

# ミャンマーとバングラデシュのNGO 連携 によるサイクロン減災プログラムのため の相互啓発実践型地域研究

京都大学 防災研究所一般共同研究集会23K-07

「第7回南アジアにおける自然環境と人間活動に関する研究集会  
ーインド亜大陸東部・インドシナの自然災害と人間活動ー」

共催: 首都大学東京、総合地球環境学研究所、  
京都大学東南アジア研究所、京都大学生存基盤科学研究ユニット、

とき: 2009年2月4日(土)13:20ー5日(日)13:00

ところ: 京都大学防災研究所大会議室S519D(京都大学宇治キャンパス)南アジア研究集会

安藤和雄 東南アジア研究所

# 問題設定

- 世界のサイクロン被害、洪水の被害
- 大きくことなるサイクロン被害
- サイクロン、洪水被害対策先進国としてバングラデシュ
- バングラデシュの経験を周辺国に伝えるネットワークの構築：隣国間の国家関係はややこしい。大学、NGOの役割は大きい。
- 「ベンガル湾縁辺における自然災害との共生を目指した在地のネットワーク型国際共同研究」

# ベンガル湾科研の概要

- 2008年にミャンマーに上陸したサイクロンNargisの被害者の数は、その前年にバングラデシュに上陸した Sidarによるそれを大きく上回りました。両被災地はヒマラヤの作り出すモンスーン気候と大河・海という大地形から「メソ・グローバル」としてくられるベンガル湾縁辺の隣接国同士です。それにも関わらず、これまで多くのサイクロンを経験してきたバングラデシュの在地(村)の被災住民の知恵、ODAやNGOの実践、研究関係者の経験や成果がミャンマーに伝わっていなかったことが被害格差を生じた背景として指摘できます。また、インド・アッサム地方では毎年のように洪水被害が繰り返されていますが、隣接するバングラデシュが洪水害と向き合ってきた長年の経験は伝わっていないように見受けられます。「Nargisの悲劇」を繰り返さないためにも、広域に生じる自然災害と向き合うには、「メソ・グローバル」に隣接する在地の人々の実践の経験や対策の共有化を、積極的に図っていくことが求められているのです。

ベンガル湾縁辺地域における自然災害との共生を目指した  
在地のネットワーク型国際共同研究

平成21～25年度日本学術振興会科学研究費補助金基礎研究 (A)

International Networking Project to Cope with Natural Hazards on the Periphery of Bengal Bay

プロジェクトの概要

About the Project

メンバー

Member

関連Web Site

Link

新着ニュース

New Arrivals

論文・業績

Achievements

写真館

Photo Gallery

ワークショップ

Workshop

ニュースレター

News Letter

写真: 人を満載して進むブラマプトラ川のフェリー(インド・アッサム地方)  
Photo: Crowded Ferry Launching the Brahmaputra River in Assam, India





ベンガル湾沿岸自然災害メソ地域

- ① ブ라마プトラ  
上流洪水常襲地帯
- ② ブ라마プトラ・ガンジス低地  
洪水・サイクロン常襲地帯
- ③ 沿岸部洪水高潮常襲地帯
- ④ イラワジデルタ洪水常襲地帯
- ⑤ イラワジ中流部乾燥地帯
- Ⓜ ベンガル湾縁辺自然災害  
メソ・グローバル地域

