold events. As a consequence, once they happen, these events often cause serious damage (such as loss of cattle, horses and vegetables) for local communities and thus make their poverty reduction efforts much more challenging. Recognising this problem, after the historical cold event in 2008, the Vietnamese government made an immediate decision to provide support and compensation to the affected regions. The government has also engaged in efforts to raise awareness and build capacity for local communities so that they can better prepare for and cope with cold weather events.

Droughts and wildfires

A historical wildfire event started on 8 February 2010 (25 of Lunar New Year), in the Tả Van commune, Sa Pa district and reached the forest core zone of Hoàng Liên National Park (Hồng Hà, 2010). Officially, the fire ended on February 15, but in some areas, the fire lasted for a month (Lãng Quân, 2010). This extreme wildfire happened after several months of drought and had very severe consequences: about 3,000 ha (even more, according to Trần Hữu Sơn (2018)) of forest were burned. Three communes (of the six affected) belong to the Lào Cai province: Tả Van, Bản Hồ and Lao Chải – areas of Hmong and Red Dao people.

In 2014, a long drought triggered by many prolonged heatwaves from May to September caused a loss of 13,589 ha of paddy fields and crops in Mường Khương, Si Ma Cai, Văn Bàn, Bảo Thắng and Sa Pa (Lào Cai DARD, 2015).

Recovery, difficulties and challenges

Heat waves and drought cause serious consequences for the livelihood of local populations. They also increase the danger of wildfires, which require only a little human carelessness. When we search using the keywords 'wildfire in Hoàng Liên Sơn National Park' on Google, we find few wildfire events in electronic newspapers almost every year. Local populations living in this area earn an important part of their living through the cultivation of cardamom, which they dry in the forest after harvest using firewood that easily causes wildfires. In most wildfire events, there is no human loss of life, but the impact on the forest is very significant. Furthermore, wildfires increase the vulnerability of the local landscape and its population to further disasters such as landslides and flash flooding.

ICH CURRENT SITUATION IN LÀO CAI PROVINCE IN ASSOCIATION WITH NATURAL HAZARDS AND DISASTERS

Impacts of Natural Disasters on ICH

Since ICH is difficult to materialise, the clear conceptualisation of this notion is necessary to better facilitate the assessment of natural disasters' impacts on ICH. According to recent research (Wilson and Ballard, 2017), ICH can be captured under the rubrics of **People** as the agents of ICH (i.e. individuals, communities, agents, transmitters, transactors, institutions and states); **Place** as the material or tangible setting (i.e. sites, environments, resources, settlements, objects and artefacts); and **Story** as immaterial and intangible settings (i.e. knowledge, narrative and tradition). This conception of ICH will be used in the following sub-sections to support the assessment of natural disasters' impacts on ICH.

This report relies mainly on secondary data. However, very limited information exists regarding the impact of natural disasters on ICH. We have reviewed a number of documents related to DRM, including reports/statistics about losses and damages caused by hazards such as flash flooding, landslides and extremely cold weather in Lào Cai. Nevertheless, no information exists regarding damages directly related to the local ICH, even in the recent Post-Disaster Needs Assessment (PDNA) reports. The PDNA became a legal requirement in 2015 after the endorsement (by the Ministry of Agriculture and Rural Development (MPI, 2015)) of the national guidelines on inventory of losses/damages caused by natural disasters. This document mentions the need to invent damages related to the culture sector. However, only the **Place** (i.e. the material or tangible setting, including 'cultural building,[7] cultural and historical site, scenic landscape, assets, cultural equipment' (Article 5.đ.)) is referred to. In addition, both the 2016 and 2017 PDNA reports do not mention material losses associated with local ICH. Similar gaps were identified in the annual reports of the SCNDPC[8] over the last 10 years.

In the culture sector, the PDNA process does not exist (Trần Hữu Sơn, 2017). The Department of Culture, Tourism and Sport and their lower-level line agencies have never conducted any assessment of the impact of natural disasters on local ICH. Most of the damages recorded to date relate to tangible heritage, such as impacts of the extreme hail

7 Defined as 'build institutions to serve cultural, information and propaganda activities' (Art. 2. 13).

8 This report reviews the losses and damages caused by natural disasters in the province and identifies key experiences and learning.

events in 2013 on the Bắc Hà Temple and Hoàng A Tưởng Palace (Lào Cai DCST, 2013) and in 2017 on the temple of Bảo Hà (Bảo Hà TMB, 2017). However, clarity was not established on the way local ICH that was associated with these **Places** was affected, for instance, the interruption of local festival activities and religious practices. It is important to note that the Festival of Bảo Hà temple had been inscribed in the national list of ICH 2016.

Given the information gap described above, we can only conduct a general discussion about the impacts of natural disasters on ICH in Lào Cai. Firstly, with regards to the ICH agents, natural disasters have caused significant human losses in Lào Cai in general and in Bát Xát and Sa Pa in particular. The number of deaths and missing people, among which the Dao people are often the most numerous, was 26 in 2016 and 11 in 2017 (Bích Hợp, 2017) (see previous section on recent disaster events in 2016). Since people have knowledge of ICH and are the most important element, human losses will inevitably cause some disruption and interruption of ICH performance and transmission.

