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PROGRESS OF PREPAREDNESS AND MITIGATION IN ACEH: 20 YEARS AFTER INDIAN OCEAN TSUNAMI 2004

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TSUNAMI RESULTED UNPRECEDENTED DAMAGE ALONG THE REGION OF ACEH AND NIAS



Damage assessment

120.000	Houses destroyed
70.000	Houses damaged
14	Sea ports
120	Bridges
3.000 km	Roads
1.052	Government buildings
2.000	School buildings
114	Health centers
20.000 ha	Fish ponds
60.000 ha	Agriculture land
100.000	SMEs
167.228	Students lost their schools
2.500	Teachers died



- 167,000 dead or missing from tsunami
- 500,000 displaced from homes
- 50,000 were housed in barracks and 65,000 remained in tents
- 80,000 110,000 new houses are needed
- 25,000 families require some form of location, that between 15,000 and 50,000 ha of land are submerged or uninhabitable
- Approximately 10,000 households need resettling as their land became submerged/was ruined
- 80% of land documents lost, including almost all the cadastral index maps
- Destruction of much the physical evidence of property boundaries and witness evidence held in the minds of those who perished

(BRR Aceh Nias, 2009)

BRR ACEH - NIAS (RECONSTRUCTION & REHABILITATION AGENCY)

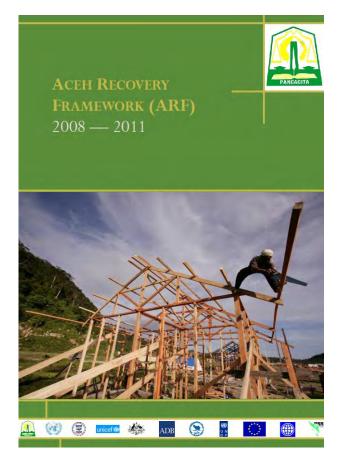


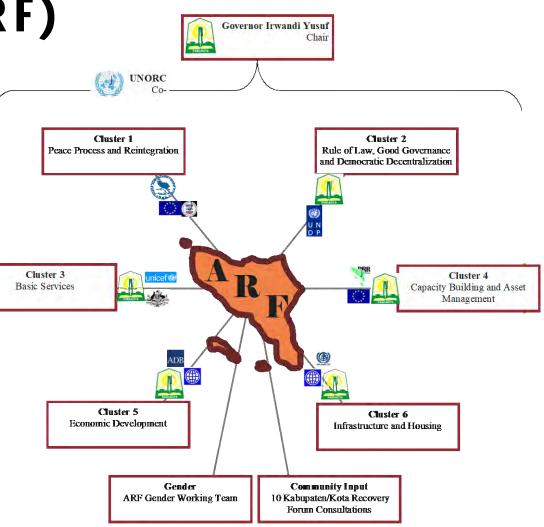
- Established on April 16, 2005 through Regulation in Lieu of a Law (Perpu) No. 2/2005 issued by the President of the Republic of Indonesia
- Mission : to restore livelihoods and strengthen communities in Aceh and Nias by designing and overseeing a coordinated, communitydriven reconstruction and development program implemented according to the highest professional standards.
- Role : As the lead Government agency responsible for post-tsunami rehabilitation and reconstruction, coordinating agency to ensure transparency, accountability, and speed in the reconstruction of Aceh and Nias, deliver necessary humanitarian assistance for tsunami affected displaced families, provide guidelines for housing policy, provide design and implementation of a barrack decommissioning plan.



ACEH RECOVERY FRAMEWORK (ARF)







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ACEH SUSTAINABLE RECONSTRUCTION AGENCY (BKRA)

- Taken over the role of BRR at the provincial level
- Provide policy and strategic direction on continuing reconstruction efforts in concert with local and national governments
- Perform activities until 31 December 2009, when all remaining reconstruction activities, and related fund disbursements and utilization, will be completed.
- The coordinating secretariat for completion of the reconstruction at the Ministry of Finance will monitor and evaluate the finalization of overall reconstruction activities consistent with the revised master plan





PHASES OF THE TSUNAMI **RECOVERY PROCESS IN ACEH**



Recovery Process Phase	2005–2009	2009–2012	2012–2014	
			Acab Disaster Management	
Tsunami Mitigation	Seven tsunami escape buildings were built	Some escape routes designed, Siren towers constructed	Aceh Disaster Management Plan (2012–2017) has been developed	
Tsunami Preparedness	Annual tsunami drills conducted by BRR, IOWAVE 2009 conducted in collaborations with national and international	First Disaster Risk Maps developed, School Disaster Preparedness	Some village- based tsunami drills were conducted	
	organisations, Aceh Tsunami Museum open, some other tsunami memorials open for public awareness	Programme launched, DRR Programme conducted	All districts already have established their disaster	
Institutional Changes	Some resettlement programmes were relocated out of tsunami high-risk zone, Its first disaster research centre established	BPBA established and 18 districts have their own disaster management agencies	management agencies, Annual Budgets for Disaster Management at Provincial and Districts have been included	
Success Factors	Large national and international donors involved, Some opportunities for changes available	Integration between academics/ research- based innovations for disaster risk reduction	Stronger collaboration with national and international partners	

