



THE RESILIENCE OF THE INDIGENOUS PEOPLE TOWARDS NATURAL DISASTERS: CASE OF CENTRAL MOUNTAINS OF PAPUA

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A B S T R A C T

The resilience of the indigenous people of Papua towards natural disasters has been questioned because of the large number of casualties post disasters deaths which should have been handled differently considering their knowledge and closeness to nature; thus, it should be easy for them to adapt in times of natural changes. This study is aimed at investigating the resilience of the indigenous people of Papua in the central mountains of Papua towards disasters based on secondary data. Study results showed that the resilience of indigenous people of the central mountains of Papua towards disasters is more influenced by social factors than ecology since, generally, the ecological system in the disaster area in the central mountains of Papua has not experienced much change. The social factors are, among others, the impact of modern civilization, which has not been well adapted by the indigenous people, and the lack of skills of local stakeholders in disaster mitigation. Disaster mitigation should be in the form of improvement of the social condition of indigenous people of the central mountains area of Papua to perfect their civilization towards a more prosperous life.

A. INTRODUCTION

The resilience of the indigenous people of Papua towards natural disasters has been questioned because of the large number of casualties post disasters deaths which should have been handled differently considering their knowledge and closeness to nature; thus, it should be easy for them to adapt in times of natural changes. Resilience is a condition of a community or people which aims at or causes the inability to face disaster threats,¹ while resilience is the opposite of susceptibility, which is a condition of a community that aims at the ability to face disaster threats. Mitigation is a range of efforts in reducing disaster risks, either through physical development or awareness and an increase in the ability to face disasters². Usually, each group of indigenous people

has its own mitigation efforts (traditional mitigation) applied at the time of the disaster. However, this mitigation effort is more spiritual as they believe that the disaster is a warning from God or the ruler of the universe due to mistakes that they made.

If an incident of disaster, according to the indigenous people's belief, is caused by the anger of the ruler of the universe on their past mistakes, according to modern understanding, each Incident of disaster, the causes can be explained scientifically. One of the concepts which are able to explain an incident of disaster is *social-ecological systems* or SES because there is always a connection between humans (social system) and nature (ecological system), and the contributions of both towards an incident of disaster in an area. Resilience in the social system will increase the human capacity to anticipate and plan the future; in which the system of human nature, this resilience is called adaptive capacity. People's resilience is an act of life learning in changes and uncertainty, protecting diversity for reorganization and update, combining a variety of knowledge, and creating opportunities for organizing

¹ BNPB (2012). *Peraturan Kepala BNPB Nomor 3 Tahun 2012 Tentang Panduan Penilaian Kapasitas Daerah Dalam Penanggulangan Bencana*. Jakarta: BNPB. <https://bnpb.go.id/berita/perka-3-tahun-2012-tentang-panduan-penilaian-kapasitas-daerah-dalam-penanggulangan-bencana>

² BNPB (2008). *Peraturan Kepala BNPB Nomor 4 Tahun 2008 Tentang Pedoman Penyusunan Penanggulangan Bencana*. Jakarta: BNPB. <https://bnpb.go.id/uploads/24/peraturan-kepala/2008/perka-4-tahun-2008.pdf>

independently carried out by the people in facing ecological changes³.

Stakeholders, as part of the social system, take part in the increase in resilience of a community. A stakeholder is an individual or a group who can influence and/or be influenced by the achievements of a certain purpose. Stakeholders can be classified into categories as follows: ³

1. Primary stakeholders are those who have related interests directly to a policy, program, or project. They must be placed directly as the main determiner in the process of decision-making, for instance, public figures and public managers.
2. Secondary stakeholders do not have related interests directly towards a policy, program, or project but have concern and apprehension, so they voice and influence the attitude of the people and the legal decision of the government. For example, government agencies in an area do not have direct responsibility, government agencies related to the issue but do not have direct authority in decision-making, local NGOs, universities, and businessmen (companies) who are related.
3. Key stakeholders have legal authority in terms of decision-making, for instance, the executive party according to the level, legislative, and agencies.

If we refer to regulations of BNPB¹ regional stakeholders (province and town/regency level), at least consist of institutions as follows: (1). BPBD (Regional Disaster Management Agency), (2). BAPPEDA (Regional Development Planning Agency), (3). BPD (Environmental Impact Control Agency), (4). Social Services, (5). Health Services, (6). Cooperative and Small to Medium Scale Business Services, (7). Industry and Trade Services, (8). Private Companies, (9). Public Figures and/or Traditional Figures and/or Religious Figures, and (10). NGOs. One of the actors who play an important role in increasing the resilience of indigenous peoples is local stakeholders such as traditional leaders.