Secondly, climate-related disasters have also had significant impacts on the **Places** associated with local ICH. For the Hà Nhì and Dao people, the places considered as tangible settings of their ICH are constituted of forest, rice fields and houses of vernacular architecture. As a tradition, the Dao people always choose to live along streams and rivers in the mountainous areas. Their daily lives and livelihood are therefore closely related to water and the forest. The flash flood in 2016 destroyed the whole Sung Hoang village where the Dao people had been living. As a result, people lost all their ICH-related settings, such as houses, cultural spaces and environments and had to move to other locations. The problem is that the relocation programme was designed and determined by the government without limited consultation with local communities and consideration of their ICH practices. People were moved far away from their traditional living environment (i.e. 10 km for the new Sùng Hoảng village). According to some researchers and officials from Lào Cai DCST, this change in living environment has had a negative influence on Dao-related ICH, as forest and watersheds are considered sacred places, where individuals perform rituals and that nurture their beliefs. Additionally, the new houses provided by the government were made from concrete with fibrocement roof instead of traditional materials, such as wooden structures, rammed earth wall and thatched roof. This may lead to the decline of traditional building knowledge and techniques.

Figure 2
Thirty-five families of Sùng Hoảng village victims of 2016 flash flood are relocated in a new place, 10 km away from the old village location. The new houses are in concrete with fibrocement roof.
(©Hà Thanh and Chí Tuệ)

Similarly, droughts, wildfires, hails and extreme cold events are considered significant threats for local ICH. For instance, these events have caused serious damage to local forests and crops, leading to significant reduction of raw materials (e.g. bamboo, medicinal trees, herbs and plants) for traditional livelihoods and craftsmanship, such as the basketwork of the Hà Nhì people and traditional healing practices of the Dao.

Role of Local Knowledge (ICH) in DRR and Climate Change Adaptation (CCA)

In this section, we look at how ICH, or more specifically local knowledge, contributes to a lessening in the vulnerability of the community to natural hazards. Vulnerability (of community, assets and systems) is the combination of the degree of exposure, sensitivity and adaptive capacity (Phan Phương Anh and Vũ Cảnh Toàn, 2013). For instance, a social group living in areas frequently affected by flash floods and easily affected by flash flood events is considered to be highly vulnerable if they have limited capacity to this hazard, and vice versa.

Exposure to hazard depends on geographic location, property values in the affected area and the intensity and frequency of natural disasters. Sensibility can be interpreted as the degree to which a community or livelihood activities are affected by disasters. For example, the elderly and children are often most impacted by temperature change, whereas free-feeding cattle are more frequently affected by heatwaves and cold weather. Adaptive capacity includes aspects such as financial (e.g. the economic autonomy and ability of communities to respond to disaster events); technical (e.g. the capacity of DRM agencies in providing accurate weather forecast and effective flood early warning system; the skills and knowledge of communities in building storm/flood resistant housing; capacity to provide stable clean water and electricity even during time of disasters, etc.); institutional and policy (e.g. the effectiveness of organisational structures on DRR and CCA, the coordination between relevant agencies and the effectiveness of policies and strategies in DRR and CCA); social and cultural (e.g. social cohesion and community networks, traditional knowledge in dealing with natural disasters, such as living with floods) factors.

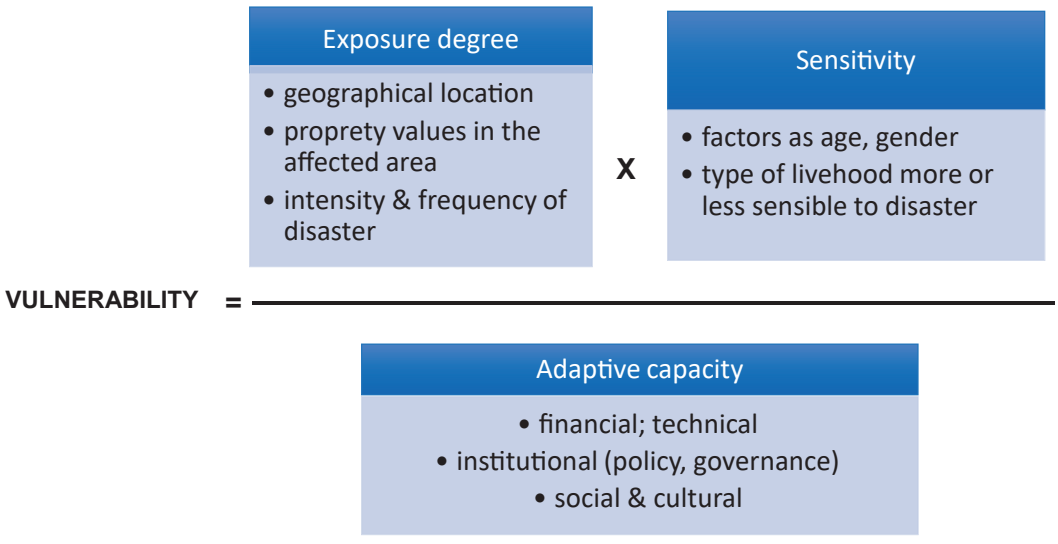

Figure 3 Vulnerability framework

According to reviewed documents, Lào Cai government officials leading culture management and local researchers, ICH plays an important role in reducing exposure to natural disasters as well as in improving the capacity of local communities (i.e. the Dao and Hà Nhì people) in dealing natural disasters. Below are some examples.