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ACHIEVEMENTS AND CHALLENGES IN IMPLEMENTING THE HFA



		2005–2009	2009–2012	2012–2014
01	Ensuring DRR as local priority with strong institutional basis for implementation	Focusing on reconstructing and reactivating local government in providing services to communities	The disaster risk reduction becomes one of seven priorities of the Aceh Provincial Government for long-term development programme	Strengthening local disaster management agency through regulations, budgeting, and staff training. Enacting a number of local bylaws related to disaster management
02	Identify, assess, and monitor disaster risk and enhanced early warning	Mapping tsunami impacted areas in	InaTEWS constructed and it covers Aceh for the service area	Establishment of Command Center at BPBA (Pusdalops), working 22/7
03	Use knowledge, innovation, and education to build a culture of safety and resilience at all levels	Aceh.	Development of its first disaster risk maps for Aceh.	Integrating disaster related- data in DiBA (Data and Information of Disaster of Aceh)
04	Reduce the underlying risk factors	Relocation of a number of coastal settlements to locations far inland	Limiting development at coastal areas in some districts	Establishment of Online disaster risk maps (DRMiS), Strengthening spatial-based disaster risk management
05	Strengthen disaster preparedness for effective responses at all levels	Introducing disaster-prepared schools programme, started in Banda Aceh	Extending disaster- prepared schools programmes A number of tsunami evacuation signboards were installed	Earthquake- tsunami contingency plan for Aceh. More tsunami evacuation signboards placed in some locations (results of review process)

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DISASTER MANAGEMENT-RELATED REGULATIONS

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- Governor Decree No. 07/2011 Structure and Administration of **BPBA**
- Governor Decree No. 51/2011 on Aceh Disaster
 Management Plan
- Qanun No. 05/2010 on Disaster Management
- Qanun No. 06/2010 on The Establishment of Aceh Disaster Management Agency (BPBA)
- Governor Decree No. 43/2010 on **Tsunami Early** Warning System and Emergency Responses in Aceh
- Governor Decree No. 48/2010 on Aceh Local Actions Plan for Disaster Risk Reduction (2010–2012)
- Governor Regulation No. 47/2009 on Structure and Administration of Aceh Reconstruction Continuation Agency (BKRA)
- Governor Decree No. 74/2008 on Implementing of Loans to Empower Acehnese Business Persons Due to Earthquake and Tsunami in Aceh
- Governor Decree No. 93/2008 on Amendments to Governor Decree No. 74/2008

 Governor Decree No.49/2012 on A Guideline for Floods Contingency Plan at Disaster Management Prioritised Zones in Aceh

 Governor Decree No. 87/2012 on Results of Analysis on Structural and Functional Officers at BPBA Governor Decree No. 44/2019 on Disaster Risk Reduction for Public Infrastructures

2016 2014 .

Governor Decree No. 104/2016 on Post Disaster Economy Recovery

2010

Governor Decree No. 64/2013 on Actions Plan on Rehabilitation and Reconstruction After Earthquake in Central Aceh and Bener Meriah Districts (2013–2015)

2012

- Governor Decree No. 61/2014 on Amendments to Governor Decree No. 64/2013
- Governor Decree No. 87/2014 on Details of Main Duties and Functions of Steering Committee at BPBA

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SPATIAL PLANNING REGULATIONS



Area of the Regulation	Regulation Number	Duration of the regulation implementation	Tsunami Zonation	Designated Evacuation Roads/Shelters	Limiting Development in tsunami-prone area	Tsunami Mitigation-Based Spatial Planning	
Aceh Province	No. 19 Year 2013	2013–2033	Δ	Δ	Δ	√	
Banda Aceh	No. 4 Year 2009	2009–2029	√	\checkmark	\checkmark	√	
Aceh Besar	No.4 Year 2013	2012–2032	√	√	8	1	
Sabang	No. 6 Year 2012	2012–2032	√	\checkmark	\otimes	√	
Aceh Jaya	No. 9 Year 2014	2014–2034	√	√	\otimes	√	
West Aceh	No. 1 Year 2013	2012–2032	√	√	\otimes	√	
Simeulue	No. 2 Year 2014	2014–2034	√	×	\otimes	√	
South Aceh	No. 11 Year 2016	2016–2036	√	√	\otimes	1	
Pidie	No. 5 Year 2014	2014–2034	√	√	\otimes	√	
Bireuen	No. 7 Year 2013	2012–2032	√	√	\otimes	√	

