

[©] "The Role of BNPB in Masinstreaming DRR with Climate-Related Hazards into Development"

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Indonesia's Disaster Trends (2006-2021)



Update: 17 Agustus 2021





As per 27th October 2021 at 03.00 PM (GMT +7), it is recorded that there were 2,156 events that happened in Indonesia. Most of them were floods, whirlwind and landslide, respectively. The Natural disasters resulted in 6,614,239 suffer and displaced, 542 people died, 74 missing and 13,029 injured. Moreover, on April 13th 2020, the government of Republic of Indonesia declared the spread of Covid-19 as the non-Natural National Disaster.







No: 4/U300/099/Dis-Indonesia/BNPB/27102021

RISKSCAPE INDONESIA IN MULTI-THREAT DISASTER

Understanding disaster risk is at the heart of building disaster resilience

- The "Ring of Fire" region has a very high risk
- more than 60% of the total projected loss calculation in Asia-Pacific, including Indonesia, is derived from hydrometeorological disasters
- threat of non-natural disasters (biological hazard, chemical hazard)

HOTSPOT 2	RING O	FFIRE	
Earthquake, landslide and tsunami, typhoon tracks, North and East Asia, South-East Asia			
Population exposure		High (disproportionate impact on poor	
Economic stoc	k exposure	Very high	
Infrastructure:	energy	Very high	
Infrastructure:	transport	High	
Infrastructure:	ICT	Moderate	

FIGURE 1-10 Concentration of exposed economic stock to geological hazards











INDONESIA'S VULNERABILITY TO DISASTER RISK



- Disasters are grouped into: natural, non-natural, social disasters (UU No. 24/2007)
- In the World Risk Report (2016), Indonesia is categorized as a country with a high disaster risk level.
- This is due to the high level of **exposure** (E) and **vulnerability** (V) to disasters.
- It is increasingly important for Indonesia to take mitigation and adaptation measures againt disaster risk and climate change

SEA WATER RISE Potentially cause flooding and loss of small islands



CHANGES IN RAINFALL potentially cause flooding and erosion

Salt Water Intrusion in Coastal Ar



SEA WATER TEMPERATURE HEATING

has the potential to increase the incidence of abnormal sea waves, and decrease the potential for catch fish



TEMPERATURE INCREASE potentially cause forest fires, droughts and loss of biodiversity

D1.SS Kedeputian Bidang Sistem & Strategi Badan Nasional Penanggulangan Bencana



The seroja tropical cyclone in NTT that occurred in April 2021 caused floods, landslides, strong winds and tidal waves with an estimated loss of 1.3 T.

"A number of studies state that there is a relationship between the number of tropical cyclones in the Western Pacific Ocean and the South China Sea and the La Nina phenomenon that is currently happening." (BMKG, 2021)



DAMPAK PERUBAHAN IKLIM DI INDONESIA

BNPB

Gelombang Panas Ekstrem





Cuaca Ekstrem







Kenaikan Permukaan Air Laut/Abrasi

Kemarau Panjang



PERUBAHAN IKLIM = BENCANA ALAM

Kekeringan



Banjir Rob

Kebakaran hutan





Kerusakan Karena Angin Puting Beliung

Banjir



Longsor



BENCANA ALAM = KERUGIAN EKONOMI

Sabtu, 11 September 2021 11:35:15 Reporter : Merdeka



Petani Desa Sukaringin Gagal Panen Akibat Kekeringan. Menurut petani, musim kemarau membuat sawah kekeringan dan gagal panen yang sudah berlangsung selama delapan bulan.



Home > Nusantara > Nusantara

3.500 Hektare Padi di Kotim Gagal Panen **Akibat Banjir**

Kamis 20 May 2021 19:19 WIB Red: Agus Yulianto





Kerugian Banjir Sektor Perikanan Rp 500 Miliar

Oleh : Tempo.co Senin, 24 Februari 2014 23:18 WIB



f У 🛇 🕶 🕂



Kerugian sektor pariwisata akibat banjir di HST mencapai Rp2 miliar lebih

Pewarta : M. Taupik Rahman ③ Selasa, 16 Februari 2021 9:20 WIB



Kondisi wisata Riam Banjandik di Desa Baru, Waki Kecamatan Baru Benawa Kabupaten HST yang hancur akibat banjir bandang

Hydrometeorological Risks and Climate Change.

Flood, Landslide, Drought, Hurricane, High waves.

Global Warming,
Change of season pattern,
Rainfall changes,
Extreme weather variability.