Environmental knowledge of the Dao people about water sources and the forest

The Dao people often live near water sources in mountainous areas and have a strong connection to the water. Among 466 villages of Dao people in the Lào Cai province, 151 are named in relation with water sources (*nậm*, *khe*, *suối*, *hồ*) (Trần Hữu Sơn, 2017). The experiences of living with the water allows them to gain a deeper insight into the local geographical and hydrological conditions so that they can find the proper location to settle. According to a local researcher and former senior culture official, the Dao people often settle their villages (instead of individual houses) in the middle elevation level (never in a narrow valley between mountains) and at least 300 m away from nearby rivers/streams (Trần Hữu Sơn, 2018). In addition, these villages are always located and protected by a forest to the rear. This knowledge and these practices have helped the Dao people to be less exposed to flash floods, inundation and landslides.

Additionally, Dao communities consider surrounding forests as sacred places and have special mechanisms and customary laws to strictly protect these forests and watersheds surrounding their communities. The Dao people name themselves *kìm mùn* (or *kiềm miền*), signifying 'forest people'. This title indicates a close relationship, and linkages between them and their forests are considered sacred (Trần Hữu Sơn, 2017). Each Dao village has its sacred forest where individuals worship the forest god and the spirit of the village.

Sacred mechanisms and customary laws to protect the forest of the Black Hà Nhì

Similarly, forests have a particular place in the life of the Black Hà Nhì people in Lào Cai. Given their traditional attachment to wet-rice cultivation, their daily lives and livelihoods are highly water-dependent. Thus, protecting the forest that plays a key role in regulating water resources is vital for them. The Black Hà Nhì communities believe that the forests (trees and wild animals) have souls like human beings and are controlled by supernatural powers. They divided the forest surrounding their village into four forbidden forest groups corresponding to the worship of *Gà ma do* (protective God), *Mu thu do* (fecundity god and wife of Gà ma do), *Thủ ty* gods (founders of the village who ensure the peace and security of the village and protect livestock and poultries from diseases) and forest for entertainment (i.e. places for community activities) (*A gò là do*) (Duong Tuan Nghia, 2017, Trần Hữu Sơn, 2017).

The rituals and festivals venerating the forest gods and water genies create a sacred sanction in order to protect the forest, watershed and water sources (Lào Cai DCST, 2015). Each Black Hà Nhì's village develops a system of customary laws consisting of village rules and sanctions for violation of these rules. For example, these documents require the need for 'taking care of trees, preventing fire, soil erosions and protecting habitat's topographical setting' (Lào Cai DCST, 2015). The rules also precisely forbid actions, picking/exploitation rules and the responsibility to mobilise the community to protect the forest against wildfires. Every human action (picking, dry firewood collecting, bamboo sprout picking, hunting, etc.) is strictly banned in the sacred forest. Villagers are only allowed to collect dry firewood at the ritual of worshipping forest gods to cook offering meals (Trần Hữu Sơn, 2017). Violation of the forest protection rules, such as cutting down a tree or causing a fire,

are charged with a fine, and detection of an intruder is rewarded.

Making the forest sacred and implementing strict customary laws as described above have contributed significantly to the protection of the forest surrounding the Hà Nhì villages and thus has reduced the threat posed by flash floods and landslides to the Hà Nhì community (Trần Hữu Sơn, 2017; Duong Tuan Nghia, 2017).

Local knowledge to build resistant housing for extreme weather

Since the Hà Nhì people have lived in high attitude for centuries, they have been frequently affected by extreme cold weather and windy conditions. To deal with such extreme conditions, they have developed some special techniques in building their houses. These techniques consist of applying knowledge about choosing the right location, the right materials from local resources (e.g. rock and stone for foundation, clay for rammed earth wall that has double layers and is at least 60 cm thick, wood for frames and straw for thatched roofing), and about designing the right structure (i.e. the vernacular architecture). There is much evidence showing the strong capacity of these houses in dealing with extreme conditions such as strong wind and extreme and extended cold (Lý Khai Phà, 1998).

Healing knowledge using medicinal plants

The Dao people are well-known among Vietnamese ethnic minority groups for having very diverse healing skills and rich knowledge about the medicinal properties of plants (Lê Thị Thanh Hương and Nguyễn Trung Thành, 2016). This includes knowledge about the location and procurement of medicinal plants in the forest, the benefits of these plants and how to use them for healing and improving human health. The Dao people have collected and used more than 50 wild medicinal plants for healing purposes (Nguyễn Ngọc Thanh, 2016). Several remedies (e.g. *đìa nhặn* soup) can be beneficial for people in dealing with extremely cold weather. The Dao people have also used different compositions of plants and herbs to treat arthritis and stiffness caused by extremely low temperatures (Lê Thị Thanh Hương and Nguyễn Trung Thành, 2016).

