Humanitarian aids and logistics supply operations for victims of perennial floods disasters in Lagos, Nigeria

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Abstract

Lagos floods perennially due to its low-lying coastal location. The paper analyzes the 3-year data collection on the causes, periodicities and severities of floods versus the humanitarian services, providers and distribution chain for six highly populated neighborhoods comparatively. The results portend a gloomy scenario for sustainable crisis management.

Keywords: Disasters, Floods, Humanitarian Aids, Nigeria

Introduction

Location characteristics and anthropogenic activities have strong effects on disaster occurrences. Areas of high population density and poor adherence to development protocols are of higher risks. Urban centers in developing countries are more vulnerable in view of the rapid population growth which doubles in about every decade (Shaw and Gupta, 2009; Surjan and Shaw, 2009). Nigeria is of low risks to large-scale natural disasters. Earthquakes, volcanoes and landslides are close to nil and tremors are merely occasional (Ajakaiye *et al.,* 1998).

However, human-induced disasters from techno-socio-economic activities occur persistently. Of recent are fire outbreaks, automobile accidents, building collapses, communal clashes, drought and flooding. Fire results from exploding exploratory and sabotaged oil and gas facilities; automobile accidents are from over-stretched road transport systems and building collapses are from non-adherence to planning and engineering regulations (Soneye, 2011). Ethno-religious clashes of disaster magnitudes are triggered by natural resources distribution. (Fasona and Omojola, 2010; Soneye, 2012). Drought occurs over a long period of extremely dry weather and inadequate water supply for live to be replenished while flood occurs when water overflows its confinement to submerge the surrounding regions.

The duo is increasing in frequencies and magnitudes globally as triggered by hydro-climatological events such as global warming (Kun *et al*, 2010, Gleick, 2010). Developing countries are more vulnerable however (Mulyasari *et al*., 2011; Wahlstrom 2009,). All the states of Nigeria are vulnerable. Settlements at low-altitude riverine and coastal floodplains are of higher risks particularly as they increase in size, population and density. Fatality from a single flood in 2012 was 363; more than two million people were rendered homeless (Fabiyi, 2013).

Humanitarian aids are outcomes of the concerns by stakeholders over losses to disasters. The four priorities identified by Darcy and Hofman (2003) are protection of life, health, subsistence and physical security. They flow via governments, charitable non-governmental organizations and private donors. Some disaster donations are meant for the recovery processes,

rehabilitation and reconstruction (Smith and Petley, 2008; p.73). Unlike most other disasters that lead to sudden deaths, fatalities from floods are more gradual. The disaster is more rampaging in displacing population and damaging properties. It produces more survivors, many of who are rendered homeless (Smith and Petley, 2008). It requires more humanitarian aids than other disasters therefore.

Common to developing nations, flooding forecasts, preparedness and reliefs in Nigeria are least effective just like the humanitarian operations and crisis management. Public response to disasters commenced in 1976 with the creation of the National Emergency Relief Agency (NERA). It was renamed National Emergency Management Agency (NEMA, 2011) in 1999 to:

(a) formulate policy on all activities relating to disaster management in Nigeria and coordinate plans and programmes for efficient and effective response to disaster at the national level;
(b) coordinate and promote research activities relating to disaster management at National level;
(c) monitor the state of preparedness of all organizations or agencies which may contribute to disaster management in Nigeria;
(d) collate data from relevant agencies so as to enhance the forecasting, planning and field operation of disaster management;
(e) educate & inform the public on disaster prevention and control measures; and,
(f) coordinate and facilitate the provision of necessary resources for search and rescue and other types of disaster curtailment activities and distress call.

NEMA is meant to be supported by its counterparts in each state of the federation to manage ensuing disaster operations at respective local levels. Some NGOS are also visible in the country especially the Nigerian Red Cross Society (NRCS).

The study is a survey of the humanitarian supports for flood victims in Lagos over the last three years. It established the vulnerability to flood disasters, identified the institutions providing the aids and assessed the logistics supply chains along with the success or otherwise of the provision.

