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# Integrated risk assessment to inform Adaptive Social Protection in Indonesia

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# What is Adaptive Social Protection (ASP)?

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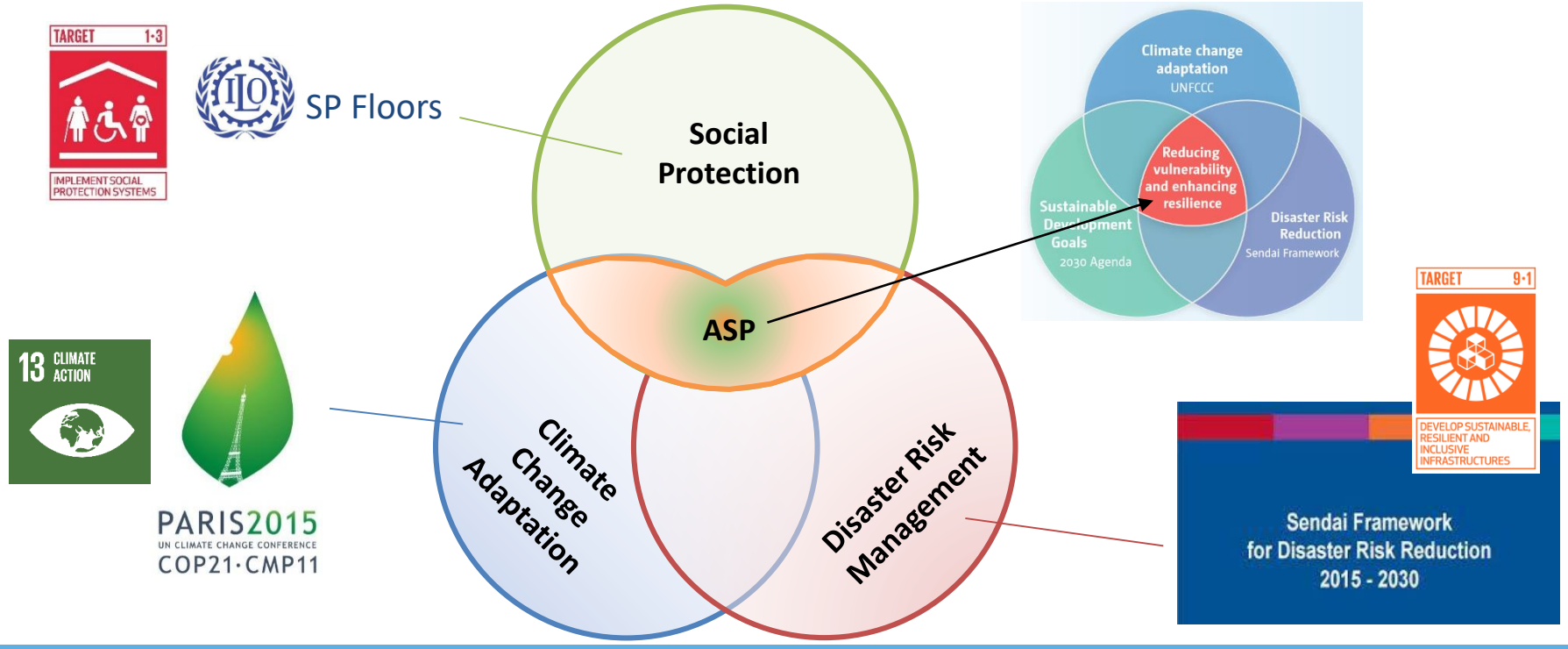
ASP aims at assuring & promoting peoples' **resilience** in the face of multiple covariate risks induced by natural & climate hazards, through **integrating** social protection, climate change adaptation & disaster risk management. (own working definition, drawing on Hallegatte et al. 2017)




*Source:* own graph drawing on Davies et al. 2013

# ASP value added and challenges

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## What can ASP provide?

- Tackle complex risks that exceed sectoral capacities and threaten sustainable development *(demand)*
- Coherence benefits, such as efficient allocation of resources *(supply)*

## What are challenges?

- Siloed approaches, both horizontal & vertical, due to different:
  - Understandings
  - Priorities
  - Goals

How can these challenges be overcome? What evidence is needed for that?