Community network and cohesion as social capital in preparedness, response and recovery

Community networks, cohesion and mutual support can play important roles in preparing for, responding to and recovering from disaster events (Hiwasaki, Luna and Marçal, 2015). In the Black Hà Nhì and Dao communities in Lào Cai, this community cohesion and network are strengthened due to the practice of traditional livelihood models and ritual and religious activities. For example, Dao communities in Lào Cai have practised the reciprocal exchange of labour (*pụi công*) for farming activities for years. People also provide mutual aid (*chảng khả*) to each other for more labour-intensive work, such as house building/renovating, timber and bamboo transportation and husbandry-making for cattle. Building a house in Black Hà Nhì communities often involves the whole village's support (Lý Khai Phà, 1998). People also help each other move cattle to warm and safe places to deal with extremely cold and windy conditions. In addition, individuals and households having difficulty or need financial support can always borrow money from other family members or other families in their village with zero interest (*pang chang mủa*) (Khổng Diễn, 1996, pp. 136-139). This mutual financial support helps families affected by, for example, flash floods and landslides to rebuild and/or repair their damaged houses and recover quickly from disasters.

According to ICH management practitioners and local researchers, this strong community network and mutual support, strengthened by traditional livelihood activities and cultural practices, have made a significant contribution towards improving social capital and thus the capacity of the Dao and Hà Nhì people in responding to natural disasters, especially during disaster and recovery phases (Trần Hữu Sơn, 2017). In high attitude, remote, mountainous areas where these communities are living, this local and internal-based capital is even more important as it may take significant time for external support forces/ resources to arrive in times of disasters due to the long distance and poor infrastructure conditions.

Religious beliefs, rituals, festive events, psychological strength to respond to disaster and cohesion in recovery

The Black Hà Nhì and Dao communities have strong beliefs in gods and a deep appreciation of nature. They organise regular ceremonies and festivals, such as forest worship and agriculture-related rituals to ask god for rain, productive harvests, and the reduction of disaster risks and disaster events such as floods and droughts (Trần Hữu Sơn, 2018). Local ICH researchers interviewed for this study confirm that such beliefs and ritual practices have helped the Black Hà Nhì and Dao communities in Lào Cai to better cope psychologically with disasters. This point is consistent with other studies that highlight the role of the religious beliefs in supernatural power in providing mental strength to believers, enabling disaster survivors to better cope with suffering and calamities and to maintain stability and strengthen social cohesion (IFRC, 2014; Schipper, 2010).

We can see that local knowledge may be involved in every aspect of DRR and adaptation, such as in predicting, preparing for, mitigating the consequences of and recovering from disaster events. However, climate change, urbanisation, economic growth and globalisation have posed significant challenges to the protection and maintenance of this knowledge. The following section will examine some cases where local knowledge/ICH is in endangered situations. This, in turn, may have negative impacts on people's vulnerability to climate-related disasters.

Non-Climate Factors Influencing the Protection and Maintenance of ICH and Thus Vulnerability of Ethnic Community Groups to Natural Disasters

According to local officials in charge of ICH management in Lào Cai, the protection and maintenance of local ICH in general and ICH related to the Red Dao and Black Hà Nhì communities in particular has been highly challenging due primarily to non-climate-related factors such as pressures caused by population and economic growth and the lack of consideration of ICH in cultural and development policies (and not climate-related disasters). Research informants in Lào Cai have identified a number of examples regarding the increased loss (either partly or fully) of local ICH in the Red Dao and Black Hà Nhì communities. These losses, in turn, have increased the degree of vulnerability of the Red Dao and Black Hà Nhì people because ICH plays an important role in protecting them and improving their capacity to deal with natural disasters as discussed above.

Firstly, as mentioned earlier, the Dao people know where to find safe places to build their houses so that they are less exposed to flash floods and landslides (Trần Hữu Sơn, 2017). However, the population growth rate among the Dao communities has significantly

increased (Nguyễn Thế Huệ, 2003). This demographic explosion has forced the Dao people to move closer to streams/rivers, where the risks in relation to flash floods and landslides are much higher (Trần Hữu Sơn, 2017).

Secondly, population growth has also created significant pressure on traditional crop practices and forest protection. On the one hand, to ensure food safety and the demand of the significantly increased population, the Dao people have had to expand their cultivation land and modify their traditional swidden farming practices by shortening the time their fields are fallowed from 3 to 10 years (Phàn Phù Lìn, 2007). According to informants in Lào Cai, these actions have triggered deforestation and led to significant exhaustion of soils, resulting in soil instability. As a result, flash floods and landslides have become more frequent and severe. On the other hand, the Black Hà Nhì population is much smaller than the Dao group, calculated at only around 2000 people in 1998 (Xuân Mai, 1998; Trần Hữu Sơn, 2017). They have also experienced much less pressure from population growth and have done a better job maintaining traditional farming practices and their sacred forests. Therefore, the Black Hà Nhì people have been less vulnerable to natural disasters than the Dao group, although they are basically living in the same geographical conditions (Trần hữu Sơn, 2018).