The Study Area

Lagos (3°E, 6°N) is the largest metropolitan area in West Africa, and the second in Africa, after Cairo but has a highest population growth rate in the continent (UN, 2008). It was founded in 1472 a fishing and farming settlement around its natural break for the approximated 2,500km-long West African creeks and lagoons parallel to the Atlantic coastline. It was the administrative headquarters of Nigeria and remains the commercial and socio-political nerve centre of the country (Odumosu, 1999; Ojo and Omotayo, 1988). The climate is tropical with high temperature all the year round and torrential rains between April and November. Lagos is a coastal metropolis with altitude of about 10m above sea level. It slips into the Atlantic Ocean at a low gradient. The geomorphology is dominated by coastal plain sands, barrier beaches and cut-off channels of coastal rivers and fringing lagoons.

The population is estimated at about 10 million in 2007 and 24 million in 2020 (Agbola and Agunbiade, 2007). About two-thirds of the residents live in high population density- low income slum neighbourhoods (Morakinyo *et al*, 2012). The slums originate from chaotic developments of unplanned squatter settlements, pressures generated by inadequacy of shelter delivery system for rising urban population and demand for land by teeming rural immigrants for their urban needs. They lack basic urban social services such as hospitals, schools, electricity and

potable water (Nwanna, 2012). The few spaces available are heaped by refuse. Living rooms are substandard and congested, sometimes without kitchen. Morakinyo *et al* (2012) estimated about 8.7 persons per room.

Lagos slums are vulnerable to floods in view of their geographical characteristics and resilience by the residents. Drains and roads are provided and maintained poorly. Some property developers and residents are also noted for disregard to landuse regulations and controls which retard smooth flow of runoffs from torrential rains and water released for safety reasons by dams upstream Ogun, the main river draining the metropolis. The floods build up gradually from sluggish runoff from torrential rains, ocean/lagoon backwash and discharges by upstream dams on the existing rivers as occasioned by safety consideration.

Incidences of flood disasters in recent times are perennial particularly in wet months. The months are a period that residents around floodplain and shoreline communities look forward to with no enthusiasm because of the high flood risks (Ayoade and Akintola, 1980; Ologunnorisa, 1999). Yet residents are unwilling to relocate because of properties and rents are cheaper. Six of the twenty local government areas of Lagos State are covered comparatively (Table 1).

Table 1: The Areas and Respondents Sampled for the Study

LGA	Neighborhoods	Respondents
Alimosho	Aboru, Ayobo, Idimu, Abule Oki, Agbado, Ijegun and Ikotun.	28
Ikorodu	Ikorodu-Agric, Ebute, Majidun, Ijede, Ipakodo and Ogolonto	41
Kosofe	Agilinti, Alapere, Ketu, Mile-12, Owode-Ajegunle, Owode-Elede and Owode-Onirin	38
Mainland	Abule Oja, Adekunle, , Alagomeji, Alara, Ebute-Metta, Ido, Iwaya, Makoko, Onike, Otto and Oyingbo	78
Oshodi Isolo	Ago Palace, Ire-Akari, Oke Afa, Isolo, Mafoluku, Oshodi and Sogunle	36
Somolu	Abule Ijesha, Akoka, Bariga, Ilaje, Pedro and Obanikoro	71
	Total	292

Lagos State Emergency and Management Agency (LASEMA) was established in 2007 with responsibilities to prevent and manage disasters in the State, develop loss prevention programmes, design and construct emergency management facilities, procure necessary technology for mitigating all emergency situations, formulate policies in relation to emergency management research and technology planning and engage in emergency call time functions. The conflicting similarities with that of NEMA ad other agencies are:

> *'. . . . .nevertheless of the existence of all other stakeholders' ministries/agencies including non-governmental agencies in emergency management in Lagos state. LASEMA is to coordinate the activities in terms of responding promptly, timely and sustained intervention at any emergency site'.*
>
> -(LASEMA, 2009).

Methods

The study was motivated by reflection on the rising severity and impacts of floods in the Lagos Metropolis in the recent past. It was survey-based. The instrument was designed for victims of the disastrous floods of the wet season of 2010, 2011 and 2012 primarily but some private individuals who were identified to be close to some victims were also considered. Administration was carried out randomly along the streets of the respective communities few weeks after respective incidences. Some 368 instruments were administered but only 292 were completed adequately and analyzed in an SPSS domain for the study as shown in Table 1. Some 65% had been victims of the disaster within the last three years.