In 2018 measles outbreak, malnutrition, and famine caused the majority of children of indigenous people in Asmat Regency, a southern area of Papua, to die. Other victims from indigenous people who were killed were found in the area of central mountains of Papua due to famine because their food-producing farms were destroyed by hail. A large number of victims showed how vulnerable the indigenous people of Papua were during disasters. Areas of difficult accessibility became the cause of slow aid, causing a large number of victims. However, it is assumed that this was not the main cause because the local indigenous people who are used to living close to nature should find it easier to adapt in times of natural changes. Therefore, there needs to be an analysis of the susceptibility of local indigenous

³ Suryawati, S.H. (2012). Model Resiliensi Masyarakat di Laguna Segara Anakan. *Doctoral Dissertation*. Bogor: Institut Pertanian Bogor.

people so that policy implemented by the local government in disaster mitigation can then be right on target. This study is aimed at investigating the resilience of indigenous people in the Papua area towards disasters and factors which give impacts.

B. RESEARCH METHOD

This study was conducted through a qualitative approach because it would be related to the deepening of social situations (place, actor, and activity) in a disaster-affected area. The effort to interpret this social phenomenon was conducted by identifying, comparing, and classifying the study object. Due to a large number of disasters in the area of the central mountains of Papua, the study was focused on the indigenous people in that area. The data used were secondary data obtained from BPS (Central Bureau of Statistics), BPBD (Regional Disaster Management Agency) Papua Province, various social media, and various other references, then, the data were analyzed using the content analysis method.

C. RESULTS AND DISCUSSION

1. The Indigenous Papuan

The indigenous people of Papua are people from the Melanesia racial group consisting of approximately 250 original tribes in Papua Province. In 2010, the total population there was 2,833,381 consisting of 2,121,436 people from the tribes of Papua (74.87%) and 711,945 people were immigrants (25.13%). Approximately 17.51% of the people live in an urban area, and 82.49% live in a rural area.⁴ Indigenous people living in rural areas still apply their own traditional laws and rules. Villages in Papua still apply traditional political systems besides the national political system.

Indigenous people of Papua live in a kinship system by embracing paternal lineage (patrilineal) and using local language influenced by marine life, forest, and mountain. Based on the topographical characteristics of the place of residence and the customs they have, the indigenous people of Papua can be identified into four main groups, namely: ⁵

- ✓ People of the coastal area and isles with general characteristics of stilt houses with livelihood from tapping sago and fishing.
- ✓ People of the inland area live in areas of rivers, swamps, and lakes. In general, they make a living by fishing, hunting, and gathering forest produce.

⁴ BPS Indonesia (2011). *Sensus Penduduk 2010*.

⁵ Djojosoekarto, A., Sumarwono, R., and Suryaman, C. (2008). *Kinerja Otonomi Khusus Papua*. Jakarta: Kemitraan Bagi Pembaruan Tata Pemerintahan di Indonesia.

- ✓ People of the inland area on valleys, and feet of mountains, generally make a living by hunting and gathering forest produce.
- ✓ People of the highland area with a livelihood of modest farming and stock farming.

There is a cultural transformation among the indigenous people of Papua who live in villages near urban areas, namely the livelihood starts to vary, among others, as civil servants (PNS), traders, and employees, and starts to have conflicts about customary land as natural resources are starting to be scarce due to the impact of urban development, while in villages in Papua which are far from an urban area, are subsistent lifestyle, livelihood as farmers, hunting and formulating forest produce, sufficient availability of natural resources, selling natural products to other parties coming to the area asking for lower prices due to limited information, and can spend earnings for momentary needs (not saving).⁶ In general, there are five cultural regions in Papua Province, namely:

- Customary Territory of Mamta (northern part of Papua Province)
- Customary Territory of Saereri (area of Cenderawasih Bay, Papua Province)
- Customary Territory of Mee Pago (central part of Papua Province)
- Customary Territory of La Pago (central part of Papua Province)
- Customary Territory of Ha Anim (southern part of Papua Province)

Figure 1. Map of Customary Territory in Papua Province



Source: BAPPEDA Papua Province, 2015

The area of the central mountains of Papua consists of two customary territories, namely the territory of La Pago and Mee Pago. La Pago customary territory consists of regencies located in

the eastern part of the central mountains, namely: Regencies of Jayawijaya, Lanny Jaya, Puncak, Pegunungan Bintang, Yalimo, Yahukimo, Tolikara, Nduga, Mamberamo Tengah, and Puncak Jaya. Mee Pago customary territory consists of regencies located on the western part of the central mountains, namely: Regencies of Dogiyai, Intan Jaya, Nabire, Paniai, Deiyai, and Mimika. The area, which consists of 16 regencies, is occupied by five major tribes, namely: Damal, Dani, Moni, Nduga, and Mee. The Dani tribe is the majority of the indigenous people that occupy the area of the Baliem River in the central mountains of Papua. Compared to other ethnic groups, the Dani tribe has a more developed farming culture. The rate of occupancy density in the area is quite high compared to other areas in the central mountains of Papua.

2. The Catastrophic Events in Papua Province

Hydrometeorological disasters such as floods and landslides often occur in Papua. The disaster that occurred from 2002-2018 were dominated by floods, then followed by landslides, earthquakes, and social conflict (see Table 1). Based on the area's topographical condition, the area with a high potential for landslide is the area of the central mountains of Papua. However, according to the data on disaster incidents from BNPB, the high frequency of landslide incidents is also found on the northern coast of Papua (see Table 2). It is assumed that besides being affected by the high rate of rainfall, it is also affected by the social and economic activities of the local people, which, many of them, resulted in environmental changes. The number of settlement areas on the northern coast of Papua, with a relatively high population total and density, is higher compared to other areas in Papua.

