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DISTRIBUTION OF LOGISTICS ASSISTANCE FOR FLOOD VICTIMS IN PASANGKAYU REGENCY

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ABSTRACT

Disaster logistics assistance is an important element of disaster management efforts. Logistics distribution in disaster situations always faces complex challenges in distributing aid to victims affected by disasters. This research aims to provide an overview of how the distribution of logistical assistance to flood victims in Pasangkayu Regency and identify the inhibiting factors in the implementation of logistical assistance, and efforts that can be made by BPBD Pasangkayu Regency in overcoming these obstacles. This research uses a Qualitative Descriptive design with an Inductive approach. The data collection techniques used include observation, interviews, and documentation. The results showed that the logistics assistance distribution program had been carried out quite effectively, although there were still several factors that influenced the obstruction of the distribution, including limited human resources and lack of facilities and infrastructure in logistics distribution which resulted in not optimal distribution of logistics assistance in Pasangkayu Regency. The practical implication of this research is the importance of increasing the capacity of human resources, procuring adequate facilities and infrastructure, and better cross-sector coordination to ensure logistics distribution can run optimally and on time in emergency situations.

***Keywords*:** *Logistic Aid Distribution, Flood Disaster, Logistics Management*

ABSTRAK

Bantuan logistik bencana merupakan elemen penting dari upaya penanggulangan bencana. Distribusi logistik dalam situasi bencana selalu menghadapi tantangan yang kompleks dalam pendistribusian bantuan kepada korban yang terdampak bencana. Penelitian ini bertujuan untuk memberikan gambaran tentang bagaimana penyaluran bantuan logistik pada korban banjir di Kabupaten Pasangkayu serta mengidentifikasi faktor-faktor penghambat dalam pelaksanaan bantuan logistik, dan upaya yang dapat dilakukan oleh BPBD Kabupaten Pasangkayu dalam mengatasi hambatan tersebut. Penelitian ini menggunakan metode Deskriptif Kualitatif dengan pendekatan Induktif. Teknik pengumpulan data yang digunakan meliputi observasi, wawancara, dan dokumentasi. Hasil penelitian menunjukkan bahwa program penyaluran bantuan logistik telah terlaksana dengan cukup efektif, meskipun masih terdapat beberapa faktor yang mempengaruhi terhambatnya penyaluran tersebut, termasuk keterbatasan sumber daya manusia dan kurangnya sarana dan prasana dalam penyaluran logistik yang mengakibatkan belum optimalnya penyaluran bantuan logistik di Kabupaten Pasangkayu. Implikasi praktis dari penelitian ini adalah pentingnya peningkatan kapasitas sumber daya manusia, pengadaan sarana dan prasarana yang memadai, serta koordinasi lintas sektor yang lebih baik untuk memastikan distribusi logistik dapat berjalan secara optimal dan tepat waktu dalam situasi darurat.
Kata Kunci : Penyaluran Bantuan Logistik, Bencana Banjir, Manajemen Logistik

INTRODUCTION

Disasters are unavoidable phenomena that can occur anytime and anywhere, either suddenly or gradually. They are categorized into three types: natural, non-natural, and social disasters (Indonesia, 2007). Natural disasters result from natural events such as earthquakes, tsunamis, liquefaction, volcanic eruptions, floods, flash floods, droughts, storms, whirlwinds, and landslides. Flooding is one of the most common disasters in Indonesia. As a tropical country, Indonesia experiences high rainfall, particularly during the rainy season, which increases the likelihood of flooding. Floods are events where excessive water flow submerges land areas, often causing significant material and non-material losses and posing health risks (Pratomo, 2008). One of the regions frequently affected by flooding is Pasangkayu Regency in West Sulawesi Province. Floods occur annually in this area due to high rainfall intensity, environmental degradation, and reduced river flow capacity. The following table presents the potential flood hazard areas in Pasangkayu Regency:

Table 1. Potential Flood Hazard Areas in Pasangkayu Regency by Hazard Level

No	District	Hazard			Total Area (ha)	Classification
		Low	Moderate	High		
1	Bambaira	-	-	36.25	36.25	High
2	Bambalamotu	-	-	212.91	212.91	High
3	Baras	-	-	85.72	85.72	High
4	Bolu Taba	-	-	890.14	890.14	High
5	Dapurang	-	-	1,840.26	1,840.26	High
6	Duripoku	-	-	1,426.65	1,426.65	High
7	Sarjo	-	84.26	52.64	136.90	High
8	Sarudu	-	-	489.59	489.59	High
Pasangkayu Regency		**-**	**84.26**	**5,034.15**	**5,118.41**	**High**

