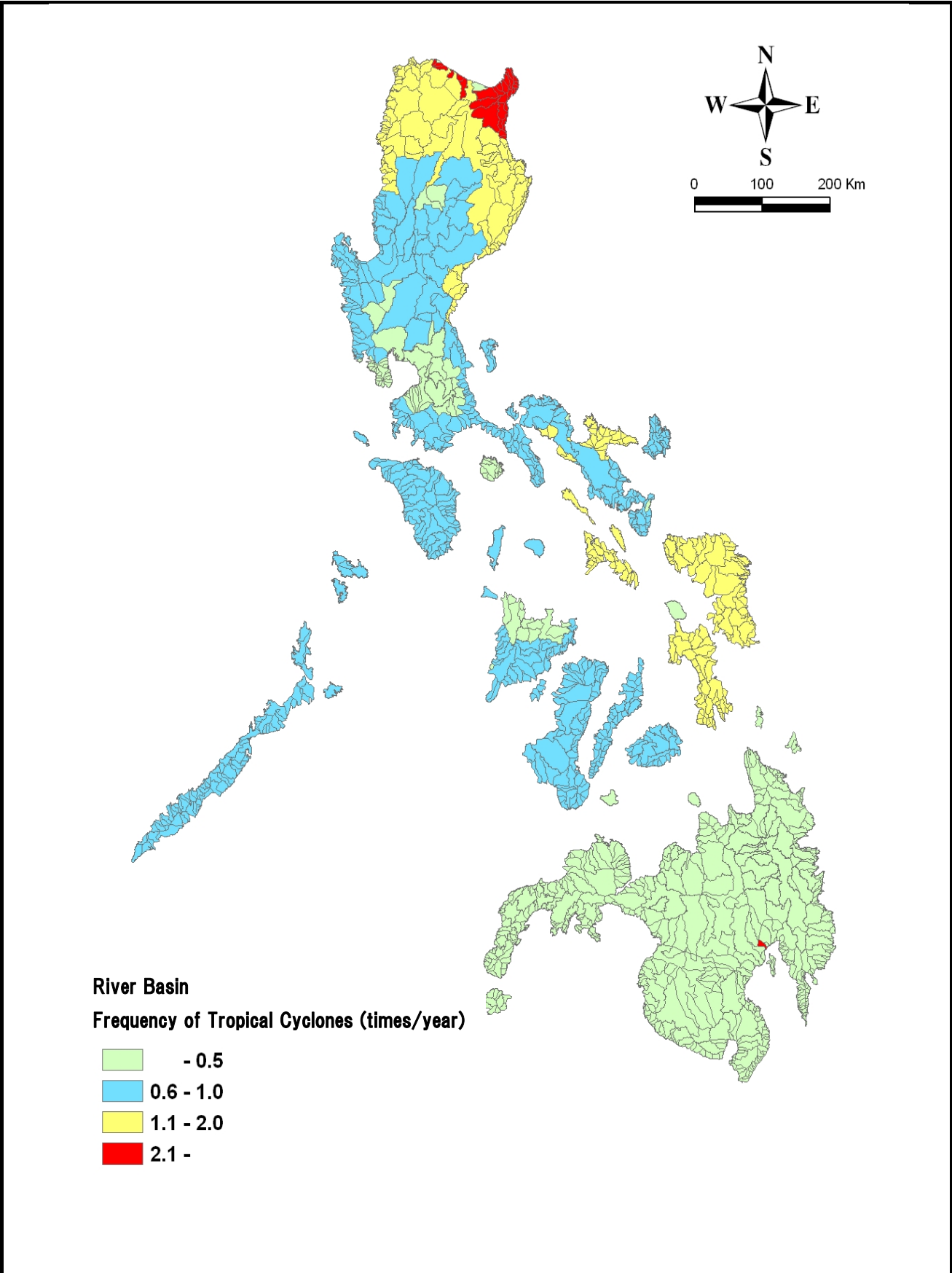


THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3-9

Flood Damages of River Basins in 2001–2005

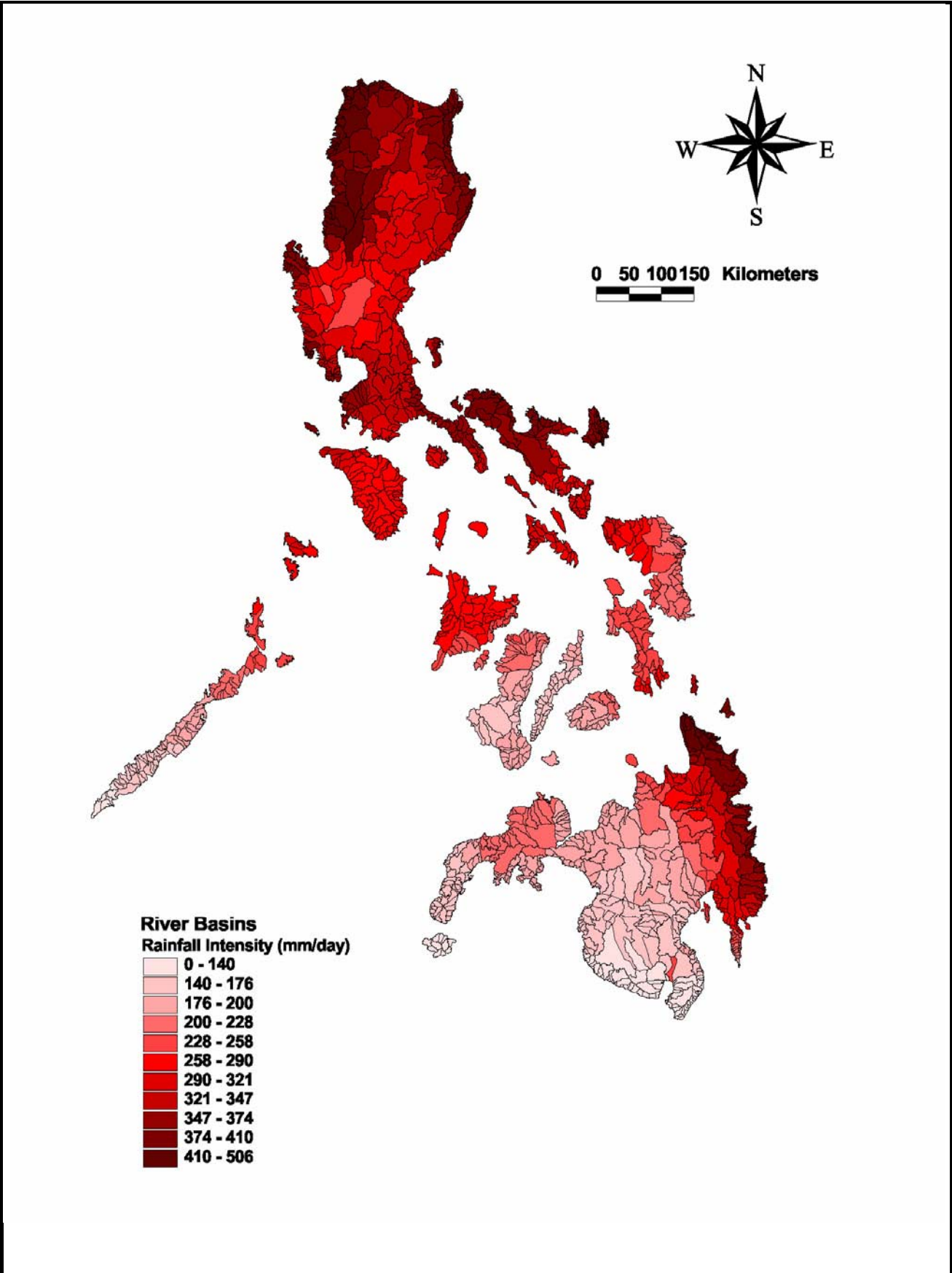


THE STUDY ON THE NATIONWIDE FLOOD RISK
 ASSESSMENT AND THE FLOOD MITIGATION
 PLAN FOR THE SELECTED AREAS
 IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3-10