Table 1. The Catastrophic Events in Papua Province (2002-2018)

No.	Type of Disaster	Frequency of Occurrence
1	Earthquake	16
2	Flood	68
3	Landslide	28
4	Social Conflict	10
5	Extraordinary Event (KLB)	3
6	Transportation Accident	5
7	Fire	3
8	Abrasion	7
9	Climate Change	1
10	Tornado	9
11	Tsunami	1
12	Drought	1
13	Industrial Impact	1

Source: processed from⁷

⁶ UNDP (2005). *Community Livelihoods and Civil Society Organisations in Papua, Indonesia, a Snapshot by Local Non-Government Organisations*. <https://www.yumpu.com/en/document/view/32331263/community-livelihoods-and-civil-society-organisations-in-undp>

⁷ BNPB: *Data Informasi Bencana Indonesia (DIBI)*. <https://bnbp.cloud/dibi/>

Table 2. The Frequency of Disasters that Often Occur in Papua Province (2002-2018)

Regional Characteristic	Flood	Land-slide	Earth-quake	Social Conflict
Northern Islands/Coast of Papua	43	14	8	3
The Central Mountains of Papua	24	14	7	7
Southern Plains/Coast of Papua	2	-	1	-

Source: processed from⁷

Besides natural disasters, there are also incidents of anthropogenic in Papua, namely disasters triggered by human activity. The majority of social conflicts occurring in Papua are in the form of wars between indigenous tribes in Papua (see Table 3). Extraordinary Events (KLB) causing a large number of deaths also have been disasters that often hit Papua Province (see Table 4). The famine which occurs in various regions in Papua province causes this province to have the highest susceptibility in Indonesia in terms of food supply for the people.

Table 3. The Social Conflicts in Papua Province (2002-2018)

Year of Incident	Name of Incident	Location of the Incident
2007	Local tribal warfare	Paniai
2010	The central mountain tribes of Papua were attacking the native inhabitants of the Yoka village	Jayapura City
2012, 2014, 2016, 2018	Local tribal warfare	Mimika
2000, 2019	The central mountain tribes of Papua were attacking the migrant communities in Wamena	Jayawijaya
2012	Election conflict (between supporters)	Tolikara
2017	Election conflict (between supporters)	Puncak Jaya
2018	Election conflict (between supporters)	Paniai
2018	Local tribal warfare	Puncak
2018	Local tribal warfare	Pegunungan Bintang

Source: processed from various mass media^{8,9,10}

⁸ Isidorus, R. (2017). Konflik Pilkada Puncak Jaya Mengakibatkan 3 Meninggal. *beritasatu.com*, Tuesday, July 4, 2017. <https://www.beritasatu.com/nasional/439825-konflik-pilkada-puncak-jaya-mengakibatkan-3-meninggal>

⁹ Kartono, A. (2014). Sengketa Lahan Jayanti, Lagi-lagi Dua Kelompok Warga Bentrok di Mimika. *kompas.com*, March 6, 2014. <https://sains.kompas.com/read/2014/03/06/0338364/Sengketa.Lahan.Jayanti.Lagi-lagi.Dua.Kelompok.Warga.Bentrok.di.Mimika>

¹⁰ Sari, H. R. (2018). Masih Konflik, Pilkada Bupati Paniai Belum Dijadwalkan Ulang KPU Papua. *Merdeka.com*, Tuesday, June 28, 2018. <https://www.merdeka.com/peristiwa/masih-konflik-pilkada-bupati-paniai-belum-dijadwalkan-ulang-kpu-papua.html>

Table 4. Extraordinary Events (KLB) in Papua Province (2002-2018)

Year of Incident	Name of Incident	Location of Incident	The number of dead victims (person)
2005	Famine because of crop failure/damaged farms (hail)	Yahukimo (The Central Mountains of Papua)	55
2007	Famine for not being able to farm (tribal warfare continues)	Paniai (The Central Mountains of Papua)	19
2008	Cholera outbreak	Paniai & Nabire (The Central Mountains of Papua)	103
2009	Famine because of crop failure/damaged farms (hail)	Yahukimo (The Central Mountains of Papua)	113
2015	Famine because of crop failure/damaged farms (hail)	Lanny Jaya (The Central Mountains of Papua)	11
2017-2018	Hunger (malnutrition) & measles outbreak (low immunization rate)	Asmat (The Southern Plains of Papua)	72
2018	Hunger (malnutrition) & measles outbreak (low immunization rate)	Pegunungan Bintang (The Central Mountains of Papua)	28

