

# Transdisciplinary Approach at Community Level in Malaysia



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**3 CASE STUDIES - 3 KEY RECOMMENDATIONS – 1 SECRET RECIPE**

**EMERGING ISSUES | LOCAL CHALLENGES | HIGH DEMAND & URGENT NEEDS**



**40% of large dams are at high risk  
12% are aging dams (> 50 years)**

Photo by BERNAMA, 27 February 2022

**Extreme weather event & climate-induced disaster risk @ large hydro dam**

**Power Generation & Critical Infrastructure Disruption | Business Continuity**

**Massive evacuation | Impact-based Early warning system | Complex decision-making**

**Systemic risk & emerging disaster | Local DRR Resilience Strategy**



MJIIT  
Disaster Preparedness  
& Prevention Centre  
(DPPC)



A subsidiary of Tenaga Nasional



TNB RESEARCH  
(259519-A)

# Dam-related disaster risk reduction and resilience strategies 2030

1. Enhancing multi-scale community preparedness (vulnerability-downstream of dams, dam-break modelling & local impacts)
2. Strengthening local resilience culture (people-centric-based early warning system, community-led risk communication, and science-based approach for building trust)

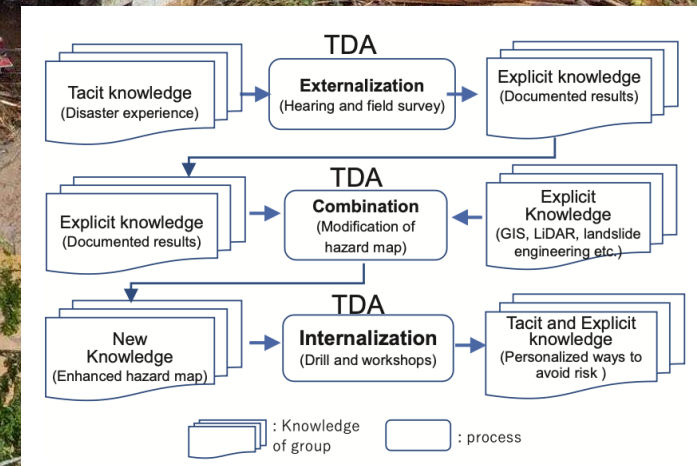
STAKEHOLDER ENGAGEMENT PROGRAMME (SEP)  
FOR DAM RELATED DISASTER (DRD) IN MALAYSIA  
- TNB RESEARCH & DPPC (MJIIT, UTM), 2020-2025 -



# Emerging Hazard, Systemic risk & Compound Disaster

Landslides, Debris flow & Debris flood, 04 July 2022 @ Kg Iboi, Baling District, Kedah

Cycle of knowledge-flow. New knowledge (enhanced hazard map) is generated by combining the externalized tacit knowledge (disaster experience) and contemporary landslide engineering (Kuraoka et al 2020)



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## Food Security & disaster risk in Malaysia

62%

Agriculture

57%

Fishery & Aquaculture

41%

Livestock farming

Source: PLANMalaysia, 2022

**TDA: Rethinking** Scientific-  
Knowledge-based Decision Making  
for Action & High-Return Investment

**2040 MASTER PLAN FOR NATIONAL FOOD SECURITY**  
(RISK-DRIVEN, MULTI-HAZARD, ALL-OF-SOCIETY)

**CO-DESIGNING RISK-INFORMED SUSTAINABLE**  
**AGRICULTURE STRATEGIES** (MULTI-RISK, FUTURE  
CLIMATE SCENARIO, RISK-SENSITIVE CULTIVATION,  
CASCADING IMPACT ANALYSIS, MULTI-SCALE  
RESILIENCE INDICATORS & MONITORING)

# CO-DEVELOPING NATIONAL DISASTER RESILIENT RECOVERY (DRR) MODEL (Multi-scale Living Lab in Jajahan Pasir Mas, Kelantan)



Northeast monsoon flood (December 2022) @ Golok River, Malaysia-Thailand border

**MALAYSIA: 29.8 million** economic losses in Kelantan, **26.1 million** economic losses in Jajahan Pasir Mas (**87.5%**) covering only 4% of total land in the state, **46%** (22/50) sub-districts flooded & 138,311 people affected  
**THAILAND: 29,113 families** directly affected by flood disaster over 13 districts in Narathiwat region, Thailand



Agensi Pengurusan Bencana Negara



**UTM** MJIIT  
UNIVERSITI TEKNOLOGI MALAYSIA Disaster Preparedness & Prevention Centre (DPPC)



**NADIM** MALAYSIA





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Disaster Prepared  
& Prevention Cer  
(DPPC)



# TRANSBOUNDARY DISASTER RISK: MALAYSIA-THAILAND

**Empowering local community**  
(local knowledge, network, resources,  
Local solution & co-ownership)  
**for Post-Disaster Needs Assessment**  
**(PDNA)** - mapping technology, disaster  
informatics tool & evidence-based system







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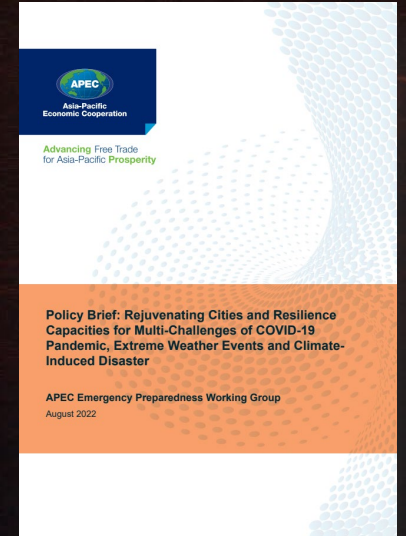
เตรียมรับมือฝนตกหนักอีกรอบ

## Malaysia's Disaster Resilient Recovery (DRR) Model

1. Improved disaster response based on data & humanitarian action at a local scale
2. Targeted multi-tier disaster preparedness program for long-term impacts
3. Enhanced partnership and collaboration at state, district and local level



# DIVERSIFYING INVESTMENT STRATEGIES FOR LOCAL RESILIENCE



“A multi-hazard, multi-dimensional, and multi-scalar assessment of systemic risk is the precursor for strengthening our understanding of increasing, complex nature of risk. Therefore, **localization** is a key factor to develop a long-term solution to address all dimensions of risk. “ –APEC-EPWG, POLICY BRIEF, 2022

RESILIENCE 2030-2045  
DR3 @ MALAYSIA

**RISK TO**  
**RESILIENCE**





**THANK YOU  
FOR YOUR  
ATTENTION**

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