Source: Disaster Risk Assessment Document for Pasangkayu Regency, 2019-2023 (Kabupaten Pasangkayu, 2019)

Based on the disaster risk assessment document for Pasangkayu Regency (2019–2023) (Kabupaten Pasangkayu, 2019), the total potential flood hazard area is 5,118.41 hectares, categorized as moderate (84.26 hectares) and high hazard (5,034.15 hectares). The Disaster Risk Assessment Document for Pasangkayu Regency highlights that

flooding in the regency is influenced by natural factors such as above-normal rainfall and tidal variations, as well as human factors such as improper land management and littering in rivers. These floods occur annually in Pasangkayu Regency.

According to Law No. 24 of 2007 on Disaster Management (Indonesia, 2007), the government is responsible for addressing all types of disasters. At the local level, the Regional Disaster Management Agency (BPBD, *Badan Penanggulangan Bencana Daerah*) is the government body tasked with disaster management, including logistics distribution during disasters. In Pasangkayu Regency, flood management involves BPBD, Search and Rescue (SAR) teams, and other relevant agencies to provide disaster response, rescue efforts, and humanitarian logistics distribution. As Sotar et al. (2023) note, the primary needs of disaster-affected communities include logistics assistance, food aid, clothing, and shelter. Disaster management must adhere to principles of speed, precision, priority, coordination, integration, efficiency, and effectiveness. Logistics distribution post-disaster is a critical activity and a benchmark for the promptness and effectiveness of disaster response efforts (Asri, Asmawati, Wajidi, & Cirua, 2022).

Logistics distribution is essential for normalization, reconstruction, and rehabilitation in the aftermath of floods. When the government provides logistical assistance, affected communities can meet temporary needs such as food, clothing, medicines, and other necessities. Logistics support is crucial during disasters and must be delivered in a timely, accurate, appropriate, and needs-based manner to the victims. However, logistical distribution processes often encounter obstacles. For instance, rigid documentation requirements, such as requiring heirs to provide documents that may have been lost during the disaster, complicate the process. Furthermore, delays in aid delivery can lead to decreased quality and quantity of relief items and resource inefficiency. Shortages of personnel and limited information also hinder effective logistics distribution.

The effectiveness of logistics distribution is a key component of disaster logistics management. A disaster relief distribution system must operate in real-time and continuously to ensure that relief commodities are delivered to victims promptly, in the correct quantity, at the right location, with the appropriate quality, and to the intended recipients (Syamsudin, 2019). Speed in evacuation, preparation of refugee locations, and logistical needs are critical during the emergency response phase (Satriawan, Mansur, & Ambo, 2023). Inadequate timing in logistics procurement, ineffective storage facilities,

and inappropriate transportation methods can hinder distribution efforts (Iskaputri, Raazak, & Arifin, 2020).

This research draws inspiration from several prior studies, both in the context of disaster preparedness and logistical assistance distribution. Research by Iskaputri et al. (2020) revealed that logistics management at the provincial level in South Sulawesi remains suboptimal. Issues such as delayed logistics procurement, inefficient storage spaces, and transportation processes that fail to consider the appropriate type of vehicle have impeded distribution. Similarly, Syamsudin (2019) found that logistics distribution efforts Sintang Regency have been carried out effectively to meet needs and track logistical objectives. Monitoring systems identified deviations in logistics distribution implementation, and the types of assistance (basic needs, medicines, and social support) aligned with the needs of flood victims, indicating the effectiveness of logistical distribution policies.

Wetania (2022) concluded that strategies for delivering aid to flood victims in Kota Bahagia District, South Aceh Regency were suboptimal. The lack of precise strategies has hindered aid distribution to rightful beneficiaries.