Results and Discussion

The Sampled Respondents

The demographic characteristics of the sampled population are shown in Table 2. The gender distribution was 57% males to 43% females. The average ages were 28.3years to 40.5years. Length of stay in the communities was between 6.3years and 10.5years. Household sizes ranged from 6.3 to 10.5. Cheaper accommodation relative to other parts of the metropolis, nearness to work / school, better business opportunities account for staying in the area. Most were self-employed private businessmen and women, unemployed or civil servants in that order.

Table 2: *The sampled population*

	Alimosho	Ikorodu	Kosofe	Mainland	Oshodi-Isolo	Somolu
Sample size (N = 292)	28	41	38	78	36	71
Gender:						
Male (%) (N = 126)	63.0	67.5	52.6	58.9	52.8	49.3
Female (%) (N = 167)	37.0	32.5	47.4	41.1	47.2	51.7
Average age (Years):	37.8	40.5	31.6	30.3	35.2	28.3
Length of Stay in the Area (Years)	6.3	8.7	7.4	10.5	8.1	8.9
Household Size:	6.1	4.6	5.2	4.7	9.1	4.2
Occupation						
Civil Servants (N = 41)	4	8	3	13	4	9
Unemployed (Students, Applicants, Full Housewives and Retirees) (N = 111)	5	10	14	35	16	31
Corporative Organization Staff (N = 12)	2	1	0	4	1	4
Self Employed (N = 116)	14	17	19	25	15	26
Religious Leaders (N = 6)	1	2	1	1	0	1
Purpose for residing in the Area						
Nearness to work or school (N = 53)	3	12	6	14	4	14
Better private business opportunity (N = 41)	0	5	4	12	5	15
Cheaper Accommodation comparatively (N = 82)	8	9	13	26	5	21
Closer to relation, spouse or peers (N = 34)	4	3	4	10	0	13
Property is family's or inherited (N = 15	1	2	1	6	2	3
Land/property purchased newly (N = 34)	4	8	6	1	13	2
Serene surrounding of some streets N = 8)	1	0	1	3	0	3
Lower cost of living (N = 25)	7	2	3	6	7	0

Frequencies of Occurrence

The frequencies are presented in Fig. 1. 'More than once in a year' is most common in all the LGAs studied as attested to by about 65% of the respondents. Some 22% claimed the occurrence is about once a year while 9% and 3% argued for once in 2 -5 years and once in more than five years respectively. Probability of occurrence is higher with every subsequent rains in July/August as well as water releases by Oyan and Ikere Gorge dams around September/October.

Impacts of the Floods

Only 32% of the respondents noted that the disasters led to fatalities in their communities over the past three years (Table 3). Thirteen lives were reported including one each at Ikorodu and Somolu, four each at Oshodi Isolo and Kosofe and five for Alimosho. Only in Aboru (Alimosho) were victims drowned as they were sleeping when floods occurred. They were a

baby and an aged woman. Some babies were reported falling off their mothers backs while some others got washed away as they scrambled for safety through high flood currents and canals that were either filled up or covered by the floods.