→ **HEVA**

# Integrated risk assessment for ASP: The HEVA

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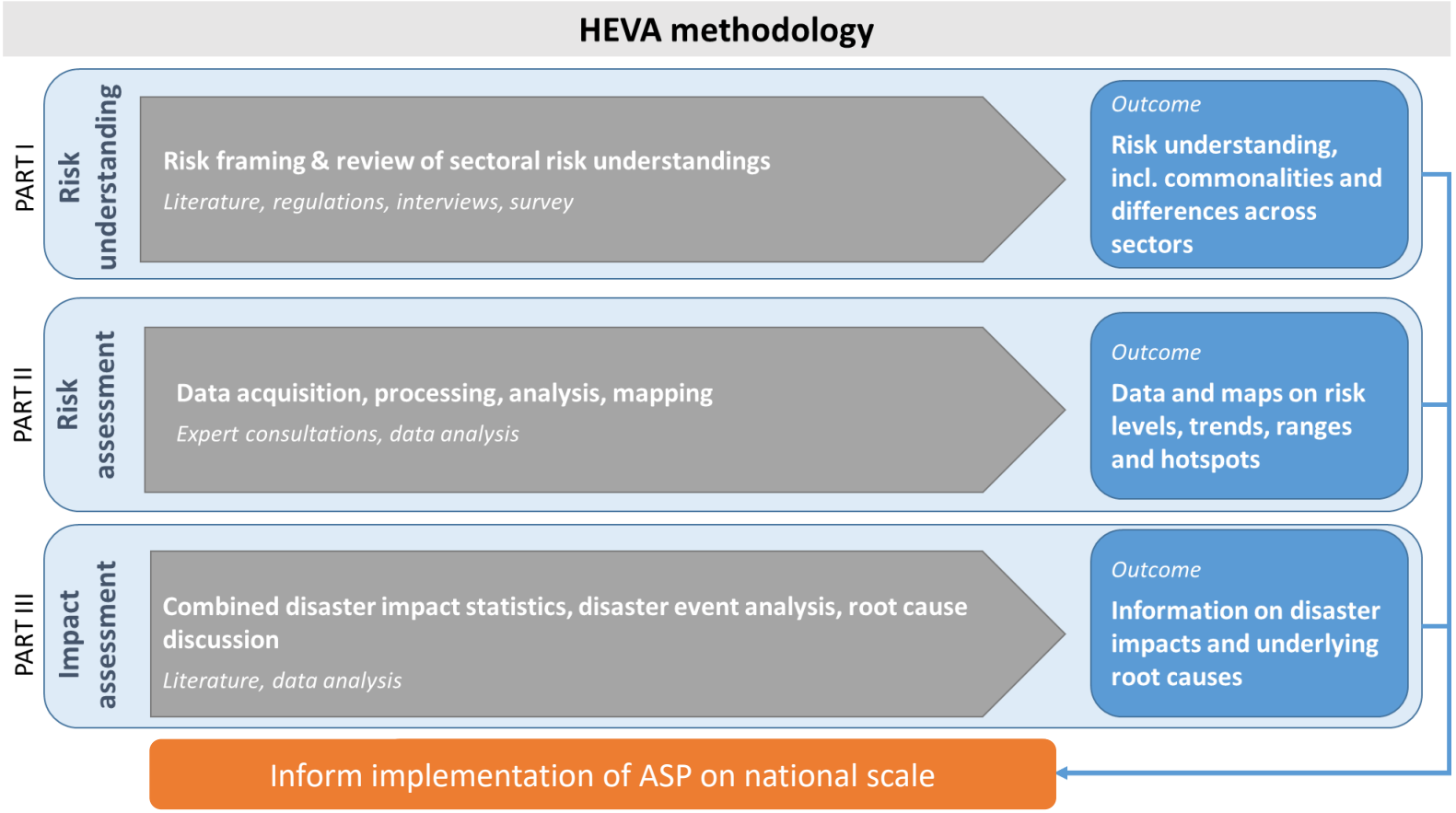
- The Hazard Exposure Vulnerability Assessment (HEVA) is a comprehensive risk assessment that supports an **evidence based**, **risk-informed approach** to ASP