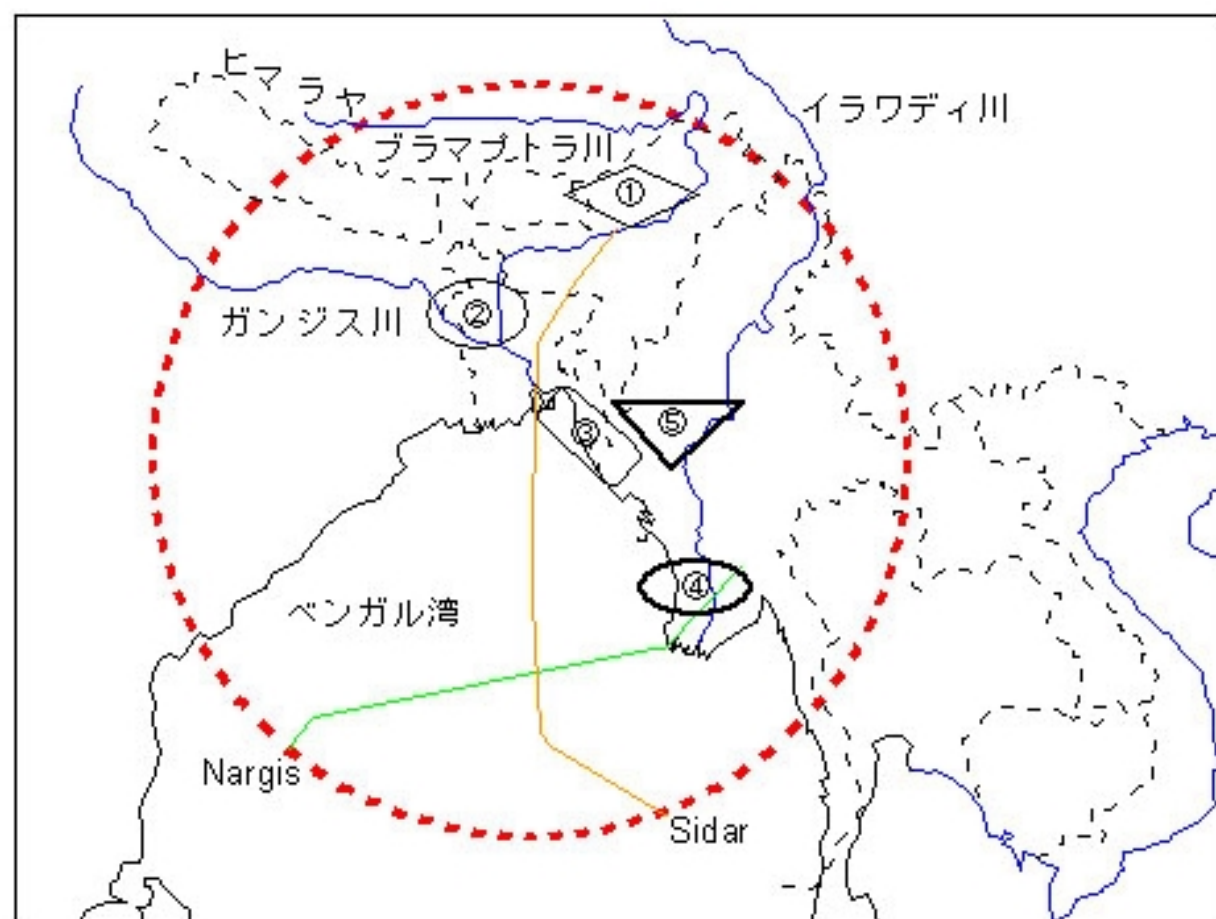


Fig.1 ベンガル湾縁辺の自然災害とメソ、メソ・グローバル地域

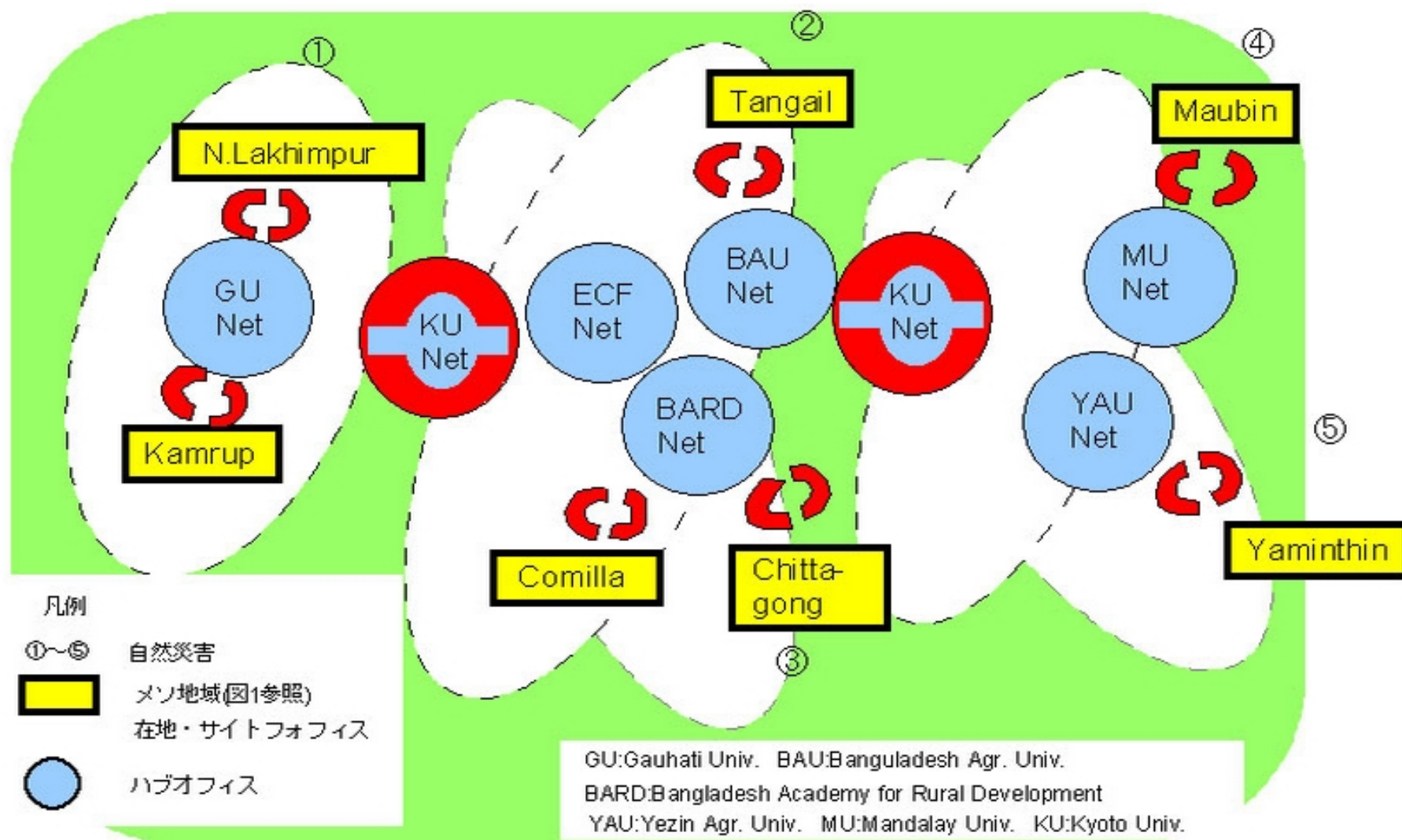


Fig.2 自然災害と共生のための在地—大学間ネットワーク



TEN DEADLIEST NATURAL DISASTERS  
OF THE PAST CENTURY, VOL. 7: THE  
1991 BANGLADESH CYCLONE

EMELINE FORT



### Cyclones

Rank	Death toll	Event	Location	Date
1.	500,000	1970 Bhola cyclone	East Pakistan, Pakistan (now Bangladesh)	November 13, 1970
2.	300,000	1839 Indian cyclone	India	November 25, 1839
3.	300,000	1737 Calcutta cyclone	India	October 7, 1737
4.	210,000	Super Typhoon Nina—contributed to Banqiao Dam failure	China	August 7, 1975
5.	200,000	Great Backerganj Cyclone of 1876	present day Bangladesh	October 30, 1876
6.	~146,000	Cyclone Nargis	Myanmar	May 2, 2008
7.	138,866	1991 Bangladesh cyclone	Bangladesh	April 29, 1991
8.	100,000	1882 Bombay cyclone	Bombay, India	1882
9.	60,000	1922 Swatow Typhoon	China	August 1, 1922
9.	60,000	1864 Calcutta Cyclone	India	October 5, 1864