A relevant study on disaster logistics assistance management for floods in Setu District, South Tangerang City by Rochman (2020). found that the South Tangerang BPBD has managed logistical assistance by collecting accurate and comprehensive data and information. This includes identifying potential logistical resources, shelters, and personnel for flood disaster management in Setu District. Additionally, references were created to address logistical needs in disaster management, establish and develop disaster logistics clusters, and coordinate and collaborate with the community, sub-district government, urban villages, and BPBD to ensure readiness and availability of logistics for flood disaster management in Setu District. The study also highlights improved logistics response during emergency situations for large-scale floods in the region.

Based on the review of relevant studies, no research has specifically discussed logistical assistance distribution for flood disasters in Pasangkayu Regency, even though this region frequently experiences floods. Addressing logistical distribution issues requires good coordination and proper anticipation of logistical needs by local governments and BPBD. This research aims to analyze and provide a detailed overview of the implementation of logistical assistance distribution to flood victims in Pasangkayu

Regency, West Sulawesi Province. This is measured using indicators from the Logistics Management Theory, which includes four dimensions: planning function, procurement function, storage function, and control function.

LITERATURE REVIEW

Disaster logistics management refers to the efforts to regulate the supply of raw materials for disaster relief logistics, encompassing several stages, including planning, procurement, storage, distribution, transportation, and receipt at the destination (Iskaputri, Raazak, & Arifin, 2020). Disaster logistics management is often referred to as humanitarian logistics or humanitarian aid logistics. Humanitarian logistics involves the planning, execution, and control of the efficient and cost-effective flow and storage of humanitarian aid and related information, from the point of origin to the point of consumption, with the aim of reducing the suffering of disaster victims (Thomas & Kopczak, 2005). Subagya (2005) outlines the functions of logistics management as a process consisting of the following components:

1. Planning and Needs Determination Function that involves setting objectives, guidelines, and measures for logistics management. Needs determination serves as a detailed breakdown of the planning function.
2. Budgeting Function that includes activities and efforts to formulate detailed needs over a specific period.
3. Procurement Function that entails efforts and activities to meet operational needs as outlined in the planning, needs determination, and budgeting functions.
4. Storage and Distribution Function that involves receiving, storing, and distributing disaster relief logistics supplies.
5. Maintenance Function that includes efforts to maintain the technical condition, utility, and effectiveness of inventory items.
6. Disposal Function that involves the process of releasing items from accountability due to distribution or items no longer being suitable for use or consumption.
7. Control Function that is the core function of logistics management, involving efforts to monitor and safeguard the overall management of logistics.

METHOD

This research employs a qualitative method with a descriptive approach. The descriptive approach was selected based on the identified problems and the aim to depict

the actual situation. Qualitative research is an approach that seeks to understand the meaning of a phenomenon from the perspective of the participants (Creswell & Creswell, 2018). The researcher initially collected as much relevant data as possible, then analyzed, described, and systematically and accurately presented the data. The data analyzed includes primary data obtained through field research using interviews with informants and observations, as well as secondary data such as field notes, literature reviews, reports from the Regional Disaster Management Agency (BPBD, *Badan Penanggulangan Bencana Daerah*) of Pasangkayu Regency, and documentation in the form of recordings and other relevant materials. The informants in this research include the Head of BPBD Pasangkayu Regency, the Head of the General and Personnel Subdivision, the Head of the Emergency and Logistics Division, the Head of the Logistics Section, and other BPBD staff members. These informants were selected based on their expertise and competency in disaster logistics to ensure that the information provided was comprehensive and aligned with the facts on the ground.

FINDINGS AND DISCUSSION

Commented [REV11]: • Analisis terhadap fungsi penyimpanan kurang mendalam. Misalnya, apa dampak spesifik dari gudang yang tidak memadai terhadap korban banjir? Apakah ada solusi inovatif yang dapat diusulkan/sudah dilaksanakan?
• Diskusi mengenai fungsi pengendalian sudah baik, tetapi perlu penekanan lebih pada bagaimana evaluasi dapat meningkatkan proses di masa depan.

Distribution of Logistical Assistance to Flood Victims in Pasangkayu Regency, West Sulawesi Province

This research utilized the Disaster Logistics Management Theory proposed by Subagya (2005), encompassing four dimensions: planning, procurement, storage, and control functions. These dimensions served as a framework to analyze the logistical assistance distribution carried out by the Regional Disaster Management Agency (BPBD, *Badan Penanggulangan Bencana Daerah*) of Pasangkayu.