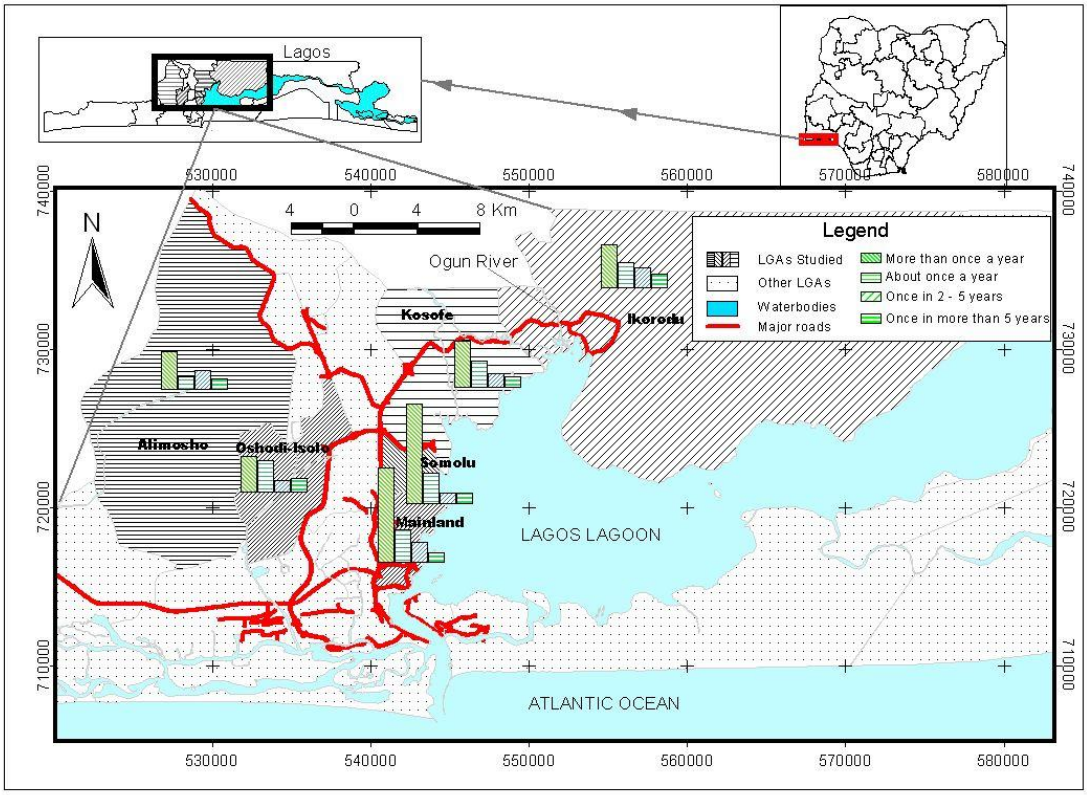

Fig. 1: *Frequencies of incidences in the areas studied*

Table: 3: Respondents' opinions on the disaster impacts on Lives and Properties

	%age for Yes on loss of lives	Number confirming impaired properties and normal ways of live						
		Attendance at work/school	Business activities	Movement around	Family togetherness & social lives	Houses and belongings	Human health	Total
Alimosho	38	3	1	8	2	10	1	25
Ikorodu	15	1	4	15	4	17	2	43
Kosofe	32	4	7	4	11	21	1	48
Mainland	51	2	4	11	6	29	3	55
Oshodi Isolo	11	3	3	7	4	13	4	34
Somolu	45	3	6	14	3	32	2	60
Total	32	16	25	59	30	122	13	265

Normal lives were stalled as a result of the floods. The implications are (i) submerged houses and household belongings, (ii) impeded movement within own properties and on the streets, (iii) separation of family members and disorganized social ties (iv) halted business activities, (v) low attendance at workplaces and schools, and (vi) hampered human health. Household goods such as electronics, mattresses and clothes, cars were washed away or spoilt

beyond repairs. Largely, buildings collapsed and lose foundations on unstable soils. Escalating cases of *seasonal landlords* were reported by some respondents whereas properties in vulnerable areas are occupied only in the dry season and abandoned in wet season.

Some roads were washed away while goods stored in the shops were destroyed. The dirty waters imported and trapped suspended wastes including faeces within apartments. Some children are taken to rescuers homes for temporary accommodation. Risks of diseases outbreak were high as residents were forced to be on flood vigil at home and sleep on bare floors or mats (at best) as the wetness lasted.

The Humanitarian Aids provided

The nature of reliefs and list of providers to victims are shown in Table 4. Private individuals rank highest, followed by government agencies at the state level, community-based associations (CBOs) and religious groups. Non-governmental organizations (NGOs) and corporate organizations hardly exist. Supports from the government are drainage provision and maintenance shortly after the disasters have occurred mostly, though some government officials are neighbors and support victims as private individuals.

Table 4: The Supports being provided by respective institutions

	Cleaning drains in the for free flow of water in the area	Construction of drains and Dredging of Canal	Demolition of buildings obstructing free flow of water	Financial Donations	Provision of Emergency hotlines	Rescuing victims (especially children) and Counseling	Provision of Relief Materials (e.g. clothing, blankets, foods and Treated Mosquito Nets	Provision of alternative accommodation temporarily	Helping to evacuate, dry and/or keep custody of	Pumping out flood water and Cleaning flooded compounds	Prayers and Counseling	Percentage (N = 289)	Rank (Significance)
Community-Based Organizations (38) • Street Youths & Women Groups (13), • Landlord and Resident Associations (31)	17	2		2		5	9			3	6	13 %	3rd
• **Corporate Organizations (2)** • First Bank (1) • A fast food company (1)				1			1					1%	6th
Government agencies (66) • Federal Government through NEMA (2) • State government (45) • LGAs and LCDAs (19)	9	30	8	1	1	1	16					22 %	2nd
Non-governmental Organizations (7) • Red Cross Society (1) • Rotary Club of Nigeria (1) • Social Clubs (2) • Occupational Associations (7)	1			1			3			2	4	3%	5th
Private Individuals (108) • Relations (12) • Friends (22) • Landlords (4) • Community members (66)	16			8		31	9	10	5	12	17	35 %	1st
• **Religious Groups (45)** • Six named Churches (29) • Both Churches and Mosques (6) • Mosques (10)				2			4	11			27	15 %	4th
Total	43	32	8	15	1	37	42	21	5	17	54		
Rank (Significance)	2nd	5th	9th	8th		4th	3rd	6th	10th	7th	1st		