### Earthquakes

Rank	Death toll	Event	Location	Date

21.	26,000–1,000,000	Bangladesh famine of 1974—Official records claim 26,000. However, various sources claim about 1,000,000.	Bangladesh	1974
22.	150,000	Finnish famine of 1866–1868	Finland	1866–1868
22.	18,000	Dutch famine of 1944	The Netherlands	1944

### Floods and landslides

Rank	Death toll	Event	Location	Date
1.	2,500,000–3,700,000	1931 China floods	China	1931
2.	900,000–2,000,000	1887 Yellow River (Huang He) flood	China	1887
3.	500,000–700,000	1938 Yellow River (Huang He) flood	China	1938
4.	231,000	Banqiao Dam failure, result of Typhoon Nina. Approximately 86,000 people died from flooding and another 145,000 died during subsequent disease.	China	1975
5.	145,000	1935 Yangtze river flood	China	1935
6.	more than 100,000	St. Felix's Flood, storm surge	Netherlands	1530
7.	100,000	Hanoi and Red River Delta flood	North Vietnam	1971
7.	100,000	1911 Yangtze river flood	China	1911
9.	50,000–80,000	St. Lucia's flood, storm surge	Netherlands	1287
10.	2,400	North Sea flood, storm surge	Netherlands	31 December 1953

### Heat waves

# I Tsunami

Rank	Death toll	Event	Location	Date
1.	229,866	2004 Indian Ocean Tsunami	Indonesia	2004
2.	100,000	1755 Lisbon earthquake/tsunami/fire	Portugal, Spain, Morocco, Ireland, and the United Kingdom (Cornwall)	1755
3.	100,000	1908 Messina earthquake/tsunami	Messina, Italy	1908
4.	36,000	Caused by 1883 eruption of Krakatoa	Indonesia	1883
5.	30,000	1707 Hōei earthquake	Tōkaidō/Nankaido, Japan	1707
6.	27,000		Japan	1826
7.	25,674	1868 Arica earthquake/tsunami	Arica, Chile	1868
8.	22,070	1896 Meiji-Sanriku earthquake	Sanriku, Japan	1896
9.	15,030	1792 Mount Unzen eruption in southwest Kyūshū	Kyūshū, Japan	1792

## List of natural disasters

Rank	Death toll
1.	92,000
2.	36,000
3.	29,000
4.	33,000
5.	23,000
6.	15,000
7.	10,000
8.	9,350
9.	6,000
10.	5,115

A supervolc  
of the glob  
thousand; s  
evidence is  
here as it w  
Sea betwee  
Crete to Eg

## Wildfire

# サイクロン

- 1970年11月12日 高潮10-33フィート、20万人（公式）、50万人（非公式）、チッタゴン (landfall)
- 1991年4月29日 高潮 12-22フィート、13.8万人、チッタゴン
- 2007年11月15日 Sidr 高潮15-20フィート 0.3万人、クルナーボリシャル
- 2008年5月2日 Nargis 高潮12フィート 14万人、イラワジ
- 2009年5月25日 Aila 高潮9フィート、0.019万人、クルナ



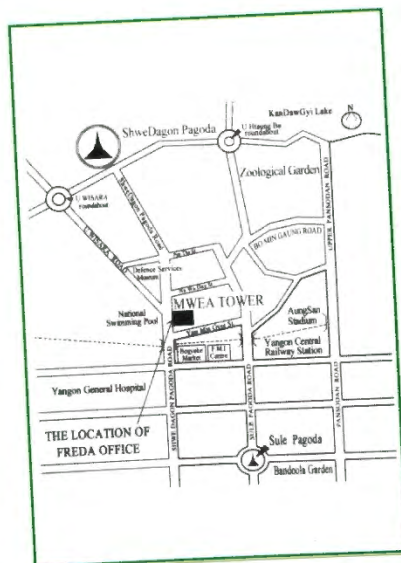
# 方法と地域

- 方法: NGOスタッフによるスタディツアーと現場での聞き取り: 2012年1月11日～25日
- ミャンマーのサイクロンシエルターの廃墟化を防ぎたい
- 地域: Satkira(Munshinganj): Aira被害地域、Noakhali(Hatia): Shidar被害地域
- 参加NGO: **Dwip Unnayan Sangstha (DUS)**、**Forest Resource Environment Development and Conservation Association(FREDA)**、**Ecosystem Conservation and Community Development Initiative (ECCDI)**

### Further Information

For further information please contact:

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October, 2010

# F R E D A

Forest Resource Environment Development and Conservation Association



### Participation and Partnership in:

- Forest Restoration
- Natural Environment Conservation
- Community Development
- Wildlife Protection
- Capacity Building



(91 metre/roll), 4000 bottles of drinking water and 240 T- shirts during the period from May to December 2008.