Flood

Flash floods

Landslide

Drought

Extreme weather

Extreme Waves and Abrasion

Land and Forest Fires

Earthquake

Tsunami

Volcanic Eruption

7 of 10

The type of disaster in the BNPB study is a climate-related disaster







Climate-related disasters are disasters with the highest frequency in the last 14 years in Indonesia

Impact of Climate Change in Indonesia



Perubahan Iklim



Proyeksi Iklim Indonesia berdasarkan skenario RCP4.5 menunjukan kenaikan suhu mencapai 1.5°C pada tahun 2100, dan menggunakan skenarion RCP8.5 mencapai 3.5°C

Terjadi perubahan pola curah hujan. Ekstrem variability akan lebih tinggi apapun skenarionya. Kejadian iklim ekstrem kering dan basah akan lebih sering berpeluang di atas Normal



Peningkatan suhu, curah hujan dan kelembaban menyebabkan peningkatan vector nyamuk

Meningkatkan potensi kasus outbreak DBD, Malaria, dan Pneumonia

(Kementerian PPN/Bappenas, 2021)

INCORPORATED GLOBAL COMMITMENT INTO NATIONAL AGENDA



Effects of El Nino induced droughts, peat fires and haze on Indonesia's achievement of SDGs, SFDRR and climate change agreements

Increase poverty level. El Nino drought has been severely impacted on people rely on rainfall for their food production and livelihoods. Out of the three million Indonesian's living below the poverty, estimated 1.2 million severely affected by El Niño drought. Indonesia's Statistical Agency (BPS), noted an increase in poverty in 2015, with 1.1 million Indonesians falling below the poverty line who previously were not.

Reduce agricultural production as a result of El Nino droughts affected 10 provinces, 84 districts and 22 million people in Indonesia

Forest and peat land fires. Nineteen dead and 560,000 treated for smoke-related **respiratory problems** in Indonesia as a result of the 2015 fires and World Bank estimated losses more than IDR 221 Trillion (USD 17 Billion) Haze closed nearly 25,000 schools, impacting over 4 million students in Indonesia.





⁶⁶ Dibandingkan kejadian tahun 2015, luasan lahan terbakar yang diperhitungkan ini hanya sekitar seperempat namun angka kerugiannya mencapai sepertiga ??

Sumber: hasil analisis staf Bank Dunia, 2019





Update : 2013







To enhance the DM efforts in Indonesia, **Science and Technology** have their role. The development some GIS portals which are Inarisk showing risk data, Inaware showing real time disaster data, **MHEWS showing real** time early warning for multi hazard, and DIBI showing real time Disaster Loss Database is a great improvement in applying science and technology approach by Indonesian government.

http://geospasial.bnpb.go.id/ http://www.dibi.bnpb.go.id/ http://www.inarisk.bnpb.go.id/



Climate Change Adaptation in Disaster Management Planning

Contents of Climate Change Adaptation are contained in the Master Plan for Disaster Management (RIPB) 2020 – 2044

It is in the background section, listed in the vision and mission, and becomes the focus of achievement every 5 year period

RIPB is a reference for preparing disaster management plans at the central and regional levels.

D1.SS Kedeputian Bidang Sistem & Strategi Badan Nasional Penanggulangan Bencana





inaRISK

InaRISK is the results of risk assessment portal using ArcGIS server, consists of :

- 1. Potential hazards
- 2. Potential population affected
- 3. Potential physical losses (Rupiah)
- 4. Potential economic losses (Rupiah) and
- 5. Potential environmental damage (hectare)
- 6. Monitoring tool for disaster risk reduction index.

inaRISK as a portal for the sharing of spatial data:

- 1. Tool dissemination of disaster risk assessments.
- 2. Support central government, local government, and the parties to strategize the implementation of programs, policies, and activities to reduce disaster risk at the national and sub national levels.
- 3. Provides spatial data for further analysis, such as MHEWS, Global Centre Disaster Statistics (GCDS), spatial planning, etc.

Ina http://inarisk.bnpb.go.id how risky is your place?