# Integrated risk assessment for ASP: The HEVA (case study Indonesia)

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PART I

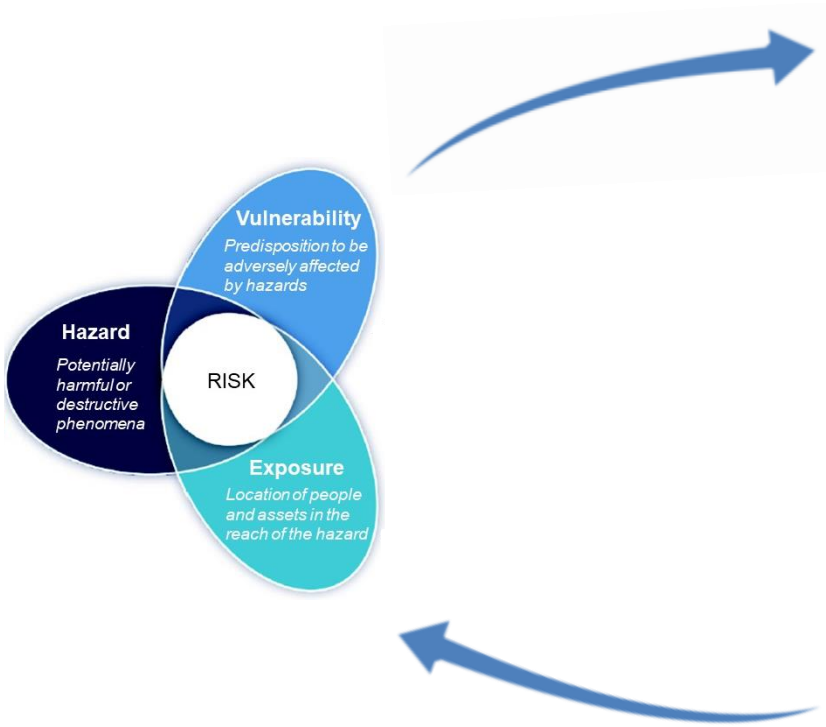
**Risk understanding**

**Risk framing & review of sectoral risk understandings**

*Literature, regulations, interviews, survey*

*Outcome*

**Risk understanding, incl. commonalities and differences across sectors**




| | Hazard | | |
|---|---|---|---|
| | **Social Protection** | **Disaster Risk Management** | **Climate Change Adaptation** |
| **International concepts** | - Livelihood risks and adverse shocks: deprivation of income (incl. chronic & extreme poverty), consumption (food insecurity), social status (marginalization), and rights (incl. power imbalances, economic inequality, social exclusion) [1]<br>- Lifecycle shocks, occurring throughout different phases of peoples' lives [2] | - Process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation [6] | - Climate extremes (extreme weather or climatic events): occurrence of a value of a weather/climate variable above/below a threshold value near the upper/lower ends of the range of observed values of the variable [10]<br>- Focus on future hazards (climate projections) |
| **National concepts & understanding** | - SP goes beyond poverty; core mandate is to deal with all lifecycle risks (from birth, working age, school age, elderly), incl. health and external risks such as disasters and economic crises [3]<br>- MoSA addresses 'social and natural disasters'[4] | - Event/series of events which threaten and disrupt life and livelihoods due to natural, non-natural, and/or human factors; causing fatalities, environmental and property damage, and psychological impacts [7]<br>- Frequency (probability) of a disaster happening with a certain intensity in a specific location [8]<br>- BNPB risk concept (e.g. IIRBI) aligns with UNDRR definition | - Climate change hazard: potential losses for humans or damage to environmental services that can be measured with scale, rate, frequency and probability of occurrence [11]<br>- Downscaling of global climate projections |
| | - Sectoral core hazards: lifecycle shocks, economic shocks, health shocks [5] | - Sectoral core hazards: geo-physical, hydrological hazards [9]<br>- Consideration of future hazards (e.g. IIRBI) | - Sectoral core hazards: climate change trends, meteorological, hydrological and biological hazards [12]<br>- Future hazards are core mandate: climate projections play a huge role<br>- Priority sectors for climate impacts in RAN-API: Marine and coastal, water, agriculture, health [13] |
| **Inter-faces** | - SP & DRM: focus on current hazards and shocks, have broader fields of action<br>- SP & CCA: consider impacts of events and trends<br>- DRM & CCA: focus on events and trends, define hazards with technical characteristics, maps often used | | |
| *Sources* | *[1] Devereux & Sabates-Wheeler (2004)*<br>*[2] ILO (2017)*<br>*[3] IN-03-BNS*<br>*[4] MoSA (2019)*<br>*[5] SU-01-TWG* | *[6] UNDRR (2020)*<br>*[7] BNPB (2007)*<br>*[8] BNPB (2012)*<br>*[9] SU-01-TWG* | *[10] IPCC (2012)*<br>*[11] KLHK (2018)*<br>*[12] SU-01-TWG*<br>*[13] BAPPENAS (2019)* |