Under the “Food security-related relief and rehabilitation project after Cyclone Nargis, Myanmar , a total of 5350 baskets of paddy seeds, 25 power tillers and 5902 gallons of diesel were distributed during the period from June to November 2008 in 6 villages, in Bogale township, Phyapon district, Ayeyarwady Delta.



Distribution of Power tiller

Under the project of “ Rehabilitation and disaster preparedness in Nargis affected area of Myanmar through sustainable landuse and renewable energy”, about 42,000 grafted fruit trees seedlings were distributed to assist the livelihood security of the Nargis-hit community and about (16) ha (40 acres) of windbreak forest was established in some villages close to the seashore. In addition, renewable energy like, solar energy, wind energy and wood/ rice husk gasification were introduced in some villages as the pilot feasibility studies.



Solar Power system

After cyclone Nargis, the majority of the people in the cyclone -affected areas have to stay in the temporary bamboo huts and tents. Hence there was the need of permanent wooden houses and cyclone shelters in case of occurrence of natural disaster in future. Based on the population density and vulnerability of natural disaster, 4 School-Cum-Cyclone Shelter (SCCS) were constructed in Tepin-seik , Okpho-kwin chaung , Kun-thee-chaung and Kon-tan -pauk villages. Similarly about 500 houses were also constructed in Kon-tan Pauk , Padekaw and Htaw -Paing (Shwe-Pyi -Aye) villages in 2009-10



Construction of rural houses

under the “ Rehabilitation of Houses and Construction of Cyclone Shelter in Ayeyarwady Delta” project.

In cooperation with the Diakonie Katastrophenhilfe (DKH) of Germany, FREDa has planned to implement the project “ Disaster Risk Reduction and Sustainable Land use in the Ayeyarwady Delta after the Cyclone Nargis” for 3 years starting from 1st January 2010 up to the end of December 2012. The project activities mainly include construction of smaller School -Cum- Cyclone Shelters, formation of high ground -cum-pond, provision of school furnitures, water harvesting scheme, training courses etc.



Cyclone shelter

### *Human Resource Development*

In partnership with NEF, FREDa has been supporting the outstanding scholars of local universities leading to M.Sc. and Ph.D. degrees in various fields related to Botany, Biology, Ecology, Environmental Science, Forestry and Zoology. Since 1998, a total of 25 M.Sc. students and 40 Ph.D. candidates have been awarded with NEF scholarship support.

FREDa has also awarded scholarships to outstanding undergraduate forestry students studying at the Forestry University at Yezin and also stipends to promising high school graduates who are financially handicapped to study forestry at the University. So far a total of (61) undergraduates in forestry have been awarded scholarships and stipends since 1999 academic year. Support is also given to the outstanding students of the Myanmar Forest School at Pyin Oo Lwin every year.

Support to students in the academic field of environmental science is one of the avenues that FREDa is promoting jointly with NEF of Japan for increased awareness, motivation and experience of the younger generation, contributing towards effective conservation of the natural environment in Myanmar.

# BACKGROUND

## What is ECCDI?

**Ecosystem Conservation and Community Development Initiative (ECCDI)** is a non-political, non-profit and non-governmental organization initiated in November 2006 by senior ex-government officials with expertise in environment, ecosystem management, forestry, wildlife, agriculture, livestock and community development.

ECCDI was granted official registration by Ministry of Home Affairs on 25<sup>th</sup> February 2010. Its registration number is “1924”.

## Vision

To be a lead organization in the restoration, conservation and management of ecosystems of natural resources and community development.

## Mission

To ensure sustainability of natural ecosystems and enhance national socio-economic development through environmental restoration and poverty alleviation.

# Objectives

- TO ENSURE AN IMPROVED AND STABLE ENVIRONMENT
- TO CREATE MODEL FORESTS TO DEMONSTRATE SUSTAINABLE FOREST ECOSYSTEM MANAGEMENT
- TO HELP ALLEVIATE POVERTY AND ENHANCE COMMUNITY DEVELOPMENT
- TO RAISE ECOSYSTEM AWARENESS OF THE PUBLIC
- TO ASSIST IN HUMAN RESOURCE DEVELOPMENT

UNDP had selected 100 villages; 40 in Laputta township;  
another 40 in Bogalay & Kyiak Latt  
the rest 20 in Mawlamyinegyun

- NGOs → ECCDI, CDA & GP were partner organizations to cooperate with UNDP for training courses in those area.
- ECCDI was assigned to give training courses at 20 villages of Mawlamyaingyun township.
  -
- Training courses → Livestock training  
Agriculture extension worker training  
Micro & Small Enterprise Management training



# Capacity Building

- Under the UNDP funded project: “Technical training on agriculture, livestock, forestry/environment and micro and small business development for Nargis affected communities in the Delta”, ECCDI conducted trainings on forestry, agriculture, livestock, aquaculture for 100 villages in Laputta, Bogale, and Mawlamyinegyun townships.





- **Enhancing livelihood of the Nargis victims of Myat Thar Zee Phyu Village Tract in Mawlamyaingyun Township through integrated environmental, economic and social rehabilitation**



In the Nargis affected delta area:

▶ provided fishing boats, fishing nets, fertilizers, pesticides and technical trainings;

▶ Distributed and planted mangroves and non-





## Staking at the Mangrove Plantation





## Sowing in the Mangrove Plantation



## Enrichment Planting





## Regeneration Improvement Felling



# Partners and donors

- ECCDI cooperates closely with all like-minded NGOs and INGOs.
- A member of the Mangrove and Environmental Rehabilitation Network (MERN), ECCDI has been working actively with the network's other 14 members to rehabilitate coastal mangroves and uplift the lives of the Nargis victims in the Ayeyawady delta.