Source: processed from various mass media^{8,10,11,12,13}

3. The Social-Ecological Systems in Papua Province

The size of Papua Province is approximately 32 million hectares, with a forest area of approximately 30 million hectares (year 2013), and the size of a peat area is 0.3 million hectares (the year 2011).¹⁵ Area of the forest was impacted the highest in the year 2009 (period of 2001-2012) at 457,930 Ha or approximately 1.53% of the total forest area in Papua Province (see Table 5). Ecological condition in the Papua region has not experienced relatively a lot of changes, so it is assumed that it has not had much impact on the resilience of the local people. Flood and landslide incidents often occurred in the area of central mountains of Papua but did not result in a high number of victims because actually, they were ready for these incidents. In the incident of a flood or landslide which destroyed crop farms, they would

¹¹ Liputan6.com (2009). Bencana Kelaparan di Yahukimo, 113 Tewas. *liputan6.com*, September 5, 2009. <https://www.liputan6.com/news/read/243144/bencana-kelaparan-di-yahukimo-113-tewas>

¹² Papuabangkit.com (2018). Mappi Tertinggi Imunisasi MRP, Kadinkes: Belajar Dari Bupati. *papuabangkit.com*, September 21, 2018. <https://papuabangkit.com/2018/09/21/mappi-tertinggi-imunisasi-mrp-kadinkes-belajar-dari-bupati/>

¹³ Sianipar, T. (2018). Kematian anak akibat gizi buruk berlanjut meski KLB sudah berakhir. *BBC Indonesia*, March 12, 2018. <https://www.bbc.com/indonesia/indonesia-43363665>

stay at their relatives' homes who were not affected by the disaster and be given a temporary loan of the plot of land so that they could plant crops.¹⁴

Table 5. The Area of Forest Affected in Papua

Year	Forest Clearing (Ha)	Logging (Ha)	Fire (Ha)	Planting (Ha)	Total (Ha)
2001	5,124	222,797	5,242	19,888	253,081
2002	11,420	223,970	39,675	24,927	299,991
2003	14,046	223,587	23,956	28,354	289,943
2004	17,256	281,491	66,703	27,708	393,158
2005	19,279	281,181	12,565	18,704	331,729
2006	27,879	281,068	27,775	20,490	357,212
2007	21,563	394,529	8,624	22,144	446,860
2008	18,522	397,675	7,771	21,676	445,645
2009	22,686	397,598	16,476	21,170	457,930
2010	18,166	158,183	11,171	13,895	201,415
2011	18,800	158,153	12,138	8,135	197,727
2012	16,594	139,507	18,711	3,808	178,620

Source: ¹⁵

Even though the percentage of forest area affected is still relatively low, it does not mean that changes in the function of forest land have not had an impact. The Incident of the flood occurring for a long time which was not common in the area around Lake Paniai (Paniai regency) in 2017, potentially caused Extraordinary Events /KLB there, namely malaria and famine.¹⁶ Floods usually only took place for one month, and during that period, people would evacuate to relatives' houses which were safer; however, in 2017 flood occurred for three months (farms were flooded with water from the lake), causing people to start having difficulty in obtaining foodstuffs. The Incident of flood again occurred in 2019 after heavy rain. The flood was predicted to occur due to lake silting. The depth of Lake Paniai in the 1970s was estimated at around 300 meters, and in 2016, it became approximately 70 meters due to sedimentation of eroded land entering the lake. The lake silting was caused by deforestation activity done among others by local people to meet their life needs, development such as roads, and companies with HPH (Forest Concession Rights).¹⁷

Since 2007, through RESPEK (Village Development Strategic Planning) and later known as PROSPEK (Village Economic and

Development Strategic Program), villages in Papua have become the focus of development because the majority of indigenous people of Papua live there. After some time of its implementation, development in Papua still did not significantly increase the indigenous people's welfare. The Human Development Index (HDI) of Papua province was still the lowest for the entire period of 2009-2013 compared to other provinces in Indonesia¹⁸, besides that the proportion of under-developed villages in Papua did not experience much change from 2011 (89.50%) to 2014 (91.06%).¹⁹ The HDI of regencies located in the area of the central mountain of Papua was even lower compared to the HDI of regencies in the area of northern islands/coasts of Papua. The percentage of the total poor population in the area of central mountains was relatively higher compared to people of other areas in Papua. Village Development Index (VDI), which is also an indicator of the skills of rural/village governance, was still low in Papua (see Table 6). In the year 2018, there were around 5400 villages in Papua Province, and around 82% of them were under-developed villages, of which the majority were located in the area of central mountains of Papua.