← → C () inarisk.bnpb.go.id



FLOOD HAZARD MAP



FLOOD HAZARD AND SCHOOL LOCATIONS



DISASTER RISK INDEX





DIBI dirancang mudah dan sederhana agar semua BPBD bisa mengentry data bencana ke DIBI sesuai Standard Data Kebencanaan (SDK) yang telah ditetapkan. Dengan infrastruktur dan sistem yang telah disiapkan oleh BNPB, tinggal modal kemauan dari masing-masinng BPBD Kabupaten/Kota untuk melaksanakan.



 tips kesehatan dan kecantikan on Peta Sebaran Jumlah Kejadian Bencana November 2014 InAWARE (Indonesia All Warning and Risk Evaluation) Sistem informasi PB yang menjadi standar nasional bagi BNPB & BPBD. Terintegrasi dengan system informasi K/L, global dan regional. Pemantauan realtime, near realtime dan historis



PetaBencana.id yang terintegrasi dengan InAWARE terbukti memudahkan penanganan bencana secara cepat. Ke depan social media dan crowde source akan digunakan untuk pelaporan jenis bencana lain di Indonesia, seperti gempabumi, tsunami, erupsi gunungapi, banjir, longsor dan lainnya.



- Inarisk merupakan sebuah sistem informasi Kajian Risiko Bencana Online berbasis GIS server yang user friendly.
- InaRISK dikembangkan untuk umum yang dapat dimanfaatkan untuk analisis perencanaan dan identifikasi awal untuk risiko bagi masyarakat.

Berbasis WEB

Android



Inarisk merupakan sebuah sistem informasi online berbasis GIS services yang dapat menamplikan kajian risiko bencana (bahaya, kapasitas, kerentanan, dan risiko) dan monitoring penurunan indeks risiko bencana diseluruh indonesia. Dalam pemanfaatannya, Inarisk dapat berfungsi sebagai referensi dalam perencanaan daerah dan memproyeksikan kerugian akibat bencana.





http://inarisk.bnpb.go.id @inaRISK

CONTOH TAMPILAN APLIKASI:



inaRISK Personal

Fitur Utama:

- Identifikasi tingkat bahaya berdasarkan lokasi (koordinat)
- Rekomendasi aksi antisipasi untuk individu

Identifikasi tingkat Bahaya Untuk setiap titik di Indonesia



inarisk

Tutorial inaRISK Mobile Apps

Direktorat PRB

Published on Oct 22, 2017

9 views

= VouTube

t 1 401 0 → SHARE =+



Tersedia di Google Playstore







Peta Bahaya Gempa Bumi dan Lokasi Sekolah





DAERAH BAHAYA COVID-19, JABODETABEK

Sumber : inarisk.bnpb.go.id



Contents of Climate Change Adaptation in 5 YEAR RIPB ACHIEVEMENT FOCUS

2020 - 2024



i) Number 6. Integration of disaster data, information, and literacy as well as increasing understanding of disaster risk, landscapes, and climate change adaptation, as well as efforts to strengthen social resilience and public health resilience.

ii) Number 8. Increasing the capacity of districts/cities in disaster resilience and climate change, as well as social resilience and public health resilience.

2025 - 2029



Number 8. Realization of disaster-resilient districts/cities and participatory and inclusive climate change adaptation.



2035 - 2039

Number 4. The realization of districts/cities against **disaster** resilience and sustainable climate change.

2030 - 2035

i) Number 6. Realization of understanding of disaster risk and adaptation to climate change.

ii) Number 8. **Realization of spatial and settlement planning** as well as integrated urban planning for disaster resilience and climate change adaptation.

2040 - 2044



1.Number 3. The realization of strong human resources who have expertise, competitiveness, and professionalism in the field of disaster in a sustainable manner.

Convergence of Climate Change Adaptation and DRR



greenhouse emissions



MITIGASI TERHADAP PERUBAHAN IKLIM

DAERAH PANTAI/ PESISIR Dampak Perubahan Iklim: Peningkatan permukaan air laut

KEGIATAN MITIGASI:

- Pembangunan Tanggul-tanggul Di Daerah Pantai
- Perlindungan Terhadap Pelabuhan, Bangunan Atau Infrastruktur Lainnya Yang Rentan Terhadap Kenaikar Air Laut
- Konservasi Air Melalui Kampanye Publik Untuk Mencegah Kontaminasi Oleh Air Laut
- Penerapan Teknologi Untuk Memperoleh Air Bersih
 Dari Air Yang Telah Tercemar
- Perubahan Pola Penangkapan Ikan Oleh Nelayan





DAERAH PERTANIAN/PERKEBUNAN

Dampak Perubahan Iklim: Erosi pada daerah dataran tinggi, Gangguan pada sistem pertanian

KEGIATAN MITIGASI :

- □ Konservasi air dan tanah
- Aforestasi melalui agroforestry dengan tanaman pengikat nitrogen
- Penyesuaian waktu tanam yang dilakukan oleh petani
- Penanaman jenis tanaman yang lebih tahan terhadap perubahan iklim