Thirdly, the loss of local ICH is also a result of cultural and economic development policies. For example, during the 1960s to the 1980s, the practices of religious activities, such as rituals and ceremonies related to the sacred forest, were considered 'superstitious' activities (*mê tín dị đoan*) and thus were prohibited by the State. Significant losses of agriculture and forest-related rituals and festival activities that led to an increase in the violation of sacred forests were documented later in both the Dao and Black Hà Nhì communities (Trần Hữu Sơn, 2018). For instance, people in the Phìn Ngan village, Trịnh Tường commune in the Bát Xát district stopped practising rituals related to the sacred forest long before our field survey in 2007 (Phàn Phù Lìn, 2007).

Significant cultural changes related to local ICH in Lào Cai due to economic development policies were also documented. Since 1968, the Vietnamese government introduced the settled agriculture and sedentarisation programme to ethnic minorities. This programme has shifted the living style of these groups from scattered small villages to concentrated areas. Additionally, the new areas are often planned and designed by the State, with limited engagement of local communities and limited use of their knowledge. Furthermore, since 1990, under the nationwide transition from a collective to a market-oriented economy, the new agricultural model that combined wet-rice cultivation and industrial forest planting was introduced (Minister of Agriculture and Rural Development, 1999). As a result, local communities were encouraged to plant industrial trees such as cardamom in primary forests. Although the plantation of these trees has made an important contribution to poverty reduction (Phàn Phù Lìn, 2007), the continued expansion of industrial trees in primary forests has considerably reduced biodiversity (Phạm Ngọc Triển, 2016) and is considered an important cause for the increase in intensity and frequency of flash floods and landslides.

Finally, globalisation and industrialisation have also pushed the local ICH in the endangered direction. For example, the availability of cheap industrial plastic containers and textiles from China in large quantities (Trần Hữu Sơn, 2018) has discouraged local communities from continuing with basketwork and producing traditional textiles. In the long term, this

phenomenon will likely lead to the loss of knowledge about these traditional crafts. Similarly, local building knowledge has been lost due to the replacement of industrial materials and techniques.

Healing knowledge of the Dao people has also been more and more replaced by modern medicine. This is also because of the significant decline in medicinal plants and trees due to increased deforestation (Vũ Trường Giang and Nguyễn Thị Tám, 2015) and over-exploitation to meet the demands of the domestic and international (i.e. mostly Chinese) markets (Trần Hữu Sơn, 2018).

The Gap in ICH Management in Relation to DRR/DRM

Based on a review of current policies related to DRR/DRM/CCA and culture management, we propose that a large gap exists regarding the overlap between ICH and DRR/DRM/CCA. There are a number of reasons for this assertion. Below are some examples:

- A significant lack of consideration of ICH in DRR and CCA is apparent. ICH has not been referred to in most of the current policies, government reports and assessments related to disasters and climate change. In some cases, local knowledge is mentioned in a very general manner. However, the current condition of this knowledge; how natural disasters, climate change and other factors affect this knowledge; how this knowledge contributes specifically to DRR and CCA; and how to protect and maintain this knowledge remain unclear and understudied.
- There is also a lack of consideration of natural disaster and climate change in current culture-related policies. For instance, disaster risks are not mentioned in any documents related to ICH safeguarding and promotion projects and programmes (either at the national level or in the Lào Cai province) from 2010 to 2016 that are reviewed in this study (Minister, 2016; LCPCP, 2015; LCPPC, 2017).

ACKNOWLEDGEMENTS

We would like to acknowledge Trần Hữu Sơn (Vice-Chaiman of Vietnam Association of Folklorists and Former Director of Lào Cai Department of Culture, Sports and Tourism), Dương Tuấn Nghĩa (Vice-Director of Lào Cai DCTS and Head of Cultural Heritage Management Division), Nguyễn Trường Giang (Associate professor of Department of Anthropology, Hanoi VNU USSH), Phạm Thị Thu Hương (Environment Protection Division of Lào Cai province) for spending time for interviews and for providing documents for the preparation of this report.

REFERENCES

Bach Tan Sinh, Vu Canh Toan and Nguyen Duy Can and Nguyen Tuan Anh (2013). *Vietnam - Disaster Risk Management.* In: Adaptation Knowledge Platform (ed.) *Understanding adaptation planning: selected case studies in Nepal, Philippines and Vietnam*, Bangkok: Stockholm Environment Institute, pp. 42-69. Available at: www.asiapacificadapt.net or weADAPT.org.

Bảo Hà TMB (2017). *Báo cáo thiệt hại do mưa đá, lốc xoáy tại di tích lịch sử Đền Bảo Hà, thống kê thiệt hại về tài sản quy ra tài chính, mưa đá lốc xoáy ngày 25/03/2017* [Report on damages caused by hail, whirlwind on 25 March 2017 of Bảo Hà temple, inventory of losses in material assets and estimated costs], *26 March 2017*. Bảo Hà: Bảo Hà Temple Management Board.