# Integrated risk assessment for ASP: The HEVA (case study Indonesia)

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PART II

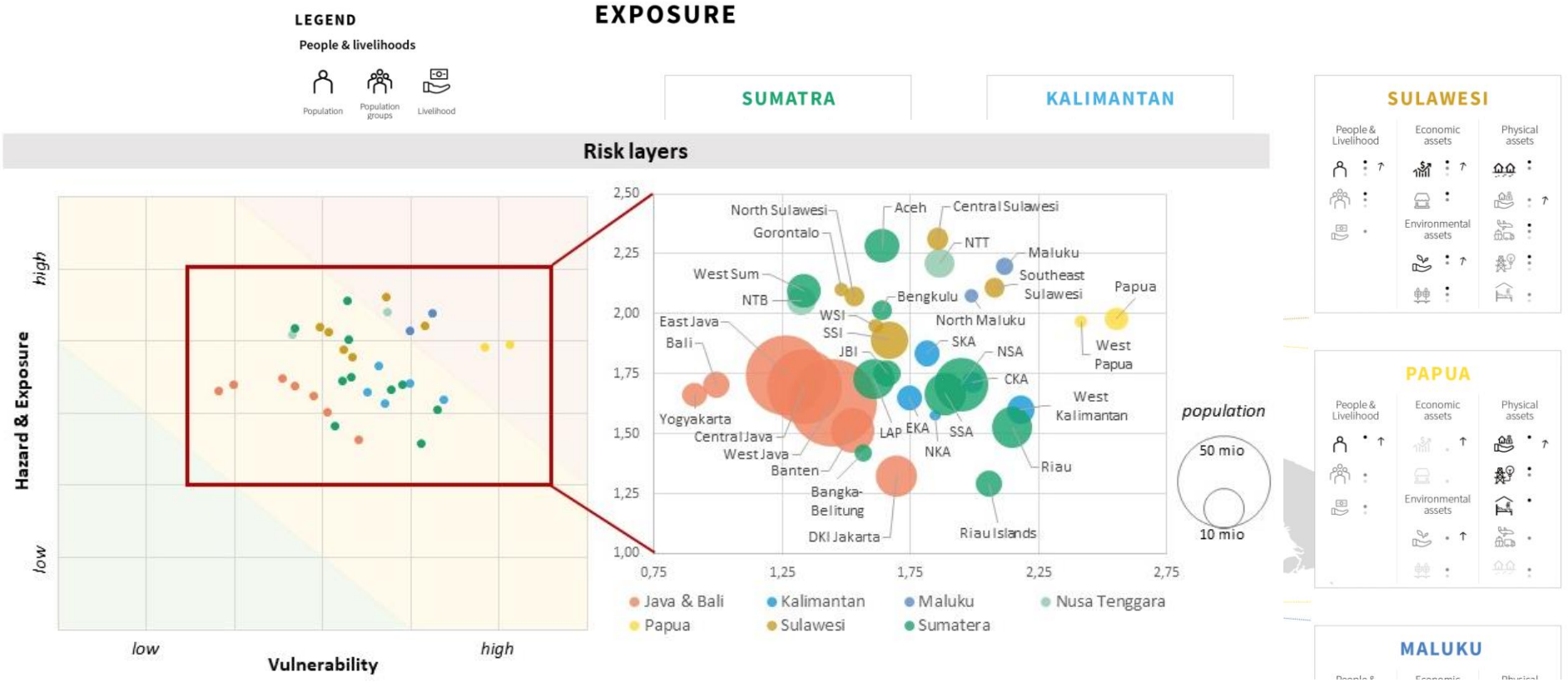
**Risk assessment**

**Data acquisition, processing, analysis, mapping**

*Expert consultations, data analysis*

*Outcome*

**Data and maps on risk levels, trends, ranges and hotspots**



# Integrated risk assessment for ASP: The HEVA (case study Indonesia)

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PART III **Impact assessment**