Frequency of Tropical Cyclones

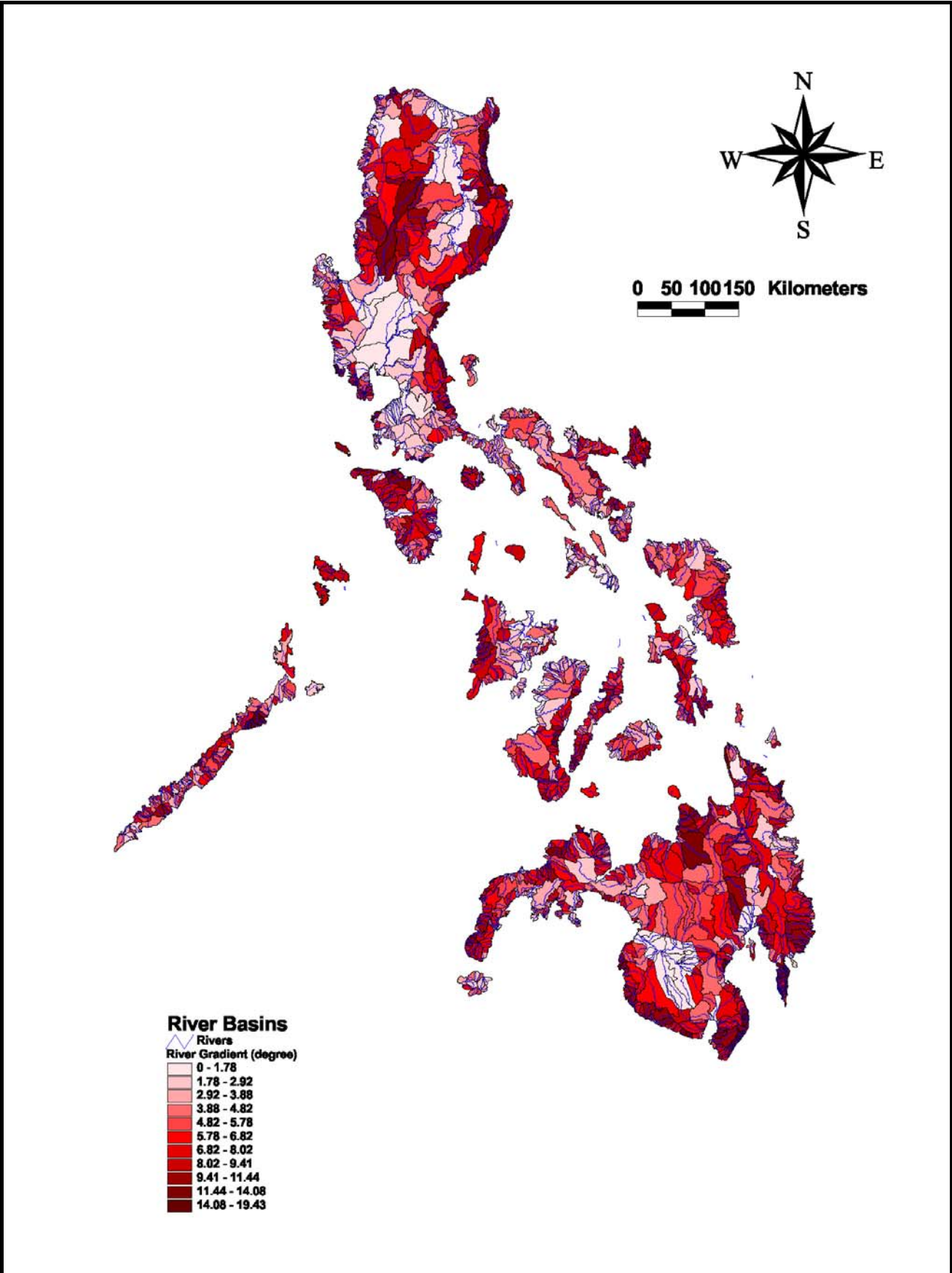


THE STUDY ON THE NATIONWIDE FLOOD RISK
 ASSESSMENT AND THE FLOOD MITIGATION
 PLAN FOR THE SELECTED AREAS
 IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3-11