Early visitors were private individuals on condolence visits always ended up as emergency rescuers. They assist in pumping out flood waters in compounds and clearing some paths for flood diversion. With nobody in charge, the operations usually become free-for-all, rowdy and strain victims more emotionally and psychologically. Religious groups (both from churches and mosques) thereafter arrive for spiritual supports through prayers and counseling. Some others provide temporary accommodation. Impacts of foreign donations through NGOs are of less significance in Nigeria but in more disaster ravaged Asian countries (Paul, 2003).

Adequacy of the Aids Received

The study adopted 10-point Likert scale to assess the respondents view on accessibility to the various aids providers over the 3-year flood disaster years of study. The scoring was from 1 (least accessible) to 10 (most accessible). The result shown in Table 5, shows that CBOs were most accessible ($\mu = 2.52$, $\delta = 2.551$), followed by private individuals ($\mu = 1.90$, $\delta = 1.377$). Corporate organizations were least ($\mu = 1.13$, $\delta = 0.398$).

Table 5: The differences in ease of access to aids from different sources

	Alimosho (N = 28)		Ikorodu (N = 41)		Kosofe (N = 38)		Mainland (N = 78)		Oshodi Isolo (N = 36)		Somolu (N = 71)		Overall (N = 292)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev
CBOs	3.04	3.383	2.27	2.924	1.18	1.136	2.46	2.166	4.03	3.229	2.13	2.469	2.52	2.551
Corporate Organizations	1.32	1.020	1.1	0.436	1.00	0.000	1.09	0.290	1.00	0.000	1.24	0.640	1.13	0.398
Government Agencies	1.48	1.528	1.51	1.551	1.32	1.372	1.29	0.605	1.28	1.21	1.39	1.093	1.38	1.227
NGOs	1.82	2.019	1.32	1.192	1.11	0.649	1.55	1.576	1.31	1.527	1.20	1.298	1.39	1.959
Private individuals	2.64	3.082	1.59	1.884	1.16	0.973	1.58	1.201	2.67	2.736	1.75	1.876	1.90	1.377
Religious Bodies	2.54	2.912	1.34	1.543	1.00	0.000	1.78	1.770	1.22	0.898	1.46	1.591	1.56	1.452

The Supply Chain

The supply chain shown in Fig 2 reveals that respective donations are of respective arrangements. Private individuals for instance hand over their reliefs to victims right in their houses or at their temporary places of abode. Religious bodies also present their reliefs directly to victims but both in residences and right in churches or mosques.