## **Dwip Unnayan Sangstha (DUS)**

### **Contact Person :**

Md. Rofiqul Alam, Executive Director  
Mollika, 24/5, Prominant Housing, 3/ Psici culture Road,  
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Mobile: 01712-580080, phone-88-02-9122145  
E-mail: [dus@bdcom.com](mailto:dus@bdcom.com), [dushq@bdcom.com](mailto:dushq@bdcom.com)  
Web address: [www.dus.Bangladesh.org](http://www.dus.Bangladesh.org)

### **Background**

Inspired by the spirit of Liberation War of 1971 a group of freedom fighters has initiated Dwip Unnayan Sangstha (DUS) in 1972 to address humanitarian hardship of the Disaster (devastating Cyclone of 1970) and war affected people of islands.

### **Vision**

Sustainable socio-economic development of the poor living in offshore islands of Bangladesh and their empowerment, which would result in, secured lives and livelihood, social justice and solidarity.

### **Mission**

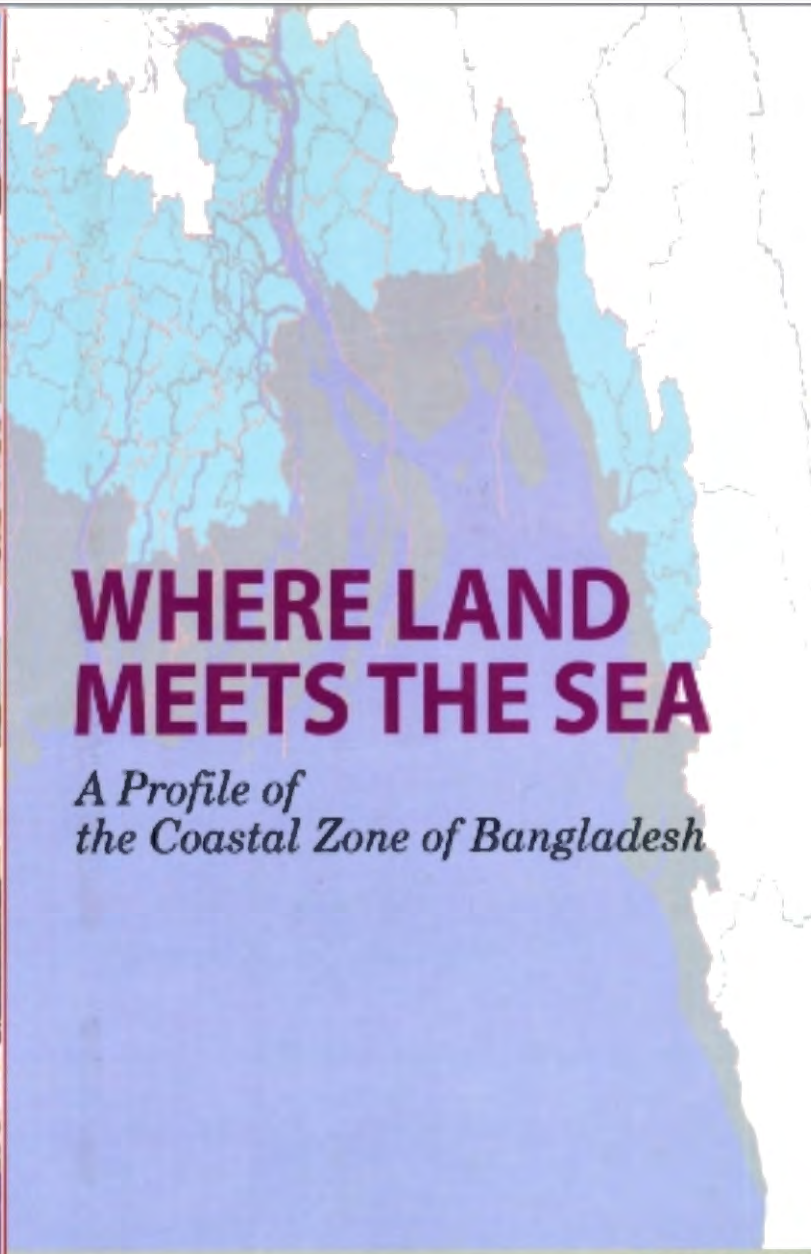
The mission of our organization is to reduce poverty, enabling them to respond disasters, protecting coastal eco-system, improve maternal and child health, raising awareness on HIV/AIDS, promote and utilize appropriate ICTs.

**Legal Status:** Registered under Department of Social welfare, NGO Affairs Bureau and Microcredit Regulatory Authority.