A. Planning and Needs Fulfillment Function

It is crucial to ensure the availability and suitability of logistical aid with the needs of the affected population, including understanding the characteristics of the victims, the method of conveying aid, and the optimal timing for distribution. Precision, competence, and skills are required to assess the actual conditions of disaster victims receiving aid. Planning logistics for disaster management involves two key indicators: the standardization of minimum logistical needs and the preparation of short-, medium-, and long-term requirements.

1. Standardization of Minimum Needs

The standardization of minimum logistical needs for disasters considers several aspects to ensure effective distribution. Based on BNPB Regulation No. 23 of 2014 (Badan Nasional Penaggulangan Bencana, 2014), the calculation includes: (1) Fulfillment of minimum inventory based on population numbers; (2) Fulfillment of minimum inventory based on the percentage of disaster victims; (3) Minimum inventory based on days; local consumptions; disasters; (4) Minimum food supply adjusted to local consumption patterns; (5) Types of items matched with specific disaster threats; (6) Fulfillment number of items of quality.

The Head of the Emergency and Logistics Division explained that disaster response programs include:

a. Providing essential needs such as rice, instant noodles, eggs, clothing, medicines, and adequate sleeping arrangements.

b. Establishing field kitchens in disaster-affected areas based on the needs and severity of the flood.

2. Preparation of Short-, Medium-, and Long-Term Needs

Short-, medium-, and long-term needs require special attention to ensure that the supplies and aid provided are available in the correct quantities, tailored to the needs of those affected, delivered to the right recipients, and distributed at the appropriate time. According to the Secretary of BPBD Pasangkayu, the agency routinely prepares a Post-Disaster Needs Assessment Document to evaluate impacts, analyze effects, and estimate the needs that form the basis for post-disaster rehabilitation and reconstruction activities. This is conducted using a post-disaster needs verification method in line with BNPB Regulation No. 15 of 2011 concerning Guidelines for Post-Disaster Needs Assessment. The results of the disaster assessment document reveal budget adjustments by BPBD Pasangkayu for logistical provisions, targeting an estimated 2,498 disaster victims for logistical aid distribution during rescue and evacuation efforts. This demonstrates that the budget adjustments for addressing disaster needs have been managed effectively.

Based on an interview with the Head of the Logistics Subdivision, it was revealed that the preparation of logistical aid aligns with the standardization requirements for distribution. Logistical categories are divided into food, clothing, and shelter. For short-term distribution, essential items such as clean water, bread,

ready-to-eat food, medicine, and toiletries are provided. If the disaster impact persists for a longer period (medium-term), ranging from one week to one month, additional items like clothing and temporary housing are also supplied. For prolonged disaster impacts exceeding one month (long-term), BPBD prepares support in the form of business capital assistance.

From the interviews, observations, and analysis, it was found that BPBD Pasangkayu has developed its logistics planning quite effectively. This is evidenced by the existence of a minimum logistics standard applied to the logistical distribution program. Moreover, BPBD has successfully planned for logistical needs across short-, medium-, and long-term time frames.

B. Procurement Function

The logistics procurement process represents a significant portion of the overall performance in logistical distribution. A successful procurement ensures that the organization has adequate logistical supplies ready for distribution and utilization by relevant operational units whenever a disaster occurs. The sources for procuring disaster relief logistics and equipment may originate from both domestic and international sources, including the government, the State Budget, the community, businesses, and non-governmental organizations. According to the Head of the Logistics Subdivision of BPBD Pasangkayu Regency, three main sources for logistics procurement at BPBD Pasangkayu are the Regency Regional Budget, the Provincial Regional Budget, and direct aid from the BNPB. For the process of requesting aid from the provincial or central BNPB level, a proposal for the procurement of goods is submitted. Once reviewed, the requested goods are delivered. During the handover of logistical goods, a formal handover document is created as proof that the logistical items have been received.

The procurement request process begins with compiling a list of items needed based on the community's requirements and conditions. This was confirmed by the BPBD Secretary, who stated that during the handover process, the items received must align with the documented list of requested items. Additionally, compiling a list of required goods ensures that logistical items are appropriately tailored to current conditions.