Bích Hợp (2017). Lào Cai gặp khó khăn trong cảnh báo thiên tai [Lào Cai province's facing difficulty in

disaster warning]. *Người đưa tin.* [online] Available at: http://www.nguoiduatin.vn/lao-cai-gap-kho-khan-trong-canh-bao-thien-tai--a351081.html. [Accessed 13 Dec. 2017]

Chu Thuỳ Liên (2004). *Tìm hiểu văn hoá dân tộc Hà Nhì ở Việt Nam* [Understanding Hà Nhì Culture in Vietnam]. Hà Nội: Văn hoá Dân tộc.

Đặng Nghiêm Vạn, Chu Thái Sơn and Lưu Hùng (2000). *Ethnic minorities in Vietnam.* Hà Nội: The Gioi.

Duong Tuan Nghia (2017). *Tri thức dân gian trong khai thác và bảo vệ rừng của người Hà. Nhì Đen ở huyện Bát Xát, tỉnh Lào Cai* [Folk knowledge in forest exploitation and protection of the Ha Nhi Den people in Bat Xat district, Lao Cai province]. PhD, Vietnam National Institute of Culture and Arts Studies.

GSO (2010). *The 2009 population and housing census Vietnam: Completed results.* [online] Hà Nội: Statistical Publishing House. Available at: http://www.gso.gov.vn/default_en.aspx?tabid=515&idmid=5&ItemID=10799 [Accessed 7 Oct. 2017].

Hà Thanh and Chí Tuệ (2017). Sủng Hoảng một năm sau cơn lũ dữ [Sủng Hoảng one year after the destructive flood]. *Tuổi trẻ.* [online] Available at: https://tuoitre.vn/sung-hoang-mot-nam-sau-con-lu-du-1351066.htm [Accessed 10 Nov. 2017]

Hồng Hà (2010). Tập trung chữa cháy rừng tại Lào Cai [Effort to stop forest fire in Lào Cai]. *VGPNEWS.* [online] Available at: http://baochinhphu.vn/Tin-noi-bat/Tap-trung-chua-chay-rung-tai-Lao-Cai/27491.vgp [Accessed 4 Oct. 2017]

IFRC (2014). *World disasters report: Focus on culture and risk*. Switzerland: International Federation of Red Cross and Red Crescent Societies.

Khổng Diễn (ed.) (1996). *Những đặc điểm kinh tế-xã hội các dân tộc miền núi phía Bắc.* Hà Nội: Khoa học Xã hội.

Lãng Quân (2010). Hoàng Liên Sơn thành … Hoả Diệm Sơn! [Hoàng Liên moutain becomes Fire Moutain]. *An ninh thế giới.* [online] Available at: http://antg.cand.com.vn/Phong-su/Hoang-Lien-Son-thanh%E2%80%A6-Hoa-Diem-Son-297033/ [Accessed 7 Oct. 2017]

Lào Cai DARD (2008). *Report of the steering committee of flood and storm prevention and control*. Lào Cai: Department of Agriculture and Rural Development.

Lào Cai DARD (2015). *Statistics of natural disasters 2004–2015.* Lào Cai: Department of Agriculture and Rural Development.

Lào Cai DCST (2013). *Báo cáo công tác quản lý tại các di tích trên địa bàn Lào Cai.* [Report on Management of cultural sites in Lào Cai province]. *Mid-2013 report*. Lào Cai: Department of Culture, Sports and Tourism.

Lào Cai DCST (2015). *Safeguarding and promotion of indigenous knowledge associated with the ecological environment of the Black Hà Nhì in Lào Cai Province, Vietnam, 2014–2015.* International Assistance from the Intangible Cultural Heritage Fund, Final Narrative Report. Hà Nội: Unesco Vietnam.

Lào Cai Gov (2016). Lào Cai: Provincial People's Committee. Available at: http://laocai.gov.vn/ubnd-laocai/4/469/54239/281714/Dan-so/Dan-so.aspx [Accessed 5 Oct. 2017].

LCPCP (2015). *Đề án số 08-ĐA/TU ngày 27/11/2015 của Tỉnh ủy Lào Cai về phát triển văn hóa, thể thao tỉnh Lào Cai giai đoạn 2016–2020* [Project no 08 on the development of culture and sports of province of Lào Cai for the period of 2016–2020]. Lào Cai: Provincial Communist Party.

LCPPC (2016). *Báo cáo tình hình thiệt hại do cơn bão số 1, 2, 3; phương án khắc phục hậu quả thiên tai và một số đề xuất kiến nghị của tỉnh Lào Cai* [Report on damages and losses caused by storms no 1, 2, 3; recovery plan and recommendations of Lào Cai province], *31/8/2016*. Lào Cai: Provincial People's Committee.