**Working Area:** District: Noakhali, Bhola, Laxmipur & Perojpur  
Upazilla Covered: 13nos.


**Donor:** PKSF, BRAC, Govt. of Netherlands, WFP, WDF, EU, BNNRC, Japan Agency for Development, Own Fund





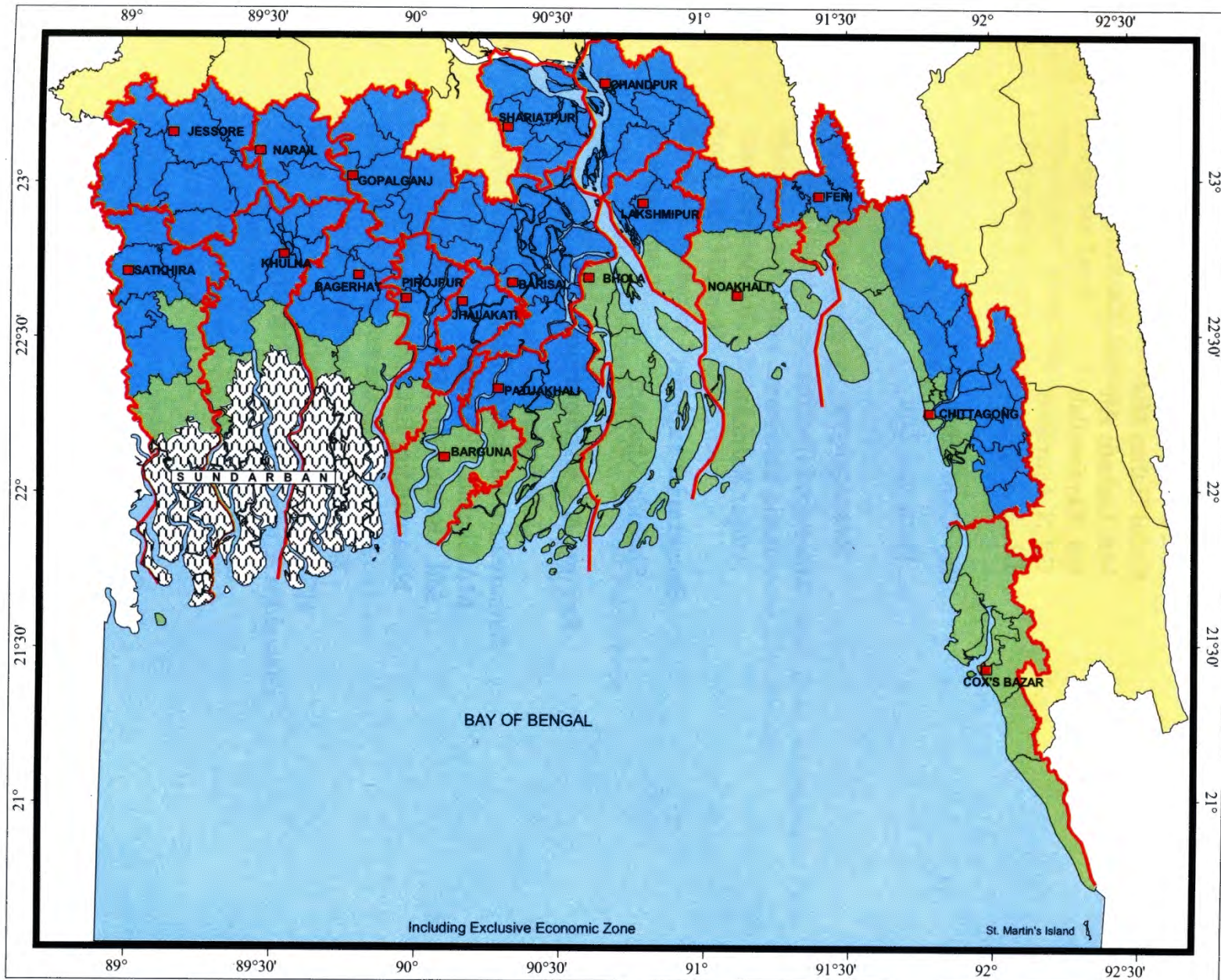
# WHERE LAND MEETS THE SEA

*A Profile of the Coastal Zone of Bangladesh*

 The University Press Limited







**COASTAL ZONE  
BANGLADESH**



- District Headquarter
- ▨ Sundarban
- ▬ District Boundary
- Exposed Coast
- Interior Coast
- Bay & River

PRODUCED BY  
PDO-ICZMP



Source: Land TM IMAGERY OF 1999-2000

Including Exclusive Economic Zone

St. Martin's Island













































Grameen Shakti

Solar Lamp

Model  
Input Voltage  
Wattage

GSL01  
12 V DC  
6Watts











কেওড়া

*Sonneratia apetala*

































যুক্ত পাঁচবিধা আলীয়াবে-সরকারী প্রাথমিক বিদ্যালয়  
ঘূর্ণিঝড় আশ্রয় কেন্দ্র  
(বহুমুখী কমিউনিটি সেন্টার)

কারিতাস ইটালীয়ানার অনুদানে ও কারিতাস বাংলাদেশ  
এর সৌজন্যে নির্মিত

ডায়িতাতা: ডেলা প্রশাসক, নোয়াখালী

১১১৪ ইং.

১৪০০ বাং

Donated by: CARITAS ITALIANA







SAUDI FINANCED

MOSQUE. CLINIC. SCHOOL. AND SHELTER.