Table 6. Human Development Index (HDI), Percentage of Poor Population & Village Development Index (VDI) in Papua Province 2018

No.	Regency/City	HDI	Percentage of Poor Population (%)	VDI
The Northern Island/Coast of Papua				
1	Jayapura City	79.58	11.37	66.02
2	Jayapura Regency	71.25	13.44	51.89
3	Keerom	65.75	16.90	44.97
4	Sarmi	63.00	14.51	44.36
5	Mamberamo Raya	51.24	30.10	34.24
6	Kepulauan Yapen	67.00	27.17	44.67
7	Waropen	64.80	30.53	37.63
8	Biak Numfor	71.96	25.72	49.24
9	Supiori	61.84	39.22	53.10
The Central Mountains of Papua				
10	Jayawijaya	56.82	38.66	39.18
11	Lanny Jaya	47.34	40.06	33.74
12	Puncak	41.81	38.15	27.64
13	Pegunungan Bintang	44.22	30.75	29.16
14	Puncak Jaya	47.39	36.27	28.03
15	Tolikara	48.85	33.14	26.10
16	Yalimo	47.13	35.45	32.23
17	Yahukimo	48.51	39.25	27.96
18	Mamberamo Tengah	46.41	37.02	36.42
19	Nduga	29.42	38.13	26.95
20	Paniai	55.83	37.35	34.17
21	Nabire	67.70	25.17	48.03
22	Deiyai	49.55	43.49	43.05
23	Dogiyai	54.44	30.48	33.30
24	Intan Jaya	46.55	42.71	27.89
25	Mimika	73.15	14.55	37.45
The Southern Plains/Coast of Papua				

¹⁴ Veronika, L (2013). Memahami Sistem Pengetahuan Budaya Masyarakat Pegunungan Tengah, Jayawijaya, Papua dalam Konteks Kebencanaan. *Antropologi Indonesia* 34 (2), 134-151. <https://doi.org/10.7454/ai.v34i2.3969>

¹⁵ Incas/Indonesian National Carbon Accounting System (2015). *Papua*. Jakarta: Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia. <http://incas.menhk.go.id/id/data/special-region-of-papua/>

¹⁶ Lintang, N. (2017). 12.000-an korban banjir Paniai terancam kelaparan dan malaria. *antaranews.com*, August 29, 2017. <https://www.antaranews.com/berita/649550/12000-an-korban-banjir-paniai-terancam-kelaparan-dan-malaria>

¹⁷ Yeimo, H. (2019). Deforestasi mendangkalkan Danau Paniai dan mengirim banjir ke Sima. *Jubi*, March 13, 2019. <https://jubi.co.id/deforestasi-mendangkalkan-danau-paniai-dan-mengirim-banjir-ke-sima/>

¹⁸ BPS Indonesia (2014). *Indeks Pembangunan Manusia*.

¹⁹ Kementerian PPN/BAPPENAS (2015). *Rencana Strategis Bidang Pemerintahan Desa*. Rakornas Program Pembinaan Penyelenggaraan Pemerintahan Desa Pusat dan Daerah Tahun 2015, Jakarta.

26	Merauke	69.38	10.54	50.25
27	Boven Digoel	60.83	20.35	35.53
28	Asmat	49.37	27.41	30.61
29	Mappi	57.72	25.64	36.24
Papua Province		60.06	27.74	34.67

Source: ^{20, 21}

The village development program was considered to bring about negative impacts on the indigenous people of Papua. The village people started to abandon their livelihood as farmers and work in the program of RESPEK since they expected a salary. The people started to consider the economic value of each of their resources used in the development program (expecting payment); for instance, the people did not want to be involved in village programs if there were no salary. The people demanded compensation for plants on their plots of land, which became the location of the development. ^{22, 23} Besides that, there were elite village groups that dominated the use of village development funds; thus, development still could not be experienced by marginal village people. ^{24, 25}

Developmental programs from the government, which do not consider the local social-cultural aspect, cause negative impacts on the life of the indigenous people of Papua. ²⁶ In general, the civilization of the indigenous people of Papua was far different from that of indigenous people of other regions in Indonesia. It can be considered that the indigenous people of Papua have not for long become familiar with Western civilization as the region of Papua was actually colonized by the Dutch at the beginning of the 19th century, unlike other regions in Indonesia, which experienced Dutch colonization since the 17th century. The indigenous people from the inland or area of central mountains of Papua itself were open to outside civilization around the 1930-s. ²⁷ Changes

in civilization from the prehistoric period towards modern times occurred for a short time, so it was extremely sudden, causing the indigenous people to experience 'culture shock', among others wanting to have everything in an instant without considering the process. ²⁸

Incidents of disaster are responded to by indigenous people of the central mountain area of Papua as a warning of their wrongdoings in the past, and they are expected to promptly admit to it in order for things to be better. ¹⁴ If a member of a family is ill, other members of the family will self-introspect, evaluating what they did in the past. If they make mistakes towards other people in the community, they must ask for forgiveness. Or the Incident of crop failure on the sweet potato, for example, can be related to the lack of respect from the people for their ancestors (not conducting complete ritual events before forest clearing for cultivation). ¹⁴ Mitigation conducted by indigenous people of the central mountains of Papua, among others: ^{14, 27, 29}

1. Conducting traditional ceremonies asking for forgiveness and protection from the ancestral spirits.
2. Preparing sweet potato farms at different locations as food reserves. These are 'kept' at various plots of land, which are scattered and will only be harvested once they are big enough.
3. Complex irrigation technique system in sweet potato farms in the sulphuric area.
4. Observing the position of sunrise as a sign of the season when the rainy season and drought start.