Rainfall Intensity

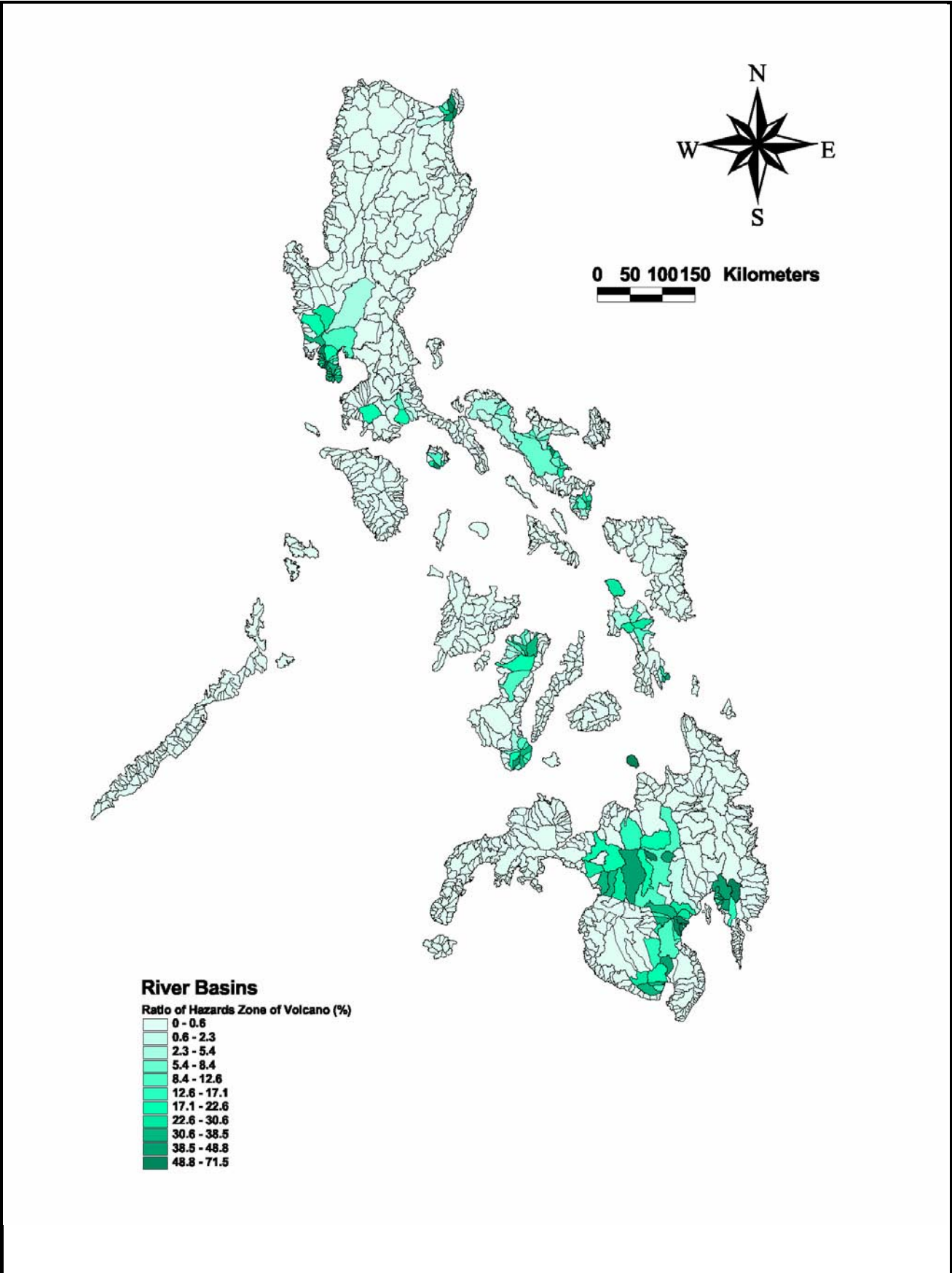


THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3-12

River Gradient

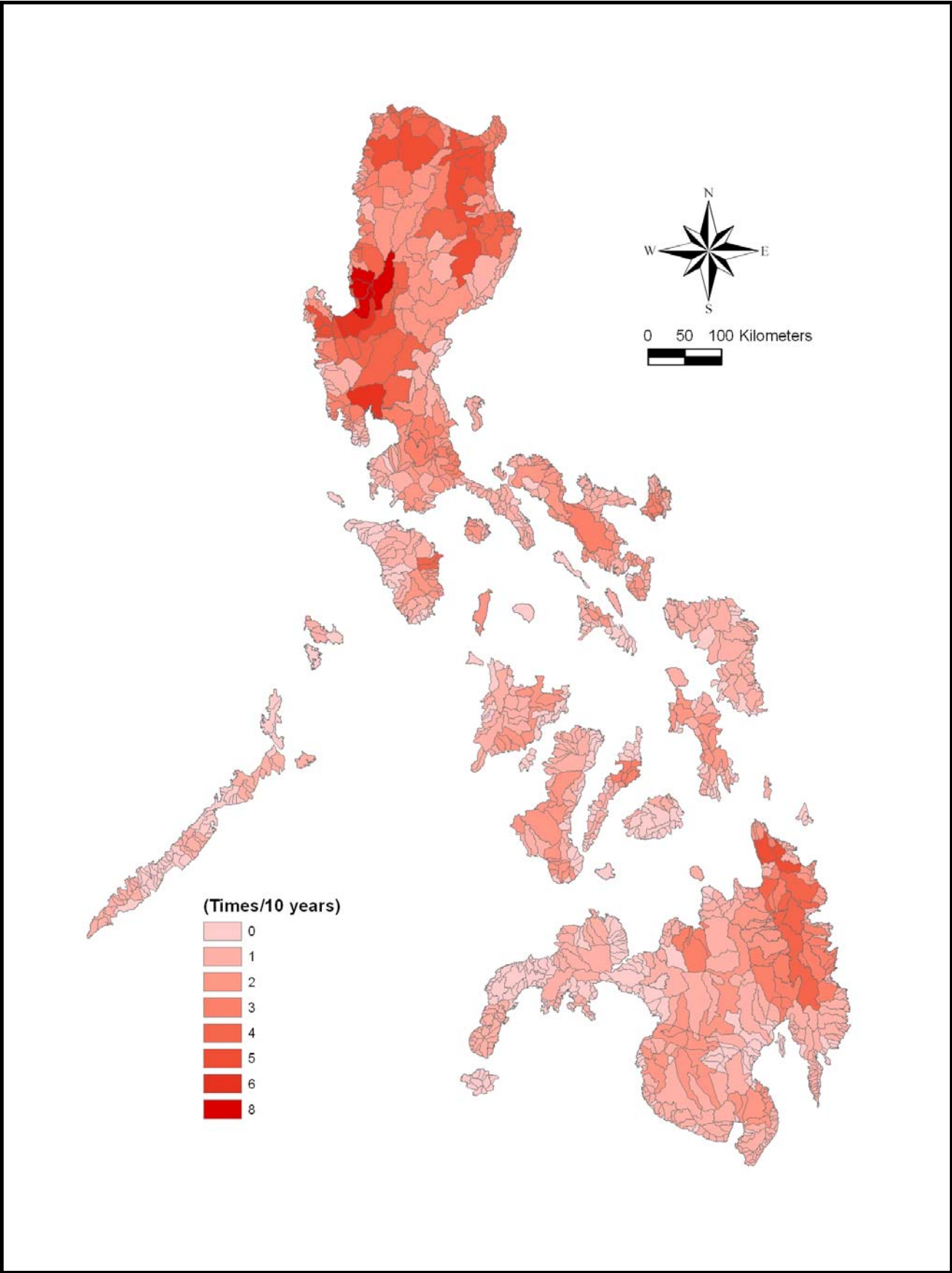


THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3-13

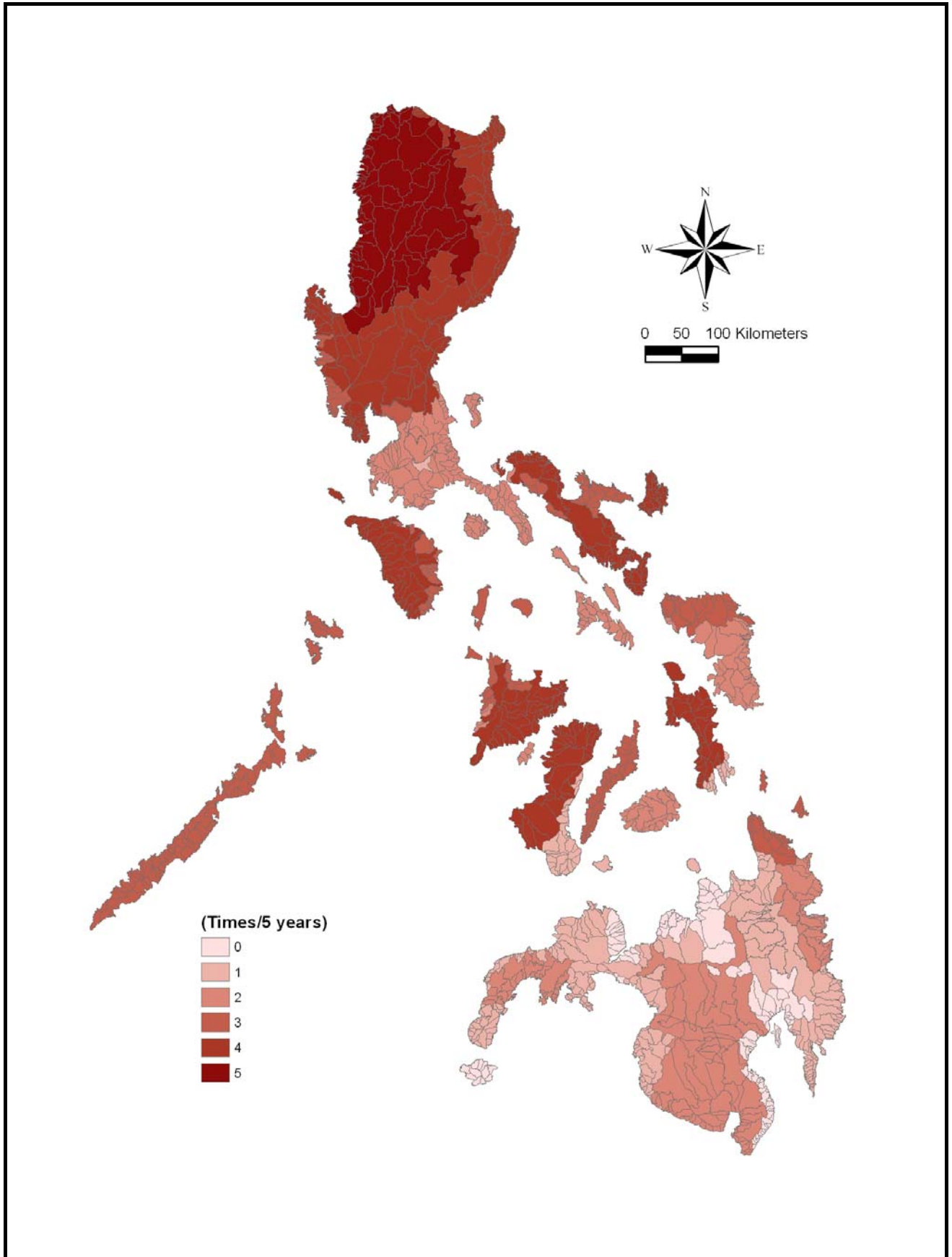
Hazards Zone of Volcano



THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

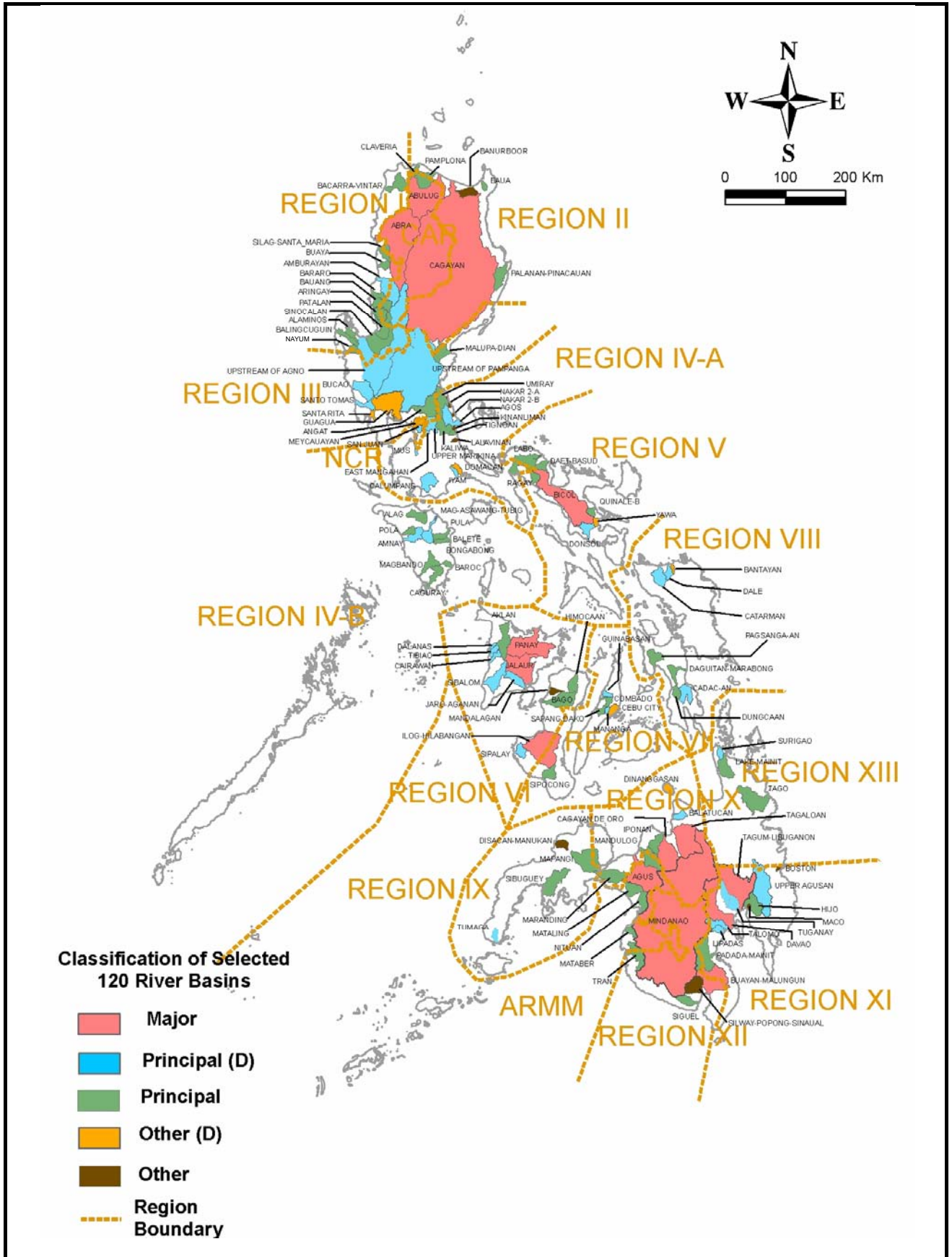
Fig. 3-14
Frequency of Floods based on Flood Casualty Data (times/10 years)



THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3-15