A = Scales of maps in the spatial planning are not intended for these purposes
 ✓ = Yes
 X = No
 ⊗ = indirectly/partially

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POPULATION IN BANDA ACEH

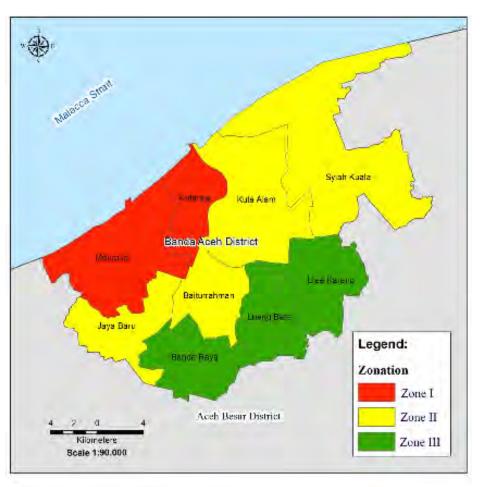
Sub District	2020	2015	2010	2006	2005	2004	2001		
Kuta Raja	15,520	12,872	10,433	3,013	2,978	21,632	17,467		
Meuraxa	26,860	19,040	16,484	2,320	2,221	34,592	27,468		
Baiturrahman	32,510	35,363	30,377	33,657	33,582	37,715	33,399		
Kuta Alam	42,500	49,706	42,217	35,088	35,033	54,718	52,824		
Jaya Baru	25,930	24,561	22,031	12,395	12,340	21,305	20,902		
Syiah Kuala	32,960	35,817	34,850	25,473	25,418	32,590	26,401		
Banda Raya	25,220	23,034	20,891	24,272	24,257	23,995	17,563		
Lueng Bata	24,330	24,660	23,592	19,339	19,284	19,232	13,477		
Ulee Kareng	27,250	25,250	22,571	22,823	22,768	19,319	13,722		
Total	252,890	250,303	223,446	178,380	177,881	265,098	223,223		
· Totall	: Totally destroyed during Tsunami 2004								

: Totally destroyed during Tsunami 2004

: Severely destroyed during Tsunami 2004

: No major damages and no impact during Tsunami 2004





⁽Syamsidik et. Al., 2017)

CHANGES OF THE LAND USE IN BANDA ACEH DUE TO THE 2004 TSUNAMI





95°16'0'E 95°17'20'E 95°18'40'E 95'20'E 95'21'20'E



aerial images in 2015

March 2005 aerial images

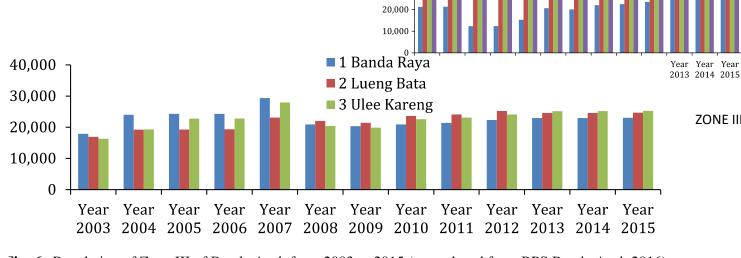
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RETURN MIGRATION IN BANDA ACEH

- Tsunami risks were only a minor concern when community members decided on a new place to live
- The return migration proved that the tsunami risk was no longer relevant as a migration push factor
- Banda Aceh is now facing the challenge of building ample evacuation facilities for its people and raising community awareness of the tsunami hazards.





40,000



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ZONE I

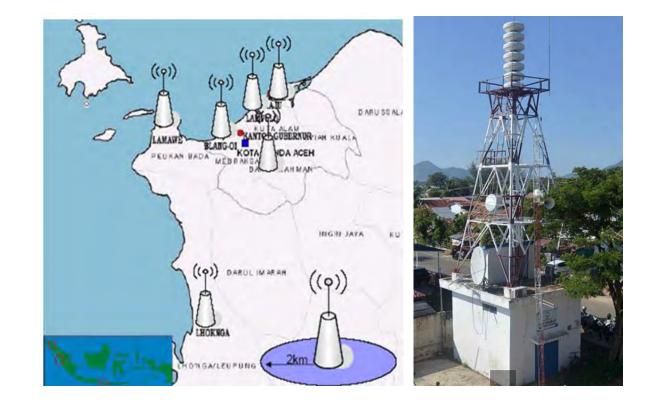


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TSUNAMI EARLY WARNING SYSTEM