The efforts mentioned above are a defense mechanism or a way for a group of people or individuals to be resilient from disasters; in other words, local wisdom has become an inherent component of traditional disaster management systems. ³⁰

The traditional role of providing food for the family is in the hands of female members. ²⁹ The women in Papua, especially in the region of central mountains, are expected to farm and sell their harvest, so they are able to make money to buy basic needs for the family while the men are obligated to prepare land for farming (see Table 7). The provision for protein food sources from hunting which was generally done by men in the past is no longer carried out at present. The women/wives must work, starting from taking

²⁰ BPS Provinsi Papua (2019). *Indeks Pembangunan Desa di Provinsi Papua Menurut Kabupaten/Kota, 2018*. <https://papua.bps.go.id/dynamic/2019/07/09/310/indeks-pembangunan-desa-provinsi-papua-menurut-kabupaten-2018.html>.

²¹ BPS Provinsi Papua (2019). *Provinsi Papua dalam Angka Tahun 2018*.

²² Semboari, Y. (2012). *Pemberdayaan Kampung Bidang Perumahan dan Infrastruktur Dasar (Konteks Program Respek Papua), Studi di Distrik Yapen Selatan Kabupaten Kepulauan Yapen di Papua*. Master's Thesis. Yogyakarta: Universitas Gadjah Mada.

²³ Turua, U. (2014). *Model Pengembangan Kapasitas Ekonomi Petani Asli Papua Dalam Pembangunan Wilayah di Kabupaten Keerom*. Doctoral Dissertation. Bogor: Institut Pertanian Bogor.

²⁴ Anderson, B. (2015). *Papua's Insecurity State Failure in the Indonesian Periphery*. *Policy Studies* 73. Honolulu : East West Centre. <https://www.eastwestcenter.org/system/tdf/private/ps073-1.pdf?file=1&type=node&id=35252>

²⁵ Sari, Y. I., Harmein R., and D. R. S. Manaf (2011). *Laporan Final Evaluasi PNM RESPEK: Infrastruktur Pedesaan dan Kapasitas Kelembagaan*. Bandung: Akatiga-Center for Social Analysis.

²⁶ Djojosoekarto, Dr. Agung, etc. (2012). *Nilai-Nilai Dasar Orang Papua Dalam Mengelola Tata Pemerintahan (Governance), Studi Reflektif Antropologis*. Yogyakarta: Centre for Learning and Advancing Experimental Democracy and Indonesia Forestry and Governance Institute.

²⁷ Diamond, J. (2015). *The World Until Yesterday (Dunia Hingga Kemarin), Apa yang Dapat Kita Pelajari dari Masyarakat Tradisional?* Jakarta: KPG.

²⁸ Modouw, J. (2013). *Pendidikan dan Peradaban Papua : Suatu Tinjauan Kritis Transformasi Sosial*. Yogyakarta : Bajawa Press.

²⁹ Ariani, M., Saliem, H. P., Hardono, G. S., and Purwantini, T. B. (2007). *Wilayah Rawan Pangan dan Gizi Kronis di Papua, Kalimantan Barat dan Jawa Timur*. Bogor: Pusat Analisis Sosial Ekonomi dan Kebijakan Pertanian. <https://media.neliti.com/media/publications/696-ID-wilayah-rawan-pangan-dan-gizi-kronis-di-papua-kalimantan-barat-dan-jawa-timur.pdf>

³⁰ Ismail, N., Bakhtiar, Yanis, M., Darisma, D., and Abdullah, F. (2020). *Mitigasi dan Adaptasi Struktural Bahaya Banjir Berdasarkan Kearifan Lokal Masyarakat Aceh Singkil Provinsi Aceh*. *Jurnal Antropologi: Isu-Isu Sosial Budaya*, **22(02)**, p.276-285.

care of children, farming, taking care of farms and pig stocks, if any, harvesting crops also, selling them, and making money for buying clothes, medicine, or other needs.²⁹ The men are not diligent anymore in clearing forests for new farms because they tend to do other jobs they consider more modern. There is a change of work pattern in the society once they interact with modern civilization, and the men are in the group of less productive among the indigenous people of the central mountains, especially since the government and religious leaders forbid warfare activities.²⁹

Table 7. The Traditional Division of Roles between Men and Women in The Central Mountains Communities of Papua

Men	Women
At war	Farming
Keep the village safe	Raising pigs
Escort wife	Doing housework
Organizing custom events	Parenting
Take care of custom objects	Sell the crop
Clearing forest for the new field	

Source: ³¹

The disaster in Papua which took the most life was social conflict. In the past, the war between tribes occurred in the area due to land grabs, livestock, and women, and now it has increased due to politics of government power struggle, especially during Pilkada (local head election). It became very easy for men to be influenced to be involved in social conflicts occurring in society, among others, because one of their traditions in problem-solving is warfare.