Frequency of Floods based on Flood Damage Data (times/5 years)



THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 3-16
Location of Selected 120 River Basins in the First Screening

Simulation result - Bicol river basin



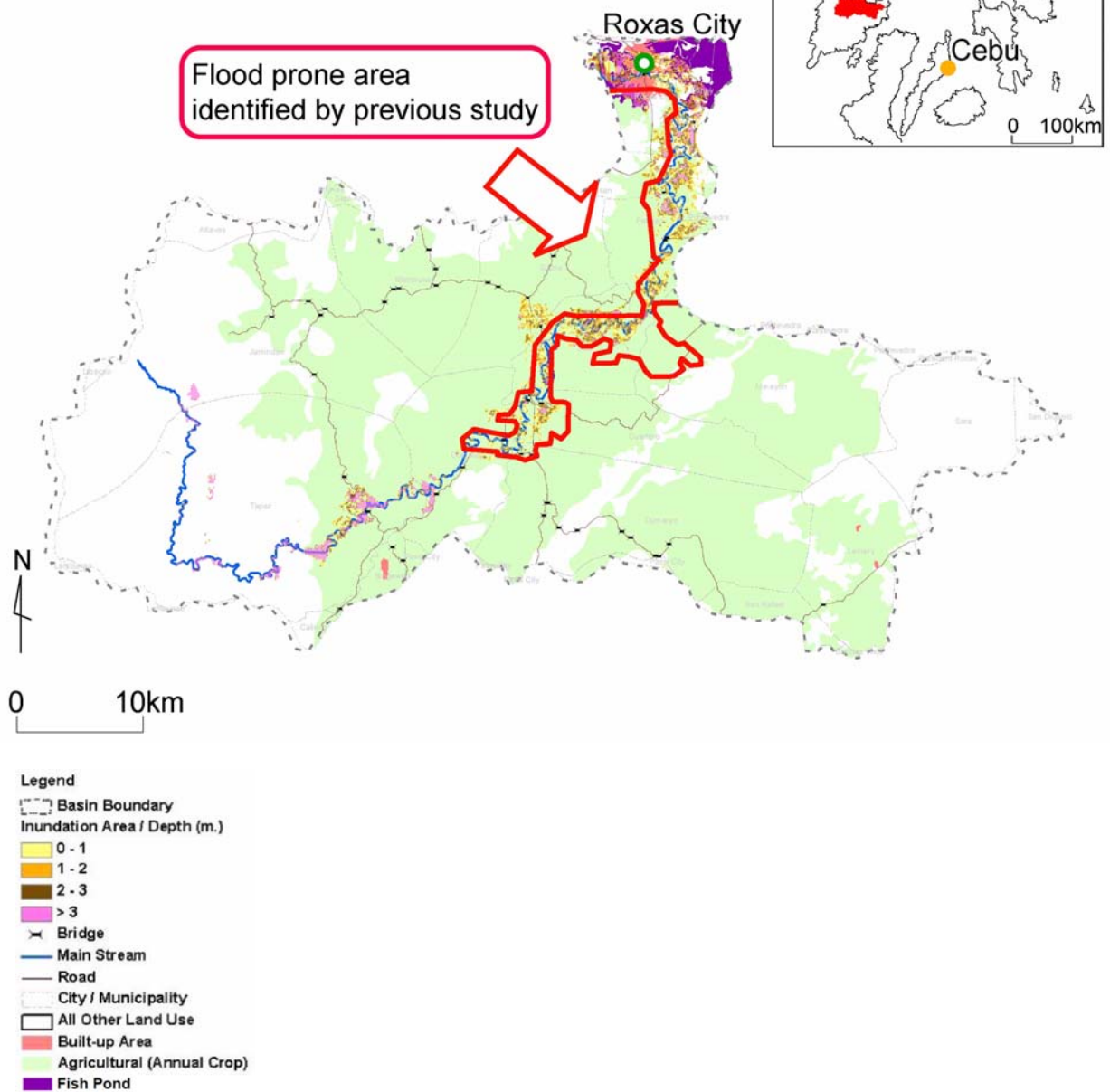
THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4-1

Flood Area Map of Bicol River Basin

Simulation result - Panay river basin



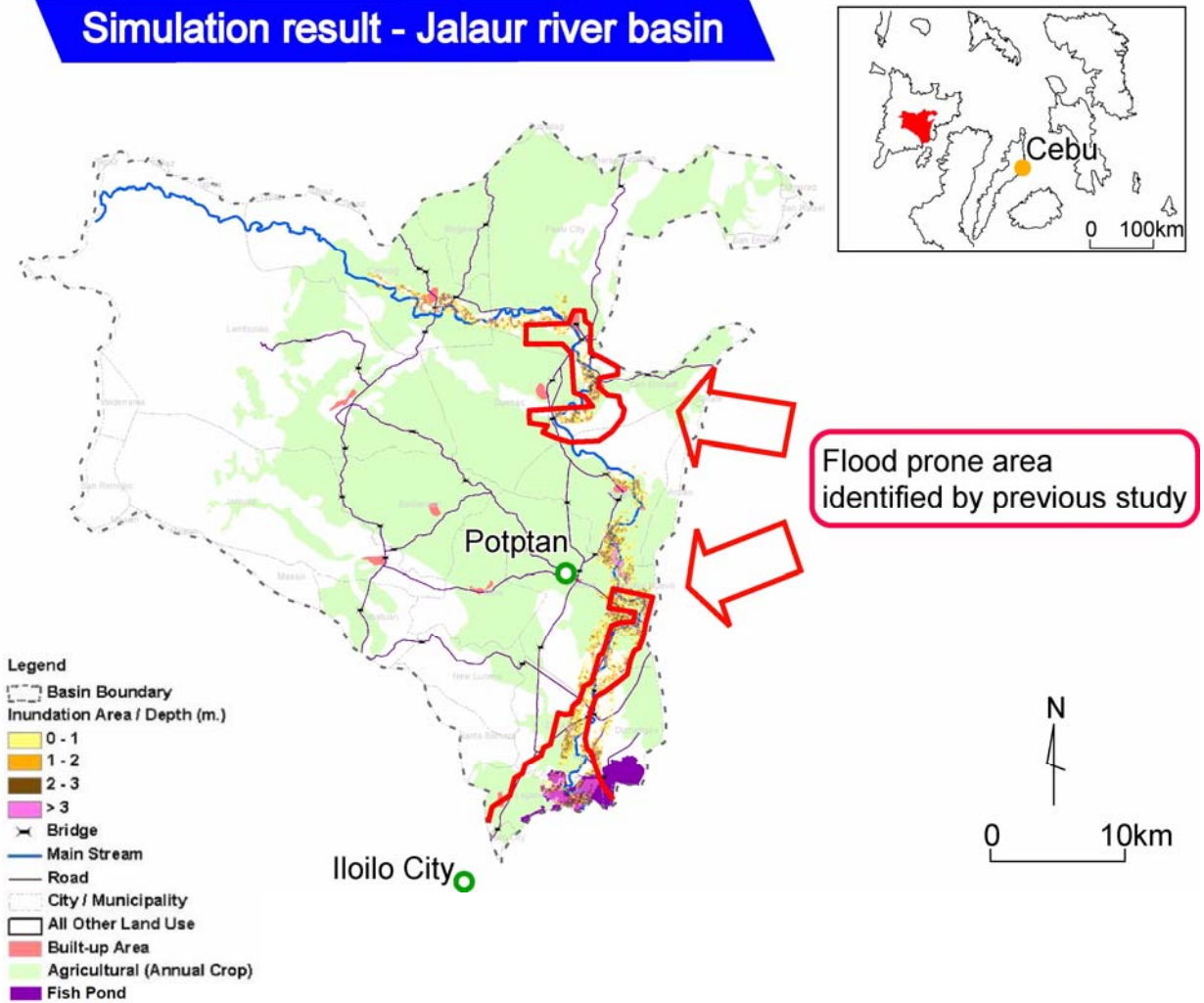
THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4-2