CONSTRUCTION DATE. MARCH - '97

UNDER SAUDI CYCLONE GRANT - '91

List of Cyclone shelter Cum Schools ,Hatiya, Noakhali

1. Maksudia GPS	Union No. 3	Saudi Shelter	1994-1995
2. Nalchira Alhabib GPS	Union No. 4	Saudi Shelter	→ } Tire
3. Nalchira GPS	Union No. 4	Saudi Shelter	
4. Afazia GPS	Union No. 5	Saudi Shelter	}
5. Renu Miar Hat GPS	Union No. 5	Saudi Shelter	
6. East Laxmi dia GPS	Union No. 5	Saudi Shelter	
7. West Laxmi dia GPS	Poura sava	Saudi Shelter	
8. Oskhali Alia GPS	Poura sava	Saudi Shelter	
9. Char Kailash GPS	Poura sava	Saudi Shelter	
10. Azhar Uddin	Poura sava	Saudi Shelter	
11. South Char latia	Union No. 5	Saudi Shelter	
12. Char Ishawar roy Dasher Hat	Union No. 6	Saudi Shelter	
13. Nilaxmi	Union No. 6	Saudi Shelter	
14. Madhya Char King Chyada	Union No. 6	Saudi Shelter	}
15. Sullakia	Union No. 6	Saudi Shelter	
16. West Charkilash	Poura sava	Saudi Shelter	
17. Begu Galia Khaser Het	Union No. 7	Saudi Shelter	
18. Saiyadia	Poura sava	Saudi Shelter	
19. Gulla Khali	Poura sava	Saudi Shelter	
20. Shunayar Char	Union No. 9	Saudi Shelter	
21. South Charishwar roy	Union No. 6	Saudi Shelter	
22. South WesCharishwar roy	Union No. 6	Saudi Shelter	
23. North Charishwar roy	Union No. 6	Saudi Shelter	
24. Char Bagula	Union No. 6	Saudi Shelter	}
26. Tamamaruddim	Union No. 7	Saudi Shelter	
27. Madon Khali	Union No. 7	JAICA	
28. Tamamaruddim Seragia	Union No. 7	JAICA	
29. East Maij Chara	Union No. 8	JAICA	
30. South Char Chenja	Union No. 8	Saudi Shelter	
31. East CharChenga	Union No. 8	Saudi Shelter	
32. Bash Khali Halima	Union No. 7	Saudi Shelter	
33. South Sonadia	Union No. 8	Saudi Shelter	
34. South West Sonadia	Union No. 8	Saudi Shelter	
35. East Chanandi	Union No. 8	Saudi Shelter	}
36. Jorkhali Habib Ullah	Union No. 9	JAICA	
37. Sagaria	Union No. 9	Saudi Shelter	
38. Maij Chare	Union No. 9	JAICA	
39. Kalir Dail	Union No. 9	Saudi Shelter	
40. Rehanian	Union No. 9	Saudi Shelter	
41. North Bribri	Union No. 10	Saudi Shelter	
42. Jahajmra	Union No. 10	Saudi Shelter	
43. Char Hair	Union No. 10	Saudi Shelter	
44. Burir Jorkhali Asadia	Union No. 9	JARMAN	
45. Darul Ulul Alia Madrasha	Union No. 5	Saudi Shelter	1994-95
46. NIZUM DWIP BIDHYA NIKATON	Union - 11	JAICA	18.1.2012