Another factor that influences the resilience of indigenous people towards disaster is the effort of giving aid and disaster mitigation by the local government, one of the stakeholders. After a disaster, the promptness of aid in disaster management becomes very important to decrease the number of deaths. This is still difficult to be implemented in the area of central mountains of Papua due to difficulty in access (extreme area geographic condition: mountainous, many rivers, lack of transportation and communication facilities). Disaster mitigation has not been carried out much due to the local government's capacity, which is still limited in this case. There were even two regencies in Papua Province without institutions for BPBD (Regional Disaster Management Agency) in 2019, namely Asmat and Merauke regencies.³²

³¹ Detriana, N., Kombong, M., and Yuristianti, A. (2000). Gizi untuk Pertumbuhan dan Perkembangan. Prioritas dan Intervensi yang Dilakukan oleh Jayawijaya WATCH Project. *Makalah dari Jayawijaya Women and Their Children's Health Project*, AUSAID-World Vision-Depkes RI. <http://www.papuaweb.org/dlib/lap/watch/2000-gizi.pdf>
³² Papua.bisnis.com (2019). 2 Kabupaten di Papua Belum Miliki BPBD. *papua.bisnis.com*, November 14, 2019. <https://papua.bisnis.com/read/20191114/414/1170278/2-kabupaten-di-papua-belum-miliki-bpbd>

4. The Resilience of Indigenous People

The most impacting on the level of resilience of the indigenous people of Papua is the social system applied in the society at present. Looking at the current social conduct found in the life of the indigenous people of Papua at present, it may not be considered to be towards building resilience yet. Extraordinary Event (KLB) occurring in Papua, besides being considered to be in the category of natural disaster, is also in the category of anthropogenic disaster. For instance, famine due to floods which destroyed farms is also considered to have happened because the people left their farms for weeks to attend pilkada campaign.^{29, 33} mass mobilization is even booming in the special autonomy era due to the growth in identity politics.

Still, in the special autonomy period, there was a social change among the indigenous people of the central mountains of Papua. The women struggle by themselves to provide food and meet other needs for the members of the family as the men are more involved in nonagricultural activities, which are less productive. Being hungry because of having to wait for 'mother' to come home in the late afternoon from the farm while carrying yields to be later cooked is a daily custom there.^{29, 34} This kind of condition can decrease their perseverance, especially children; thus, in times of epidemic of a disease, they are the ones who are most affected. They also are not familiar with the technology of preservation of foodstuffs, or more specifically, decline with the reason that it is sweet potato, the main staple, which tastes better when eaten directly.²⁹ Besides that, there is a custom like that of a belief in food sources in the form of tuber as a heritage from their ancestors, causing a lack of food diversification, so there was an Incident of malnutrition among the people of the central mountains of Papua.³⁵ Malnutrition cases also occurred because their protein need had not been met. Even though the indigenous people of central mountains, in general, raise pigs but they are not for the people's own food; instead, the pigs are only for traditional events. This problem of eating habits is a form of patterned behavior that is closely related to culture, which includes beliefs and dietary restrictions that develop in a group of people.³⁶ Extraordinary Event (KLB) due to famine is also often caused by farmers who feel afraid to go to the farm during lengthy tribal warfare. Anderson stated that social conflict among the people is the main cause of security breaches in Papua compared to conflicts

³³ Suryawan, I N., Ed., (2011). *Tanah Papua di Garis Batas, Perspektif, Refleksi dan Tantangan*. Malang: Setara Press.

³⁴ Sitorus, Y. L. M. (2018). Kehidupan Orang Asli Papua di Distrik Tiom setelah Pemekaran Kabupaten Lanny Jaya. *Jurnal Masyarakat dan Budaya*, **20** (03), 407-424. <https://doi.org/10.14203/jmb.v20i3.698>

³⁵ Mapandin, W. Y. (2006). Hubungan Faktor-Faktor Sosial Budaya dengan Konsumsi Makanan Pokok Rumah Tangga pada Masyarakat di Kecamatan Wamena, Kabupaten Jayawijaya Tahun 2005. *Master's Thesis*. Semarang: Universitas Diponegoro.

³⁶ Nurti, Y. (2017). Kajian Makanan dalam Perspektif Antropologi. *Jurnal Antropologi: Isu-Isu Sosial Budaya*, **19**(01), p.1-10.

between civilians and the military, as often reported all this time.²⁴ However, at certain times, the natural factor is highly influential on the susceptibility of indigenous people of Papua towards food insecurity. In 2015 when Indonesia was hit by El Nino phenomena, Papua, especially the highland in the area of central mountains, was hit by hail for quite a long time, unlike usual, thus causing a food crisis. Such climatic change has not been able to be adapted well by the farmers there.