- Aceh Governor Regulation Number 43 of 2010 Concerning Early Warning and Emergency Management Systems for Tsunami Disaster in Aceh
- Siren activation function tests → ensure this system continues to function
- Every 26th day of each month at 10 AM, it is sounded twice for a duration of 45 seconds.
- Before sounding the siren, BPBA and BMKG Geophysics Aceh Besar conduct socialization to the local community → not to panic and not to be afraid when they heard the sound of the siren



DISASTER RESILIENCE VILLAGE/ DESTANA





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INFRASTRUCTURE RESILIENCE





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SCHOOL BASED EDUCATION AND AWARENESS













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INTERGENERATIONAL KNOWLEDGE TRANSMISSION (IKT)

- Cases of Smong \rightarrow Illustrating IKT's success in saving lives during tsunami hazards.
- Part of the socialization process that involves the transmission of values, knowledge, and skills from generation to generation.
- Engaging teaching and learning strategies that fulfill adaptive goals to shape human behaviour.



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ROLE OF HIGHER EDUCATION





University Network for Disaster Risk Reduction (UNDRR)



Higher Education Consortium on Disaster



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TSUNAMI AND DISASTER MITIGATION RESEARCH CENTER (TDMRC)



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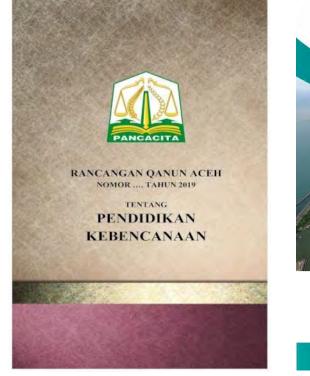


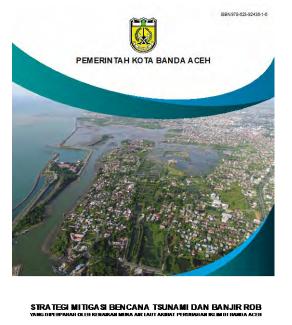
INNOVATIVE RESEARCH PRODUCTS



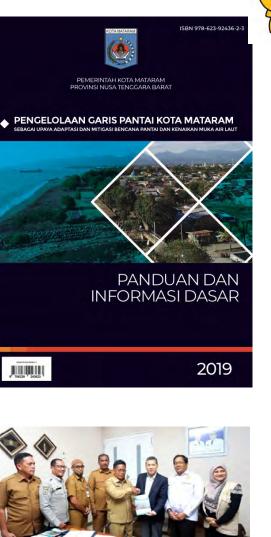
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ADVOCACY





2019









Serah Terima Dokumen Pengelolaan Garis Pantai Kota Mataram Sebagai Upaya Adaptasi dan Mitigasi Bencana Pantai dan Kenaikan Muka Air Laut



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Serah Terima Dokumen Pengelolaan Garis Pantai Kota Mataram Sebagai Upaya Adaptasi dan Mitigasi Bencana Pantai dan Kenaikan Muka Air Laut

Diterbitkon Oleh: Bidong | Pada Sep 07, 2021

Kota Mataram selain merupakan ipakota Privinsi Nasa Tenggara Barat, ipga merupakan salah salu kiri ternentline di kawatan Ternek terlenesia. Selak saman awal matehi Kasa Mataram dan Provesi NTB uecara benefundion tetali memenjang peranan penting pada tata kelidupan matyarahai dan peradaba di kawasan ini (Wacana diki, 1991). Di cisi lain, ancaman bencana yang juga merupakan siau diantar tantangan pembangunan di Indonesia memerlukan perhatian serius lerutama unluk kawasan parli yang semakin hiri semakin rawun berhadap dampak kenakan muka se laut yang dilimbulkan oleh perubahan khim. Mataram secara finitions telah tercatat menghadapi bencena erosi puntai yang masih minjadi masalah sampai-sali ini. Berperari labagai kota pesilar, masyarakiti pesilar kota Mataram juga relatif memadati area pantai. Netayan dari masyanakat pesisi lainnya tinggal milihi dekat dengan Instance and Catalities which leaves Mastacians Summer Transversal Billid, summing the state days to remain without a Freed pantai yang terus berlangsung memaksa garti pantai untuk terus bergenak manalar berangga relatif sangat delan dengan tumah masyarakat. Permasainhan ini masih menjati pekerjaan rumah bagi Perministih kota Matavani swinduh lagi perusahan iklim dapai memperbusuk kentisi pantai yang twertes. Selam Ru, bantil roß aus tercatat teläh menadi buncana tahunan yang dialami oleh masyarakai pescit yang juga terancam dapat diperparah oleh kenaikan maka an laut. Teraseak dan

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TEURIMONG GEUNASEH

Terima Kasih







Communicating Science, Enhancing Resilience

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