Flood Area Map of Panay River Basin

Simulation result - Jalaur river basin

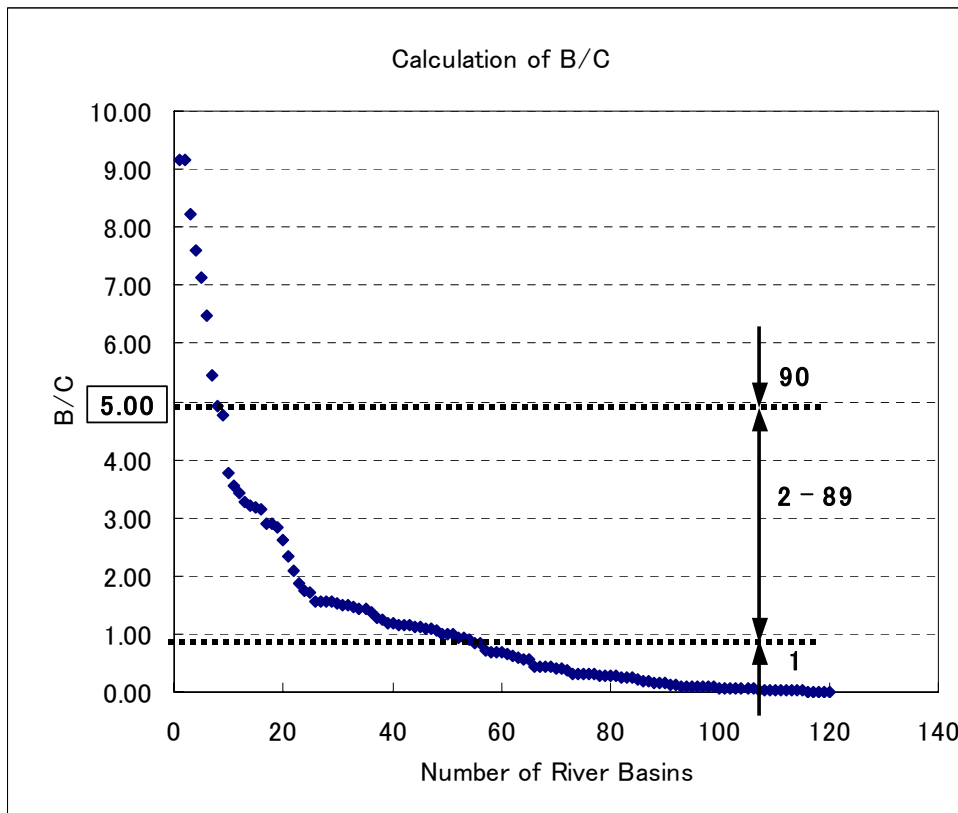
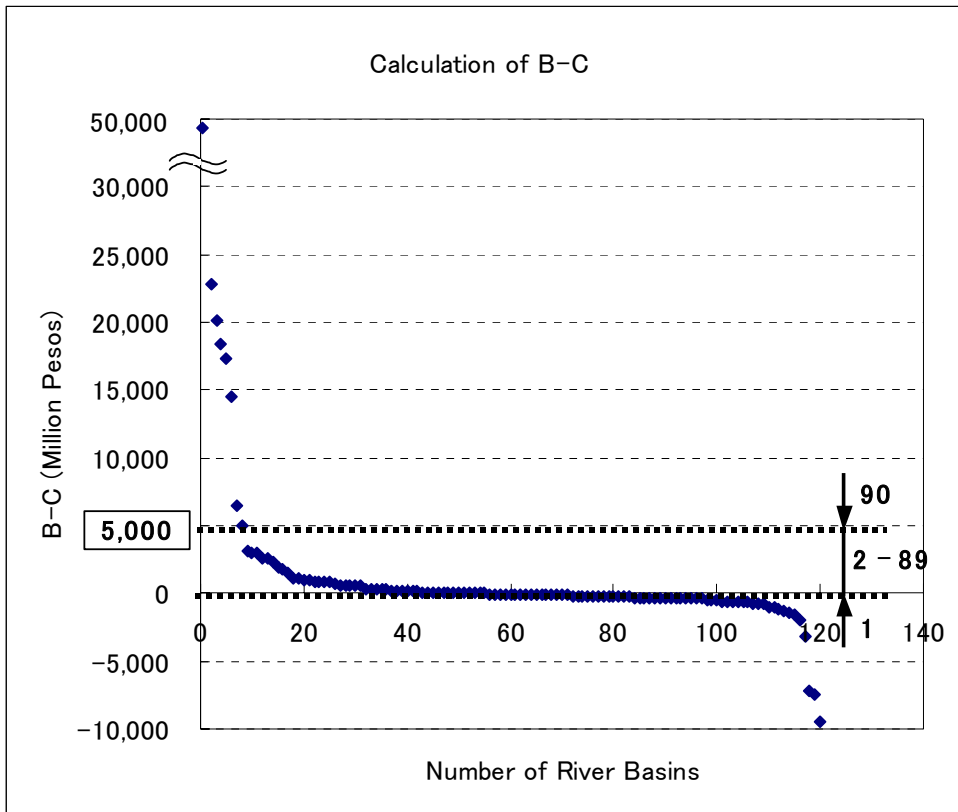


THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4-3

Flood Area Map of Jalaur River Basin

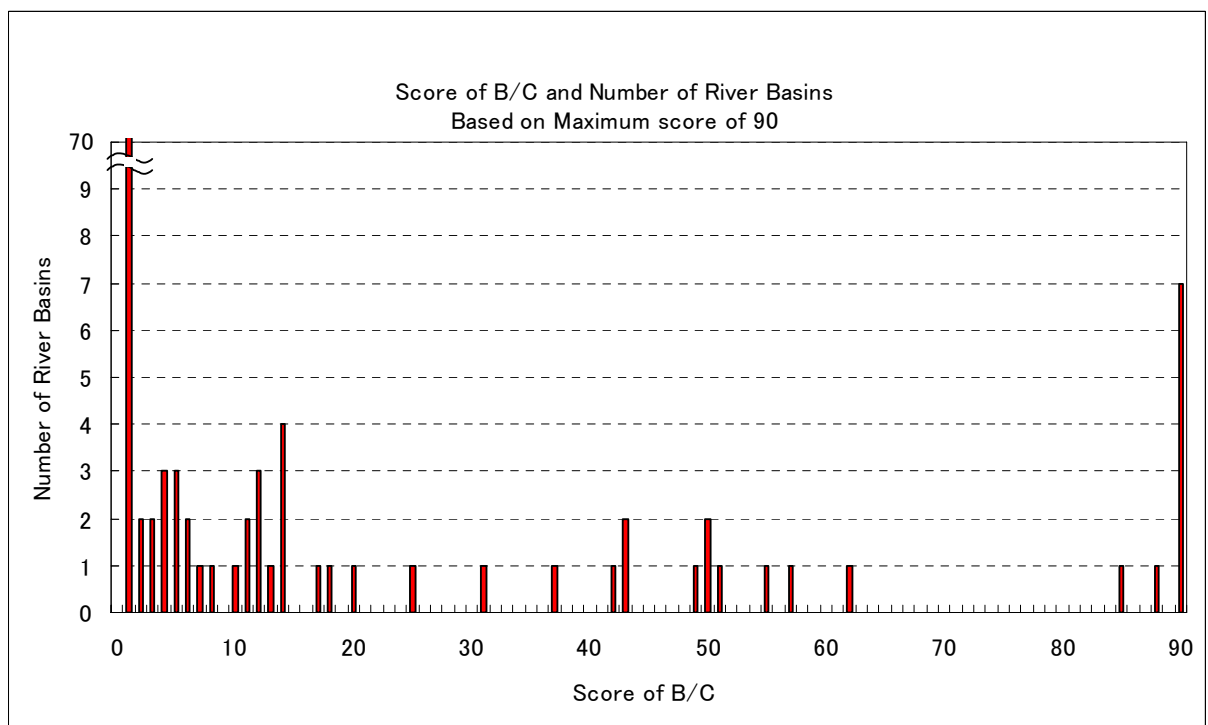
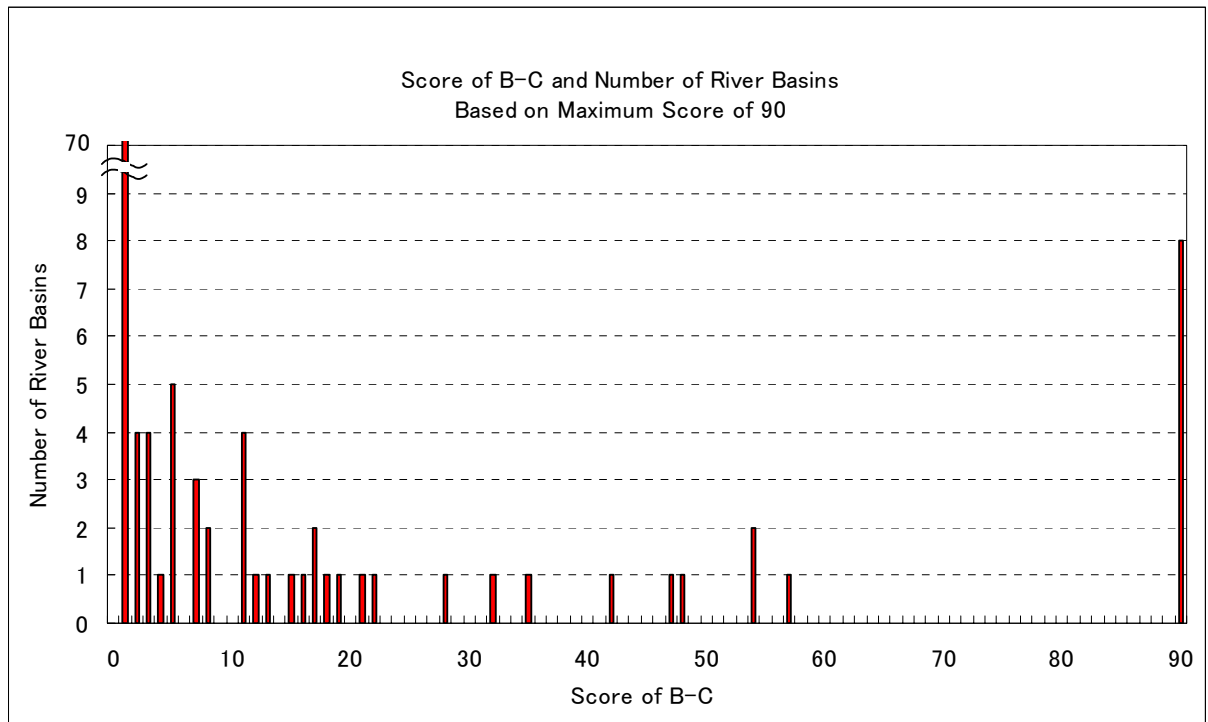


THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4-4

Calculation of (B)-(C) and (B)/(C)

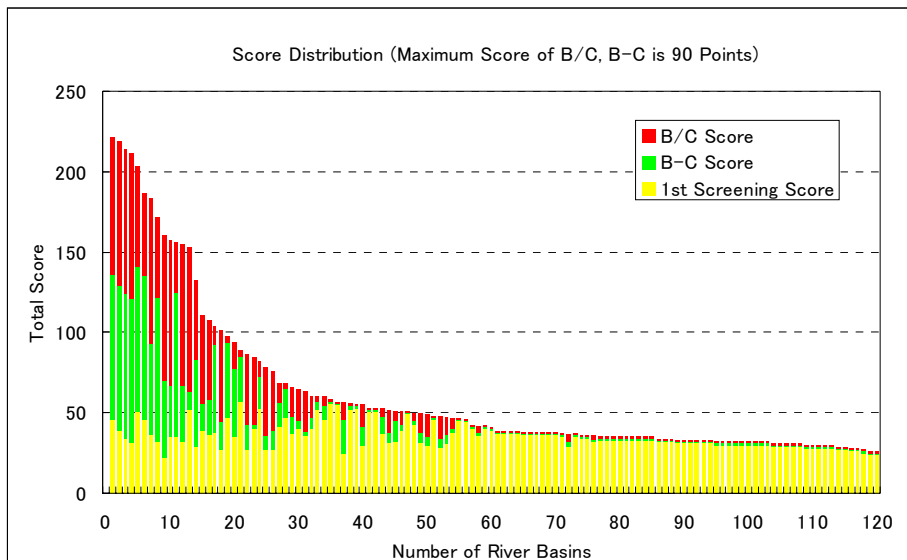
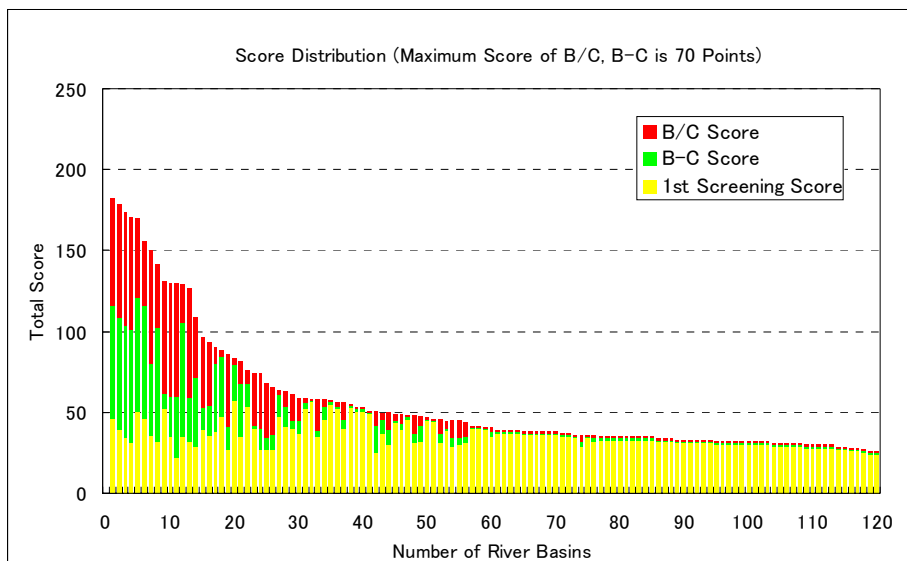
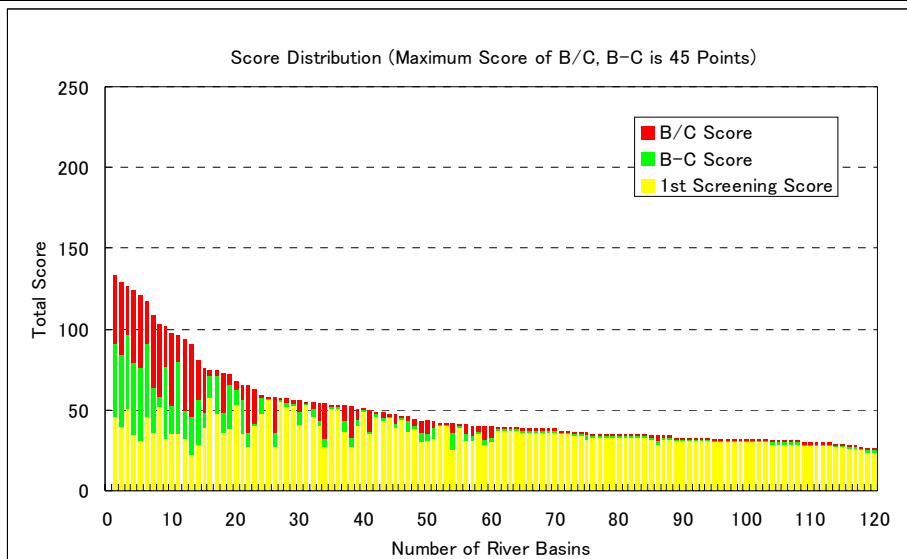