**Combined disaster impact statistics, disaster event analysis, root cause discussion**

*Literature, data analysis*

*Outcome*

**Information on disaster impacts and underlying root causes**

**ROOT CAUSES / EXACERBATING FACTORS**

- Poor constructions, particularly older un-reinforced masonry homes

**DISASTER EVENT: YOGYAKARTA EARTHQUAKE, 27 MAY 2006**

- Earthquake 5.9 Richter Scale/MW 6.3, 52 seconds duration
- Triggered liquefaction, rockfalls

**DISASTER LOSS & DAMAGE**

**HUMAN LOSSES**

- +5,778 lives lost, +58,790 injured
- Total affected: 3,177,923

**ASSET LOSSES**

- ~154,000 houses completely destroyed
- ~260,000 houses damaged
- Private & public Infrastructure: 550 billion IDR
- Severe damage to public and private health and education facilities

**SOCIAL IMPACT**

- Impoverished additional 67,000 households
- Increased poverty ratio by 1.6%
- +650,000 workers employed in productive sectors affected, ~90% in SME
- 30,000 enterprises affected
- Loss of approximately 130,000 jobs
- 4% increase in unemployment rates

**ECONOMIC LOSS AND DAMAGE**

- Total amount : 29.1trillion IDR
- Private homes: 15.3 trillion IDR
- Private sector / economic assets: 9 trillion IDR
- Damaged approximately 90.52% of private assets in housing, social & productive sectors

**RELIEF, RECOVERY & RECONSTRUCTION ACTION**

**NATIONAL & INTERNATIONAL AID**

- Central government provided US$570 million
- UN cluster system provided US$175 million
- Multilateral Java Reconstruction Fund (JRF) with US$80 million donations from European Commission, different European countries and Canada

**GOVERNMENT EMERGENCY RELIEF**

- One-time 90,000 IDR cash transfer, 10kg rice 100,000 IDR grant pP for clothing pP
- Rp 100,000 per household for kitchen equipment
- Free healthcare to injured people
- Emergency accommodation
- Tents for temporary trading

**RECOVERY & RECONSTRUCTION**

- Community-driven rehabilitation & reconstruction of houses & residential areas of 5.4 trillion IDR over 2 years, linked to Community Empowerment
- Local economy recovery, including e.g. small industry revitalization Program Provision of assets to support entrepreneurial activities
- Microfinancing institutions to re-establish damaged business activities
- Agricultural support through seeds, fertilisers, provision of livestock
- Capacity building and training

*Earthquake, Yogyakarta Region, 2006*

*Photo: habitatforhumanity.org.uk*

# HEVA lessons for linking climate adaptation and the SDGs

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- Meaningful integration must consider ALL perspectives
  - For ASP: extend focus of programmes on DRM/CCA and focus of risk assessments on SP
- Tools such as HEVA can meaningfully contribute to integration
  - Conceptually: joint understanding, alignment of methodologies
  - Practice-oriented: analysis guidelines, risk layering
- Tools need to be further enhanced and made relevant & accessible for all actors (particularly for local level)

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# Thank you for your kind attention!

# Any questions or comments?

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Source: online

# HEVA analysis approach

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Step I: Data acquisition | Step II: Data cleaning & normalization | Step III: Risk analysis & mapping

*Categorical data on regency-level or continuous*

I.I

| No | Province | 2011 Number (000) | % | 2012 Number (000) | % | 2013 Number (000) | % |
|---|---|---|---|---|---|---|---|
| 1 | Aceh | 894.81 | 19.67 | 876.60 | 18.88 | 855.71 | 17.72 |
| 2 | Sumatera Utara | 1,481.31 | 11.33 | 1,378.40 | 10.41 | 1,390.80 | 10.39 |
| 3 | Sumatera Barat | 442.09 | 9.04 | 397.90 | 8.00 | 380.63 | 7.66 |
| 4 | Riau | 482.08 | 8.47 | 481.30 | 8.08 | 522.83 | 8.42 |
| 5 | Jambi | 272.67 | 8.65 | 270.10 | 8.28 | 281.87 | 8.41 |
| 6 | Sumatera Selatan | 1,074.91 | 14.24 | 1,042.00 | 13.48 | 1,108.21 | 14.06 |
| 7 | Bengkulu | 303.60 | 17.60 | 310.60 | 17.91 | 320.41 | 17.75 |
| 8 | Lampung | 1,266.71 | 16.93 | 1,219.00 | 16.66 | 1,134.26 | 14.39 |
| 9 | Bangka Belitung | 72.06 | 5.76 | 70.20 | 5.37 | 70.90 | 5.28 |
| 10 | Kepulauan Riau | 129.58 | 7.40 | 131.20 | 6.83 | 126.62 | 6.36 |
| 11 | DKI Jakarta | 363.42 | 3.76 | 366.60 | 3.70 | 370.70 | 3.72 |