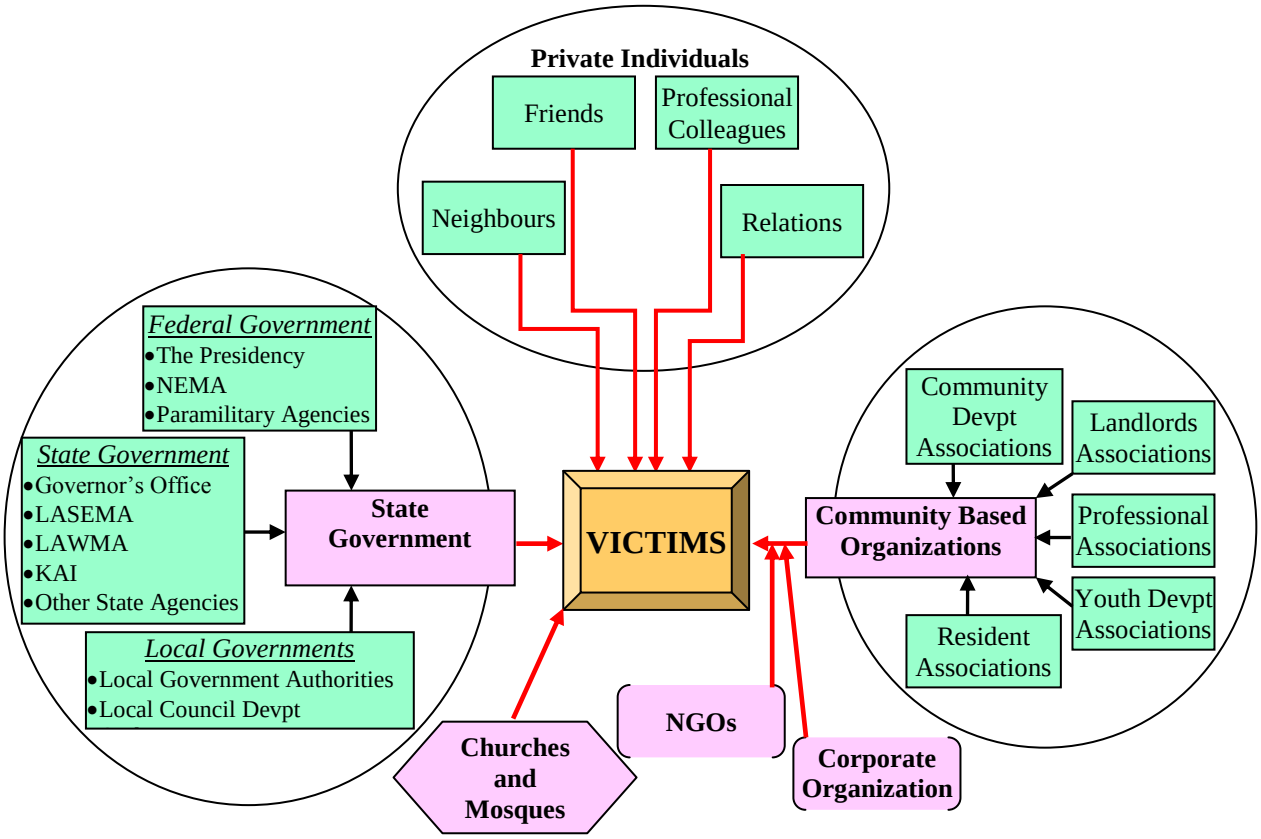

Fig. 2: The supply chains between the aids providers and the beneficiary victims.

Conclusion

Water is a necessity of life but becomes disastrous if a large volume is disturbed from its regular flow laterally or not absorbed by soils thereby swelling in levels and overflowing its confine. Experiences around Lagos suggest that flood disasters would continue to increase in frequency, magnitude and impacts considering the geographical location and associated human activities. Generally, disaster forecasting and preparedness are poor in the country because notable disasters are induced suddenly by anthropogenic activities, relevant geo-based data such as citizenship and demographic database and environmental characterization are deficient while coordination of field rescue operations and aids for victims are uncoordinated. Human-induced activities will continue unabated while impacts will continue to aggravate because perpetrators are hardly brought to book.

Humanitarian aids require practical assistance that can recover livelihoods. The success depends on an organized system that can integrate prevention and preparedness with response and recovery through rescue, relief, rehabilitation and reconstruction operations. The results generated in the study show that aids to flood victims in the country are paltry. This portends a gloomy scenario for sustainable disaster management, humanitarian logistics and supply chain organization in Nigeria. Most often, the chain of management is berated by lack of proactive logistics, chains of supply and communication between agencies. This leads to poor coordination, dereliction and duplication of duties and, hence, poor performances even at search and rescue spots. Victims are usually left to their fate and sometimes have their cases compounded by some other stakeholders.

Emerging views support that the disaster will intensify over time and displace more people as settlements expand into river floodplains and low-lying coastal areas. Effectiveness of the management operations including preparedness, aids and supply will depend on the understanding of peoples' attitudes, perception and behaviours in prevention, impacts adaptation and environmental sustainability. Preventing flood disasters would require adequate dredging of canals conveying unprecedented floods across the metropolis to curtail flood waters and prevent overflow of their banks during heavy rainfall, maintenance of existing ones and mobilization of every stakeholders on disaster prevention, management and operational services. The subject is expected to be of intense scientific and socio-political concerns over the next decades.

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