LCPPC (2017). Quyết định phê duyệt dự án 'Bảo vệ và phát huy giá trị di sản văn hóa phi vật thể Quốc gia trên địa bàn tỉnh Lào Cai giai đoạn 2017–2020' [Decision of Lào Cai Provincial People's Committee on the approval of the project: 'Safeguarding and Promotion of National ranked ICH in Lào Cai province for the period 2017–2020'], 09/05/2017. Lào Cai: Provincial People's Committee.

Lê Thị Thanh Hương and Nguyễn Trung Thành (2016). Nghiên cứu tri thức và kinh nghiệm sử dụng cây thuốc của các dân tộc thiểu số ở tỉnh thái nguyên để bảo tồn và phát triển bền vững [The Knowledge and Experience of the Medicinal Plants Using of Minorities Ethnic in Thái Nguyên Province for Conservation and Sustainable Development]. *Tạp chí Khoa học ĐHQGHN: Khoa học Tự nhiên và Công nghệ,* 32, pp. 55–64.

LSO (2015). *Laocai Statistical Yearbook 2014.* [online] Hà Nội: Statistical Publishing House. Available at:

http://www.laocai.gov.vn/SiteFolders/Root/3372/NewFolder/Nien giam 2014.pdf [Accessed 5 Oct. 2017].

Lý Khai Phà (1998). Tìm hiểu một số vấn đề về văn hoá dân tộc Hà Nhì [Understanding some issues of Hà Nhì people culture]. *In:* Tô Ngọc Thanh and Nguyễn Xuân Kính (ed.) *Giữ gìn và phát huy tài sản văn hoá các dân tộc ở Tây Bắc và Tây Nguyên* [Safeguarding and Promotion of Culural Assets of Ethnic Groups in the Northwest region and Central Highlands]. Hà Nội: Khoa học Xã hội, pp. 135–147.

Mai Thanh Sơn, Lê Đình Phùng and Lê Đức Thịnh (2011). *Biến đổi khí hậu: tác động, khả năng ứng phó và một số vấn đề về chính sách (Nghiên cứu trường hợp đồng bào các dân tộc thiểu số vùng núi phía bắc)* [Climate Change: Impacts, Response Capacity and Policy Issues (Cases Studies of Northern Mountainous Ethnic Minorities)]. Hà Nội: Climate Change Working Group and Ethnic Minority Working Group.

McElwee, P. (2010). *The social dimensions of adaptation of climate change in Vietnam (English)*. Development and climate change discussion paper, no. 17, Washington, DC: World Bank. http://documents.worldbank.org/curated/en/955101468326176513/The-social-dimensions-of-adaptation-of-climate-change-in-Vietnam

Minister of Agriculture and Rural Development (1999). Quyết định của Bộ trưởng Bộ NNPTNT số 140/1999/QĐ-BNN-ĐCĐC ngày 14/10/1999 về nội dung, tiêu chí định canh định cư [Decision 140 on the contents and criteria for sedentarization]. Hà Nội: Ministry of Agriculture and Rural Development.

Prime Minister (2016). Quyết định số 1207/QĐ-TTg ngày 27/7/2016 của Thủ tướng Chính phủ phê duyệt Đề án 'Bảo tồn, phát triển văn hóa các dân tộc thiểu số Việt Nam đến năm 2020' của Bộ VH, TT và DL [Decision no 1207 of Prime Minister approving the Program of 'Conservation and promotion of culture of ethnic minorities in Vietnam up to 2020' of the Ministry of Culture, Sports and Tourism]. Hà Nội: Government of Socialist Republic of Vietnam.

Nguyễn Ngọc Thanh (ed.) (2016). *Tri thức dân gian của người Dao trong sử dụng và bảo vệ nguồn tài nguyên thiên nhiên* [Folk knowledge of Dao group in using and protecting natural resources]. Hà Nội: Khoa học Xã hội.

Nguyễn Thế Huệ (2003). Dân số các dân tộc ở Việt Nam thế kỷ XX [Population of ethnic groups in Viêt Nam in the 20th century]. *In:* Khổng Diễn and Bùi Minh Đạo (ed.) *Dân tộc học Việt Nam thế kỷ XX và những năm đầu thế kỷ XXI* [Ethnology in Viêt Nam in the 20th century and in the first years of 21rst century]. Hà Nội: Khoa học Xã hội, pp. 383–397.

Nguyễn Trọng Yêm (2006). *Nghiên cứu đánh giá trượt lở, lũ quét - lũ bùn đá tại vùng trọng điểm tỉnh Lào Cai (H. Bát Xát, H. Sa Pa và TP. Lào Cai - tỉnh Lào Cai) và kiến nghị các giải pháp phòng tránh, giảm nhẹ thiệt hại* [Assessment of lanslide, flash flood - mud and rock flood in the most affected areas in Lào Cai province (Bát Xát district, Sa Pa district and Lào Cai city) and recommendation of disaster prenvention and mitigation]. Nghiên cứu xây dựng bản đồ phân vùng tai biến môi trường tự nhiên lãnh thổ Việt Nam. [Studying mapping of natural disasters typology of Việt Nam territory. Code KC-08–01, Hà Nội: Institute of Geography, Vietnam Academy of Science and Technology.