The Head of the Emergency and Logistics Assistance Division stated that logistical procurement at BPBD Pasangkayu Regency, in addition to being funded by the Regional Budget and the State Budget, also involves a tendering process that includes

participation from businesses and community organizations. The tender process adheres to established regulations, encompassing the qualification assessment of suppliers, purchasing, borrowing, leasing, self-production, bartering, substitution, donations or gifts, and repairs or refurbishments. Furthermore, BPBD Pasangkayu collaborates with other agencies in logistical procurement, such as the Social Services Office, the Indonesian National Armed Forces, the Indonesian National Police, and the Civil Service Police Unit (BPBD Kabupaten Pasangkayu, 2021).

Based on the above analysis, the logistical procurement process at BPBD Pasangkayu Regency can be considered satisfactory and compliant with the National Disaster Management Agency Regulation No. 4 of 2018 (Badan Nasional Penanggulangan Bencana, 2018). This regulation stipulates that logistical procurement and disaster management equipment must be carried out in a planned manner, taking into account the type and quantity of needs, and can be implemented through tendering, selection, or direct appointment, following applicable provisions.

C. Storage Function

The storage function is analyzed using two key indicators: Warehouse Standardization and Logistics Readiness. The standardization of logistics storage is a critical process for managing goods and materials to ensure their safety and security in the warehouse. Key considerations include: (1) Placement according to a layout plan; (2) Protection against theft; (3) Security from physical damage; (4) Protection from chemical and biological contamination that may affect quality and quantity; (5) Fire safety; and (6) Organization that adheres to warehousing standards. Additionally, the use of appropriate racks and pallets, proper air circulation management to avoid humidity, and safeguards against flooding, pests, and inefficiencies are also essential for warehouse design (BNPB, 2009).

The Head of Emergency and Logistics Assistance at BPBD Pasangkayu Regency stated that the agency has only one logistics storage warehouse, located to the left of the BPBD office building. The warehouse is relatively small, measuring 6x10 meters, and primarily stores clothing and housing supplies. Due to its limited size and the volume of goods, some items are stored in employees' office spaces, while food supplies are temporarily stored at the Social Services Office of Pasangkayu Regency. Consequently, the existing warehouse does not meet the established storage standards.

There are several aspects that still need improvement to meet the desired storage standards. The small size of the warehouse leads to overcrowding and a tendency for disorganization. An inadequate warehouse can result in scattered logistical aid supplies, which may slow down the distribution process to disaster victims. However, the security of the warehouse is considered adequate due to its location next to the BPBD office and near the main road. The warehouse currently stores only clothing and housing supplies because its humid conditions are unsuitable for storing food supplies. To address the limitations of the warehouse, BPBD Pasangkayu Regency has been storing food supplies at other government agencies, such as the Social Services Office.

In addition to proper logistics storage, sufficient inventory is equally crucial in disaster logistics management. Adequate inventory ensures the availability of necessary resources, reduces response time, improves efficiency, minimizes losses, and ultimately saves lives. According to the Head of BPBD Pasangkayu Regency, the logistical supplies are adequate and meet the necessary requirements. The agency routinely plans for logistical procurement. Although the quantity received does not always match the requested list, the current inventory levels are deemed sufficient in the event of a flood disaster. Logistical inventory is essential for ensuring the availability and distribution of supplies during emergencies. Accurate and detailed inventory records are vital for monitoring when replenishments are needed. By analyzing historical data and forecasting future needs, BPBD can effectively plan its logistical inventory. This planning includes considering various disaster scenarios and potential requirements.

Based on the results of interviews, documentation, and analysis, it can be concluded that the storage warehouse does not yet meet the established standards due to its small size, which is insufficient to accommodate all logistical supplies. However, the logistical inventory at BPBD Pasangkayu Regency is considered adequate, as the availability of aid supplies is supported by comprehensive and detailed records that correspond to the inventory stored in the warehouse.

D. Control Function

The control function is defined as the process of organizing and directing activities to ensure specific objectives are achieved efficiently and effectively, in accordance with established Standard Operating Procedures (SOPs). To describe the dimension of the

control function, this research uses two analytical indicators, namely Logistics Data Collection and Monitoring and Evaluation of Distribution Implementation.