THE STUDY ON THE NATIONWIDE FLOOD RISK
ASSESSMENT AND THE FLOOD MITIGATION
PLAN FOR THE SELECTED AREAS
IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4-5

**Allocation of Score of B-C and B/C
(Maximum Score is 90 Points)**

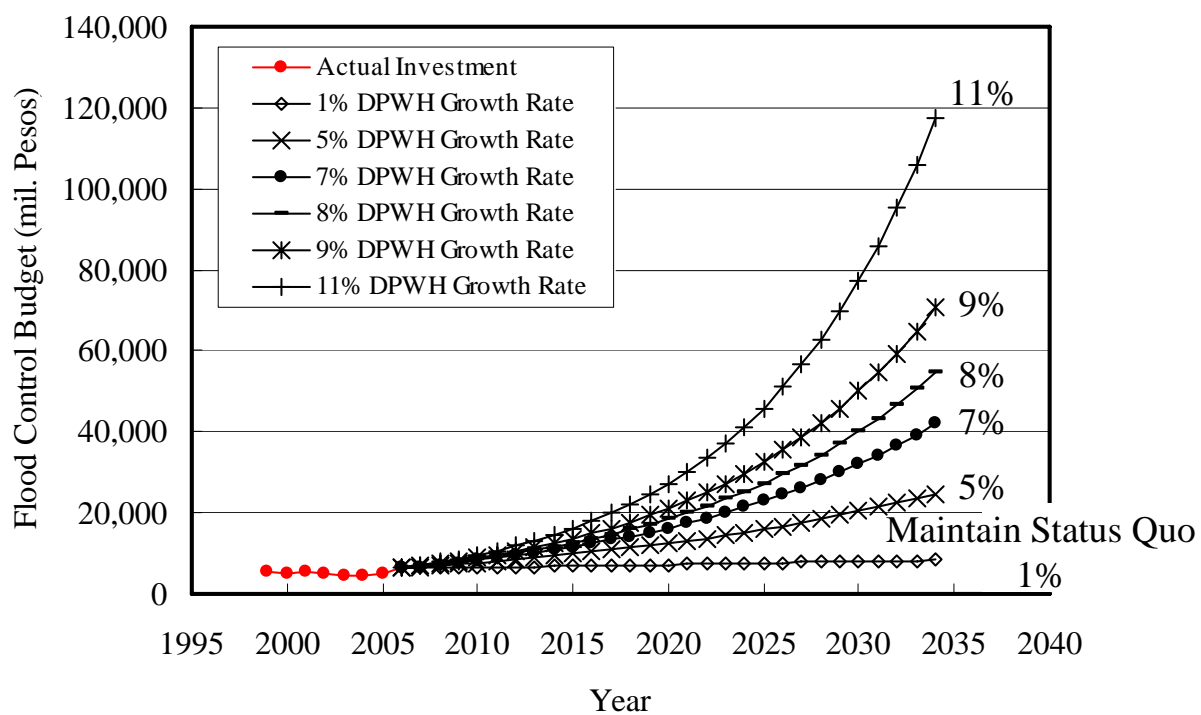


THE STUDY ON THE NATIONWIDE FLOOD RISK
ASSESSMENT AND THE FLOOD MITIGATION
PLAN FOR THE SELECTED AREAS
IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4-6