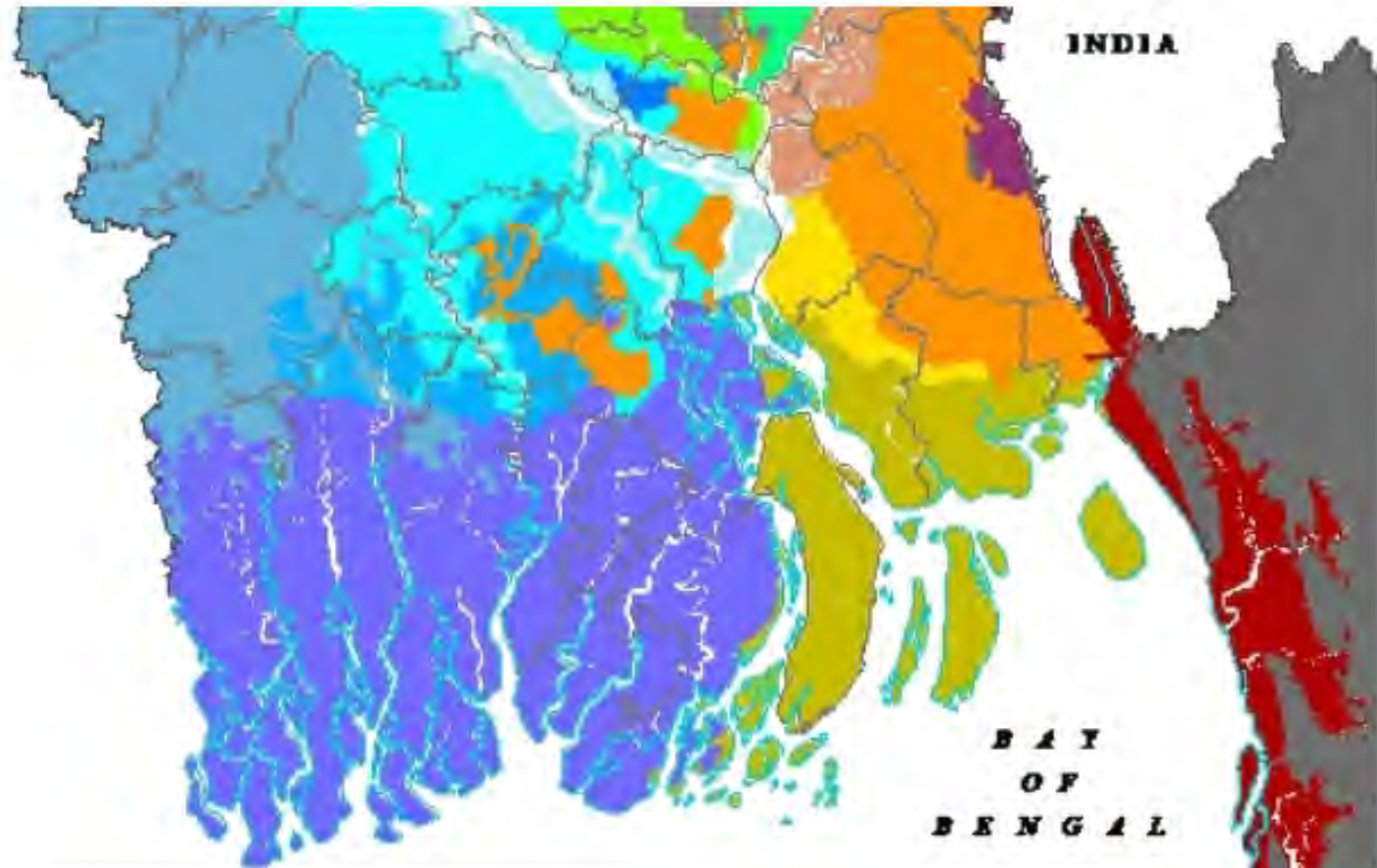






INDIA

INDIA



BAY OF BENGAL

**LEGEND**

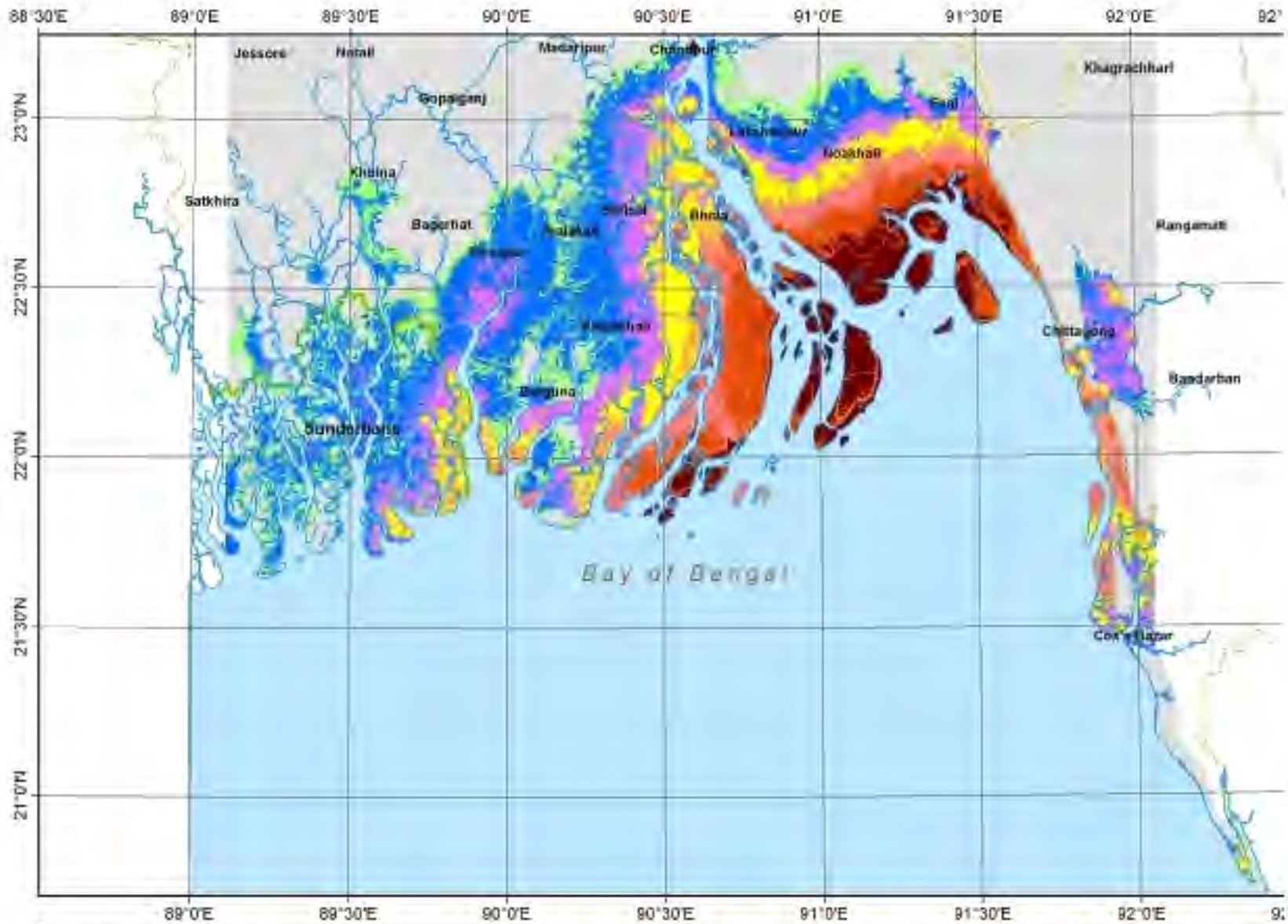
- District Boundary
- International Boundary
- River Systems

- Old Himalayan Plain
- Active Tera Floodplain
- Tera Mounder Floodplain
- Kamas-Bangali Floodplain
- Lower Assam Basin
- Lower Patnabaha Floodplain

- Active Brahmaputra-Jamuna Floodplain
- Young Brahmaputra-Jamuna Floodplain
- Old Brahmaputra Floodplain
- Active Ganga Floodplain
- High Ganga Floodplain
- Low Ganga Floodplain
- Ganga Tidal Floodplain
- Gopalyanj -Khatua Beds
- Arsal Bed
- Middle Meghna Floodplain
- Lower Meghna Floodplain
- Young Meghna Estuar Floodplain

- Old Meghna Estuar Floodplain
- Eastern Suwa Karbiya Floodplain
- Sylhet Basin
- Northern and Eastern Piedmont Plains
- Chitagong Coastal Plains
- St. Martin's Coastal Islands
- Level Barind Tract
- High Barind Tract
- North eastern Barind Tract
- Madhupur Tract
- Northern and Eastern Hills
- Akhaur Terace





**Legend**

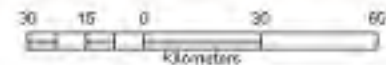
- International Boundary
- Rivers
- Water

**Maximum Water Depth in meter**

	0 - 0.5		3 - 4
	0.5 - 1		4 - 5
	1 - 2		5 - 6
	2 - 3		> 6

**Inundation Risk Map for Storm Surge**

Maximum water depth (Cyclone events 1960 - 2007)



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