Accurate logistics data collection is crucial in disaster relief distribution as it prevents the allocation of unnecessary or unneeded items. The distribution of disaster relief logistics is carried out in compliance with the Standard Operating Procedures outlined in National Disaster Management Agency Regulation No. 04 of 2019 (Badan Nasional Penanggulangan Bencana, 2019). According to the Secretary of BPBD Pasangkayu Regency, logistics planning is generally preceded by field surveys. Reports from field officers include data on the number of affected households and the amount of aid needed. In addition to reports from BPBD field officers, coordination is also conducted with the Department of Social Services, Civil Service Police Unit, and Non-Governmental Organizations to gather supplementary information. Furthermore, the prioritization of aid distribution is directed toward residents of the most affected areas to ensure that logistical assistance reaches those who are truly in need.

Monitoring and evaluation are equally critical components of the control function. The purpose of monitoring and evaluating logistics operations is to ensure the effective execution of activities related to logistics and to identify benefits for future planning by comparing activity realizations against pre-established plans and standards. In the distribution of logistical aid, BPBD Pasangkayu Regency actively conducts monitoring and evaluation. According to the Head of Emergency and Logistics Assistance, the focus of monitoring and evaluation includes measuring the effectiveness of logistical aid in meeting the needs of disaster victims and affected communities. BPBD uses evaluation findings to identify opportunities for improvement and implement necessary corrective actions. Additionally, the results of monitoring and evaluation are utilized for future enhancements, such as improving coordination among parties involved in the distribution process.

BPBD Pasangkayu also conducts routine monitoring of the entire distribution process. As conveyed by the Secretary of BPBD Pasangkayu Regency, the agency meticulously records details such as the types and quantities of aid distributed, the recipients, and the locations of distribution. Monitoring begins from the transfer of goods at the distribution center to their final delivery to the recipients, ensuring that the logistical items are not only delivered on time but also in good condition. This data is

then used for reporting to relevant parties and for further evaluation. Monitoring ensures that logistical aid reaches its destination in a timely manner and in optimal condition.

Therefore, based on the results of interviews, documentation, and analysis, it can be concluded that the control function is adequately implemented. This is evident from the logistics data collection process, which has been assessed as effective and in accordance with the Standard Operating Procedure (SOP), as well as the routine monitoring and evaluation conducted during the logistics distribution process. Regular evaluations help minimize the risk of inaccuracies in the distribution process, enabling better logistics distribution practices in the future.

Inhibiting Factor

The implementation of disaster logistics management often encounters obstacles, including in the logistics distribution process by the BPBD of Pasangkayu Regency. Some of the challenges faced by BPBD Pasangkayu in distributing disaster relief logistics are as follows:

1. The lack of proficiency among BPBD Pasangkayu staff in administrative tasks significantly impacts reporting and accountability stages.
2. The facilities and infrastructure available to BPBD Pasangkayu are insufficient, particularly in the areas of accommodation (limited quantity and type of transport vehicles) and insufficient storage facilities.

These constraints can delay the disaster logistics distribution process. To address these challenges, BPBD Pasangkayu has implemented several measures, including providing assistance to underqualified staff and striving to improve and enhance existing facilities and infrastructure. Additionally, efforts have been made to reorganize the logistics storage warehouse. However, due to budget constraints, BPBD collaborates with local government officials for logistics distribution and coordinates with the Social Services Department to store logistical supplies.

CONCLUSION

The disaster logistics management by BPBD Pasangkayu Regency has been evaluated as relatively effective. Based on an analysis of four dimensions of planning, procurement, storage, and control, the storage dimension was identified as needing improvement, where the logistics warehouse lacks adequate capacity. However, the other three dimensions

were found to be sufficiently effective. This evaluation is supported by the achievement and progress of various indicators, including the standardization of logistics, short-, medium-, and long-term needs planning, alignment with government budgets and applicable mechanisms, sources of logistics assistance, warehouse standardization, logistics availability, data acquisition, and monitoring and evaluation of distribution processes. Nevertheless, some inhibiting factors were identified in the implementation of disaster logistics management at BPBD Pasangkayu Regency, such as limited storage capacity, constrained budgets, insufficient human resources, and inadequate facilities and infrastructure.

This research focuses solely on the logistics distribution process for flood disasters, utilizing the four dimensions proposed by Subagya (2005), namely planning, procurement, storage, and control. It is recommended for future research to explore logistics distribution not only for flood disasters but for all types of disaster logistics processes.

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