Nguyễn Trường Giang (2015). *Ruộng bậc thang ở Việt Nam, bảo tồn và phát triển bền vững* [Terraced fields in Viêt Nam, preservation and sustainable development]. Hà Nội: Chính trị Quốc gia.

Phạm Ngọc Triển (2016). Lào Cai: Không khuyến khích trồng cây Thảo quả dưới tán rừng tự nhiên [Lào Cai: the cardamom plantation is not encouraged in the primary forest]. *Tài nguyên & Môi trường*. [online] Available at: https://baotainguyenmoitruong.vn/moi-truong/lao-cai-khong-khuyen-khich-trong-cay-thao-qua-duoi-tan-rung-tu-nhien-1122625.html [Accessed 13 Dec. 2017]

Phan Phương Anh (2008). *Tri thức bản địa trong sản xuất nông lâm nghiệp: trường hợp làng Phìn Ngan, xã Trịnh Tường, huyện Bát Xát, tỉnh Lào Cai* [Indeginous knowledge in agricultural and forest production: the case of Phìn Ngan village, Trịnh Tường commune, Bát Xát District, Lào Cai province]. In: Nguyễn Thị Hiền (ed.) *Văn hoá sinh thái của các tộc người ở huyện Bát Xát, tỉnh Lào Cai* [Ecological Culture of Ethnic Groups in Bát Xát District, Lào Cai Province], Vietnam Institute of Cultural and Arts Studies. Hà Nội. Unpublished report.

Phan Phương Anh and Vũ Cảnh Toàn (2013). Intangibles Cultural Heritage Conservation and Challenges in the Context of Climate Change: A Case Study of Cà Mau. In: Võ Quang Trọng and Nguyễn Chí Bền (ed.) *Museum & cultural heritage: Facing climate change*, Conference Proceedings, 11–12 June 2012, Huế, Viêt Nam. Hà Nội: Social Sciences Publishing House, pp. 466–487.

Phàn Phù Lìn (2007). Ecological Culture of the Red Dao Group in Bát Xát District, Lào Cai Province. (Personal communication, August 2007, Phìn Ngan village, Trịnh Tường commune, Bát Xát district, Lào

Cai province).
Phương Liên (2017). Lũ quét làm 1 người mất tích tại Trịnh Tường – Bát Xát [Flash Flood causing one missing person in Trịnh Tường - Bát Xát]. *Lao Cai Radio and Television.* [online] Available at: http://laocaitv.vn/chinh-tri-xa-hoi/lu-quet-lam-1-nguoi-mat-tich-tai-trinh-tuong-bat-xat [Accessed 5 Oct. 2017]
Sa Pa Gov (2017). Lào Cai: Sa Pa District People's Committee. Available at: http://sapa.laocai.gov.vn/tp-sapa/1227/27461/53369/262630/Gioi-thieu-ve-huyen-Sa-Pa/Dan-so.aspx [Accessed 7 Oct. 2017].
Schipper, E. L. F. (2010). Religion as an integral part of determining and reducing climate change and disaster risk: an agenda for research. *Der Klimawandel*. Wiesbaden: VS Verlag für Sozialwissenschaften | GWV Fachverlage GmbH, pp. 377–393.
SRV (2013). Luật phòng chống thiên tai [Law on Natural Disaster Prevention and Control] (LNDPC). Hà Nội: National Assembly of Socialist Republic of Vietnam.
Trần Hữu Sơn (2017). *Văn hoá dân gian ứng dụng* [Applied Folk Culture]. Hà Nội: Văn hoá Dân tộc Publishing House.
Trần Hữu Sơn (2018). ICH and Natural Disasters in Lào Cai Province. (Personal communication, January 2018, Hà Nội).
Trần Thục and Koos Neefjes (ed.) (2015). *Viet Nam special report on managing the risks of extreme events and disasters to advance climate change adaptation*. Ha Noi: Vietnam's Institute of Meteorology, Hydrology and Environment and UNDP.
Trang Do, Cuong Nguyen and Tung Phung (2013). *Assessment of natural disasters in Vietnam's northern mountains*. Hanoi: Munich Personal RePEc Archive. http://mpra.ub.uni-muenchen.de/54209/
Wilson, M. and Ballard, C. (2017). *Safeguarding and Mobilising Intangible Cultural Heritage in the Context of Natural and Human-induced Hazards*. UNESCO's ICH Section.
World Bank (2010). *Vietnam - second northern mountains poverty reduction project (English)*. Washington, DC: World Bank. http://documents.worldbank.org/curated/en/568511468133544695/Vietnam-Second-Northern-Mountains-Poverty-Reduction-Project
Xuân Mai (1998). Về người Hà Nhì Đen ở Lào Cai [Black Hà Nhì in Lào Cai]. In: *Giữ gìn và phát huy tài sản văn hoá các dân tộc ở Tây Bắc và Tây Nguyên* [Safeguarding and Promotion of Culural Assets of Ethnic Groups in the Northwest region and Central Highlands]. Hà Nội: Khoa học xã hội, pp. 73–79.