*Numerical data across time*

I.II

| Province | Stunting |
|---|---|
| Aceh | 41.5 |
| Sumatera Utara | 42.5 |
| Sumatera Barat | 39.2 |
| Riau | 36.8 |
| Jambi | 37.9 |
| Sumatera Selatan | 36.7 |
| Bengkulu | 39.7 |
| Lampung | 42.6 |

*Categorical & numeric data on provincial level*

Raw data

| Vulnerability | | ASSETS | INFRASTRUCTURE | |
|---|---|---|---|---|
| | | extreme | | |
| Exposure | | POPUL | GROUPS | |
| | | extreme | | |
| | Hazard | HEAT | FLOODING | |
| | | extreme heat level | Urban FL | River FL |
| | source | GFDRR - Thi | GFDRR - Th | GFDRR - T |
| | link | https://thi | https://thi | https://thi |
| Sumatra | Aceh | medium | high | high |
| Sumatra | North S | medium | high | high |
| Sumatra | West S | medium | high | high |
| Sumatra | Riau | medium | high | high |
| Sumatra | Riau Islands | medium | high | medium |
| Sumatra | Jambi | medium | high | high |
| Sumatra | South S | medium | high | high |
| Sumatra | Bangka-Belitung | medium | high | medium |
| Sumatra | Bengkulu | medium | high | medium |
| Sumatra | Lampung | medium | high | high |

*Categorical & numeric data on provincial level for hazard, exposure, and vulnerability*

II.I II.II

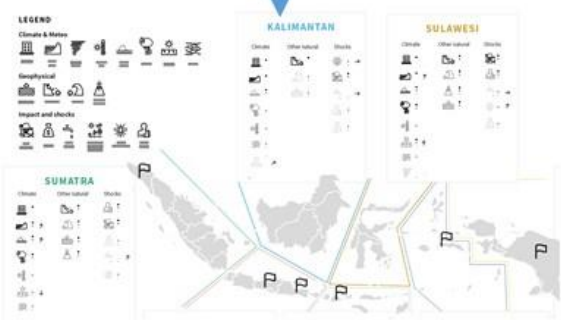
Normalized data

III.I III.II

Final HEV data

| Hazard | | STORMS average | STORMS range | WILDFIRE average | WILDFIRE range |
|---|---|---|---|---|---|
| | source | | | | |
| | link | | | | |
| Sumatra | | low | | moderate | moderate-high |
| Sumatra | Aceh | 0,38 | | 2,25 | |
| Sumatra | North S | 0,38 | | 1,5 | |
| Sumatra | West S | 0,38 | | 2,25 | |
| Sumatra | Riau | 0,38 | | 1,5 | |
| Sumatra | Riau Islands | 0,75 | | 1,5 | |
| Sumatra | Jambi | 0,38 | | 2,25 | |
| Sumatra | South S | 0,38 | | 3 | |
| Sumatra | Bangka-Belitung | 0,38 | | 2,25 | |
| Sumatra | Bengkulu | 0,75 | | 2,25 | |
| Sumatra | Lampung | 0,75 | | 3 | |
| Java & Bali | | low | low | high | moderate-high |
| Java & Bali | DKI Jakarta | 0,00 | | 2,25 | |

*Average, range, projection & hotspots for hazard, exposure, and vulnerability*




*I.I Aggregation to provincial level*
*I.II Aggregation across time*

II.I Alignment of data level
II.II Average building across sub-indicators

III.I Calculation of provincial averages
III.II Calculation of regional average and range

**Limitations:** Data availability and access; Data aggregation bias; Basic analysis methodology