PETA INDEKS RISIKO BENCANA INDONESIA

Tingkat Provinsi Update : Tahun 2020





Indonesia merupakan Negara di urutan ke 48 dari 48 negara yang paling terdampak pada Perubahan Iklim (RE Index)

PETA INDEKS RISIKO BENCANA GELOMBANG EKSTRIM DAN ABRASI



Update : Tahun 2020



PETA INDEKS RISIKO BENCANA CUACA EKSTRIM

Update : Tahun 2020



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PETA INDEKS RISIKO BENCANA KEBAKARAN HUTAN DAN LAHAN

Update : Tahun 2020





PETA INDEKS RISIKO BENCANA KEKERINGAN

Update : Tahun 2020





⁽²⁾ ☆ ⓐ ☆ ▲ ◆ ▷ 平 ♥ ☆ ⑫ Climate Change Adaptation and Disaster Risk Reduction

- ✤ In the context of disasters, climate change:
 - 1. Increase the frequency and intensity of climate-related hazards, such as: Long dry seasons, floods, extreme weather, landslides and forest fires.
 - 2. Increasing vulnerability through ecosystem degradation which causes a decrease in the carrying capacity of the environment which can have an impact on people's lives.
- In the context of disaster risk management, climate change adaptation is a strategic effort in the context of preventing and mitigating climate-related disasters.
- The main objective of both is Community Resilience, protection and safety as the ultimate goal.
- Climate Change Adaptation (API) and Disaster Risk Reduction (DRR) have something in common in terms of reducing risk factors (vulnerabilities and hazards) associated with or caused by climate change.











COLLECTIVE ASSISTANCE DISASTER MANAGEMENT (Pentahelix Element) 95% of disasters occur in the regions, so the initial action must be from the Regional/Local level

The Role of Pentahelix in DRR efforts as a Climate Change Adaptation

- **Risk identification** through risk, hazard/threat mapping, and vulnerability analysis with the support of climate impact projection
- Building an Ecosystem-based protection program with multi-stakeholder involvement through the Welfare-based Disaster Risk Reduction and DRR Movement
- Building adaptive capacity of the community through the Participatory Structural Mitigation Program, Disaster Resilient Village
- **Building awareness** through education sector-based Disaster Mitigation and Climate Change (SPAB Program)



D1_SS Kedeputian Bidang Sistem & Strategi Badan Nasional Penanggulangan Bencana

DISASTER RISK REDUCTION MOVEMENT ACTIVITIES IN THE REGIONS



STRUCTURAL MITIGATION OF FLOOD AND DROUGHT DISASTER

- Efforts to reduce the amount of runoff water into rivers so as to reduce the risk of flooding in the area
- Efforts to manage rainwater as a way of dealing with drought.
- As a daily water source and a water reserve.

- Sufficient for **one week**
- For **5 family members**
- estimated demand (150 liters/person per day)



STRUCTURAL MITIGATION OF LANDSLIDE DISASTER IN INDONESIA



ASLIDE RESISTANCE FROM WEBBING JUTE AND VETIVER GRASS IN CILACAP AND BADUNG REGENCY



GLOBAL TARGETS

i

V

C

 \leftarrow \rightarrow +

PROGRESS OF GLOBAL TARGETS

sendaimonitor.undrr.org/country/contributor



MY INDICATORS

Below are the indicators that have been assigned to your institution to complete.

	INDICATOR
A-1	Number of deaths and missing persons attributed to disasters, per 100,000 population
A-2	Number of deaths attributed to disasters, per 100,000 population
A-3	Number of missing persons attributed to disasters, per 100,000 population
B-1	Number of directly affected people attributed to disasters, per 100,000 population
B-2	Number of injured or ill people attributed to disasters
B-3	Number of people whose damaged dwellings were attributed to disasters
B-4	Number of people whose destroyed dwellings were attributed to disasters



0



Disaster risk reduction strategies



Ε

110

G

Early warning and risk information

100,000 population

Number of deaths attributed to disasters, per



N/A



0

A-2

+

+

Number of missing persons attributed to disasters, per 100,000 population



MANDAT PENGURANGAN RISIKO BENCANA KEPADA PEMERINTAH DAERAH



CLOSING

- The threat of disaster risk to development is very large so that national and regional development planning must pay attention to disaster risk reduction and climate change
- Synergy of policies, institutions, planning, funding, implementation and methodologies to realize the effectiveness of implementing adaptation or mitigation actions at the Central and Regional levels
- Capacity building in the regions & Commitment of all stakeholders in realizing Resilience in the face of Disasters and Climate Change







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