Score Sensitivity

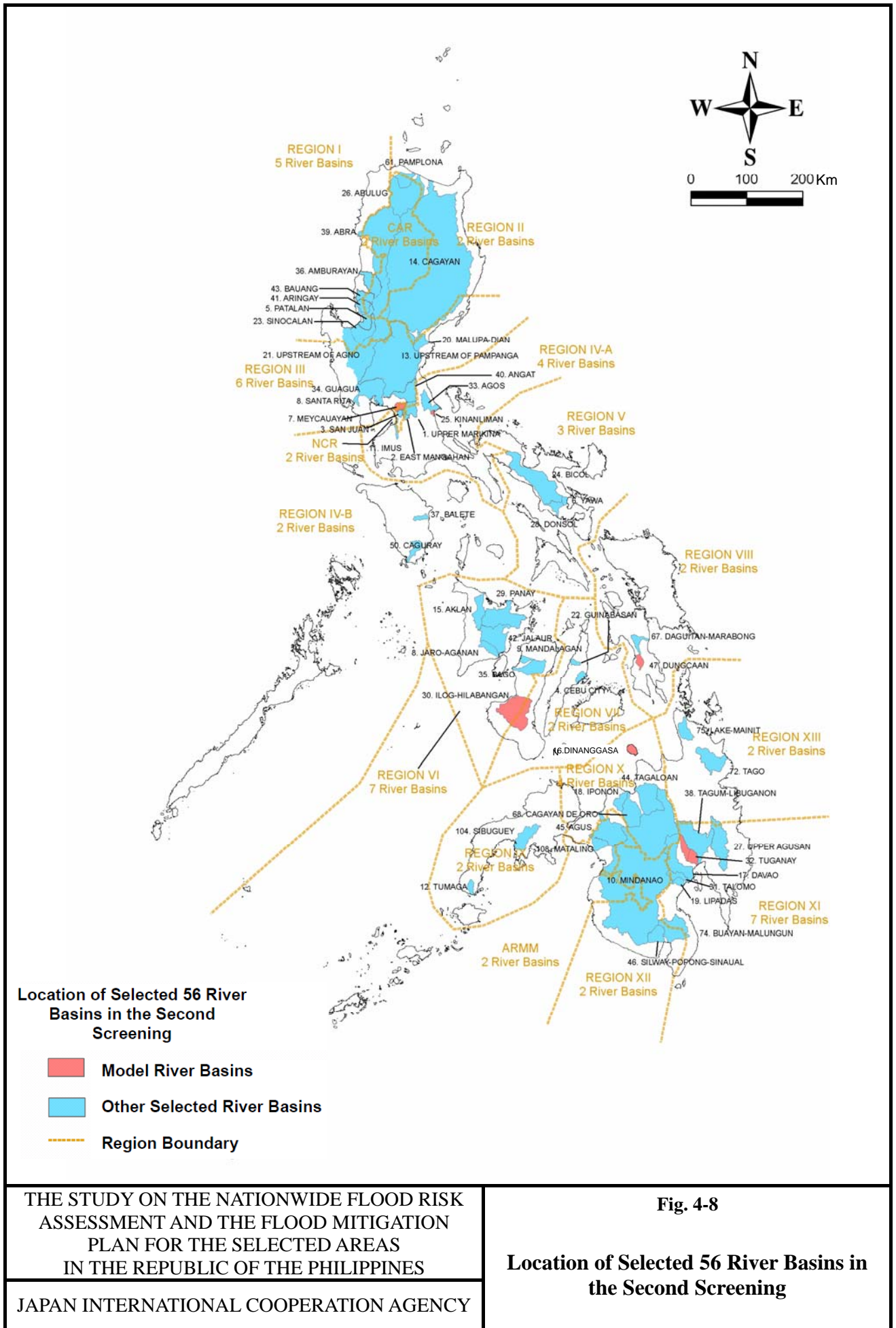


THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4-7

Expected Investment Amount



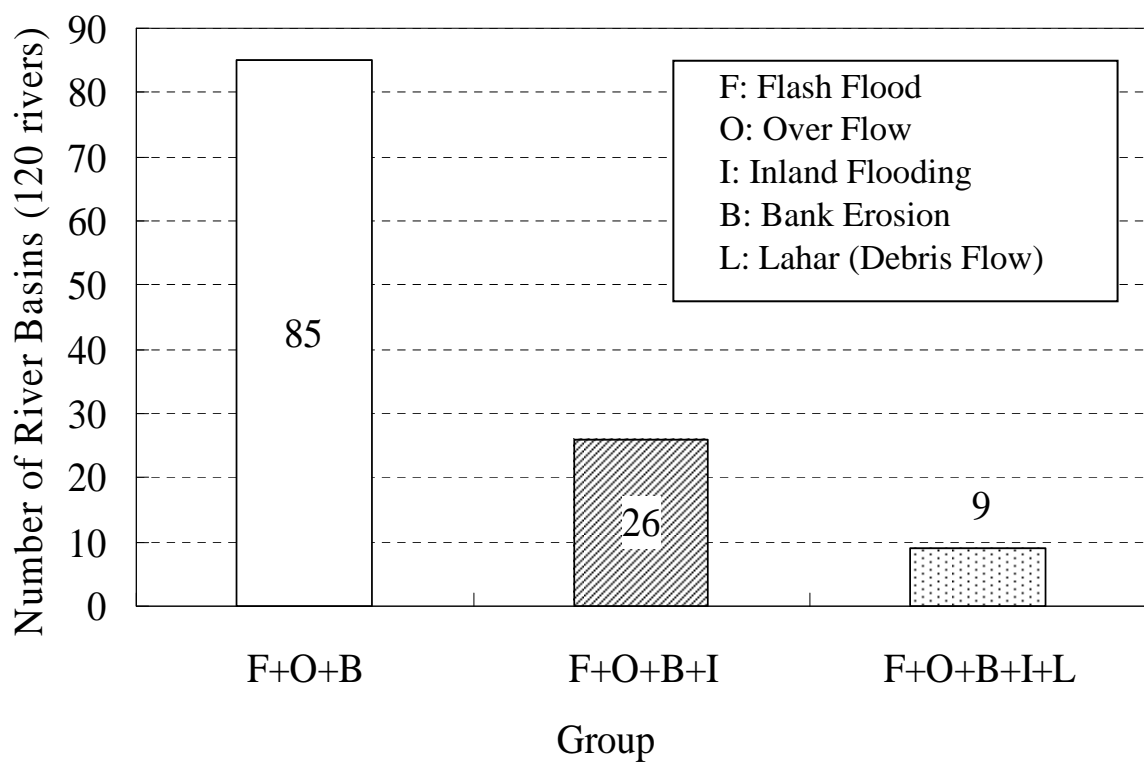
THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4-8

Location of Selected 56 River Basins in the Second Screening

Fund	Prioritization	River name	Region	Basin Area (km ²)	Project Cost (mil. Pesos)	Project Term (year, phase)	Luzon Visayas Mindanao	Classification	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Foreign	1	EAST MANGAHAN	IV-A, NCR	84	3,161	5yrs	L	P(D)	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst																			
	2	MEYCAUAYAN	III, NCR	201	7,180	5yrs x 2phs	L	O(D)	F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	3	PANAY/MAMBUSAO	VI	2,311	6,068	5yrs x 2phs	V	M		D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	4	DAVAO	XI	1,992	1,369	5yrs	M	M		F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	5	NANGALISAN/BAGGAO-PARED(CAGAYAN)	II, CAR	27,743	52,826	5yrs x 4phs	L	M			D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	6	UPSTREAM of AGNO(include AMBAYAWAN, BANILA)	I	5,722	11,850	5yrs x 3phs	L	P(D)			F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	7	ILOG-HILABANGAN	VI, VII	2,162	1,638	5yrs	V	M			F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	8	UPPER AGUSAN	XI	1,745	2,013	5yrs	M	P(D)				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	9	KABILUGAN/VELASCO/BATO LAKE(BICOL)	V	2,999	12,095	5yrs x 4phs	L	M				D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	10	GUAGUA	III	1,605	31,715	5yrs x 4phs	L	O(D)			F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	11	CEBU/MANDAWA	VII	241	2,368	5yrs	V	O(D)					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	12	TAGUM-LIBUGANON	XI	2,434	3,517	5yrs	M	M				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	13	UPPER MARIKINA	NCR, IV-A	515	13,469	5yrs x 4phs	L	P(D)				D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	14	SAN JUAN	NCR	90	2,260	5yrs	L	P(D)					D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	15	JALAU	VI	1,534	3,249	5yrs	V	M					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	16	MINDANAO	XII, ARMM	20,673	15,870	5yrs x 4phs	M	M			F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	17	PATALAN/CAYANGA/ANGALACAN	I, CAR	656	2,318	5yrs	L	P								F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	18	IMUS	IV-A	112	2,377	5yrs	L	P(D)								F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	19	TUGANAY	XI	747	2,563	5yrs	M	P(D)								F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	20	UPSTREAM of PAMPANGA(include RIO CHOCO)	III	8,122	21,856	5yrs x 4phs	L	P(D)			F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	
	21	SINOCALAN/MAROSOGY(DAGUPAN)	I, CAR	1,023	3,890	5yrs	L	P									F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	22	TAGO	XIII	1,370	2,169	5yrs	M	P									F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	23	ABULUG	CAR, II	2,766	2,989	5yrs	L	M									F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	24	ABRA	I, CAR	4,951	2,984	5yrs	L	M									F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	25	SIBUGUEY	IX	994	2,493	5yrs	M	P										F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	26	ANGAT	III	917	9,014	5yrs x 3phs	L	P									F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	27	KALIWA	IV-A	468	1,003	5yrs	L	P														F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	28	MAPANGI	IX, X	1,306	2,717	5yrs	M	P														F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	29	LABO	V, IV-A	931	1,715	5yrs	L	P														F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	30	PALANAN-PINACANAUAN	II	755	1,447	5yrs	L	P															F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	31	MANDULOG	X, ARMM	780	1,347	5yrs	M	P															F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	32	CALUMPANG(KAPUMPONG)	IV-A	446	3,693	5yrs	L	P(D)															F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	33	AMNAY	IV-B	495	1,149	5yrs	L	P(D)																F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
	34	MAG-ASAWANG_TUBIG	IV-B	443	1,048	5yrs	L	P(D)																	F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst	Cnst
Local	1	YAWA/BASUD/QUIRANGAY(LEGAZPI CITY)	V	126	475	5yrs	L	O(D)	F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst																		
	2	KINANLIMAN(REAL-1)	IV-A	10	32	5yrs	L	O	F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst																		
	3	MANDALAGAN(BACOLOD CITY)	VI	187	214	5yrs	V	O	F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst																		
	4	TAGOLOAN	X	1,762	980	5yrs	M	M			F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst																
	5	AGOS	IV-A	483	680	5yrs	L	P(D)				D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst																
	6	SANTA RITA/KALAKLAN(OLONGAPO CITY)	III	102	479	5yrs	L	O(D)			F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst																
	7	AKLAN	VI	1,010	366	5yrs	V	P			F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst																
	8	AGUS/BUAYAN	ARMM, X	1,898	681	5yrs	M	M				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst															
	9	MALUPA-DIAN(AGUANG)	III	666	540	5yrs	L	P				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst															
	10	DONSOL/MANLATO	V	413	82	5yrs	L	P(D)				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst															
	11	GUINABASAN	VII	131	433	5yrs	V	P(D)				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst															
	12	BUAYAN-MALUNGUN	XI, XII	1,400	527	5yrs	M	M				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst															
	13	AMBURAYAN	I, CAR	1,307	676	5yrs	L	P(D)					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	14	BALETE	IV-B	132	259	5yrs	L	P				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst															
	15	BAGO	VI	868	595	5yrs	V	P				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst															
	16	TUMAGA	IX	255	483	5yrs	M	P(D)				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst															
	17	ARINGAY	I, CAR	421	822	5yrs	L	P				F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst															
	18	BAUANG	CAR, I	510	358	5yrs	L	P					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	19	DUNGCAAN(PAGBANGANAN)	VIII	176	89	5yrs	V	P					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	20	DINAGASAN(CATARMAN-1S)	X	29	117	5yrs	M	O(D)					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	21	UMIRAY	IV-A	628	192	5yrs	L	P					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	22	DAET-BASUD	V	277	887	5yrs	L	P					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	23	HIMOCAAN	VI	462	374	5yrs	V	P					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	24	IPONAN	X	412	357	5yrs	M	P					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	25	CAGURAY	IV-B	361	794	5yrs	L	P					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	26	GENERAL NAKAR-2(a)	IV-A	37	17	5yrs	L	O					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	27	SIPALAY	VI	336	379	5yrs	V	P(D)					F/S	D/D	D/D	Cnst	Cnst	Cnst	Cnst	Cnst														
	28	LIPADAS	XI	163	198	5yrs	M	P(D)					F/S	D/D	D/D	Cnst	Cnst	Cnst</																



THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 4-11

Classified 120 River Basins in terms of 3 Flood Damage Type