Extraordinary Events KLB) with the many victims of children dying because of an epidemic of disease and malnutrition generally occurred in areas with characteristics as follows: isolated areas with residential areas scattered quite far apart, no health attendants, no immunization for children, poor sanitation, and poor nutrition condition. Five regencies in Papua with the lowest immunization service (below 25%) are Puncak Jaya, Pegunungan Bintang, Tolikara, Deiyai, and Nduga. However, Mappi Regency, which is also difficult to reach in fact, has an immunization service scope already above 95%. This is such because the local government and the local health services really support the immunization program by, among others, conducting coordination with various parties (community health centers) up to the point of renting airplanes to carry health attendants and equipment also material for immunization. The Health Department of Papua province hopes that every local government is able to pay attention to each of the people's welfare because it would be burdensome if this immunization program were imposed entirely on the provincial government.³⁷

Extraordinary Incidents (KLB) of famine should be able to be handled by the local and regional government since these incidents actually do not occur in a short time but through a process that takes a long time. According to the health minister, environmental factors and social conduct, which affect health, contribute to around 40% of the incidents of famine (malnutrition) and the epidemic of disease. Also, there were many victims of children dying in Asmat in 2017-2018.¹³ Therefore, the regional government needs to implement efforts in order to overcome fundamental issues for the people before a break of a bigger disaster which can also be referred to as 'mitigation of life.'

At the time of such a civilization transition, the life attitude of indigenous people becomes apathetic or not active anymore, let alone critical. A woman is the group that is most affected at this time as women are alone in facing difficult economic conditions (tougher life burden). For example, in order to sell harvest, while the transport is costly to go to the market, there is no guarantee they will all sell, while there are many goods that need to be bought at the

market. Therefore, accompaniment to overcome life problems is necessary, which is considered light since it is related to their day-to-day lifestyle but is actually not easy to be implemented. Such as counseling to trigger the productivity of farmers, especially the male group, so that they also can work to provide for the family.

The limited skills of stakeholders also contribute to the susceptibility of local people. The stakeholders extremely influence the social system (human and institutional) found in an area. For isolated villages, the ones who practically become stakeholders in the effort of disaster management are traditional figures and heads of villages only. In villages in the area of central mountains of Papua, which adopt the traditional leadership system of the *big man* and the customary leaders, there are also holding office as village head, which can be referred to as only having one stakeholder.

The following are a number of efforts implemented by the regional government in Papua which can be considered as 'mitigation of life.' The government of Lanny Jaya regency gives the incentive of a kind salary of one million rupiahs per month to every head of the family who meets certain requirements. The requirements are, among others: having an identity card and family card (orderly state administration), having a business in farming/stock farming (has economic activity), and having forbidden the children to attend traditional events or others which can cause the children to be absent from school (emphasizes on education). Incentives will be discontinued if the people are found not to meet one of those provisions. The local government evaluates development taking place in society and gradually increase the requirements.

In 2018, the governor of Papua Province decided to replace PROSPEK (people's capacity increase program) with BANGGA (charitable program), especially in the regency area with the lowest HDI. This is because the village head is considered incapable of managing the PROSPEK fund; thus development program fails. BANGGA (Build Prosperous Generation and Family) program of Papua is the provision of living costs (two hundred thousand rupiahs per child) each month to women of Papua with children under four years old so that they can provide nutrition for their children. Three regencies were chosen as models to receive the BANGGA program of Papua, namely: regencies Paniai, Asmat, and Lanny Jaya.³⁸

However, this incentive provision system is assumed to be not effective yet. The people started to depend on food sources from outside, such as

³⁷ Papuabangkit.com (2018). Mappi Tertinggi Imunisasi MRP, Kadinkes: Belajar Dari Bupati. *papuabangkit.com*, September 21, 2018. <https://papuabangkit.com/2018/09/21/mappi-tertinggi-imunisasi-mrp-kadinkes-belajar-dari-bupati/>

³⁸ Papuabangkit.com (2017). Program BANGGA Papua Diluncurkan Karena Kepala Desa Tak Mampu Kelola Dana Prospek. *papuabangkit.com*, November 24, 2017. <https://www.papuabangkit.com/2017/11/24/program-bangga-papua-diluncurkan-karena-kepala-des-tak-mampu-kelola-dana-prospek/>

manufactured food, while the money given to them was not sufficient to meet their subsistence due to the high price of commodities needed there. There is also misuse of the money given because even though the people there are poor, they are still able to be involved in gambling and buy cigarettes.³³

This is a picture of the current social conditions in society in the central mountains area of Papua. The modern civilization that has not been able to be adapted properly the indigenous people can weaken efforts to overcome disasters that occur.

D. CONCLUSIONS

The resilience of indigenous people of the central mountains of Papua towards natural disasters is more affected by social factors than ecology since, generally, the ecological system in the area of disaster in the Papua region has not experienced much change. The social factors, among others, are the impact of modern civilization, which has not been able to be well-adapted by the indigenous people, and the lack of capacity of stakeholders in the effort of disaster management. During special autonomy, the level of dependency of indigenous people on community leaders (customary leaders and village heads) is quite high in the developmental program

toward modernization. The great difference between the civilization of the indigenous people of Papua, especially in the area of central mountains of Papua, with modern civilization at present causes the tendency for them to be passive towards various development programs implemented by the government.

The people start to abandon traditions in handling the disaster, not being active and critical anymore and following instructions from authorities while the skills of local stakeholders are still limited in helping the people in handling the disaster, especially in disaster mitigation. Disaster mitigation should be in the form of improvement of the social condition of indigenous people of the central mountain area of Papua to perfect their civilization towards a more prosperous life.

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