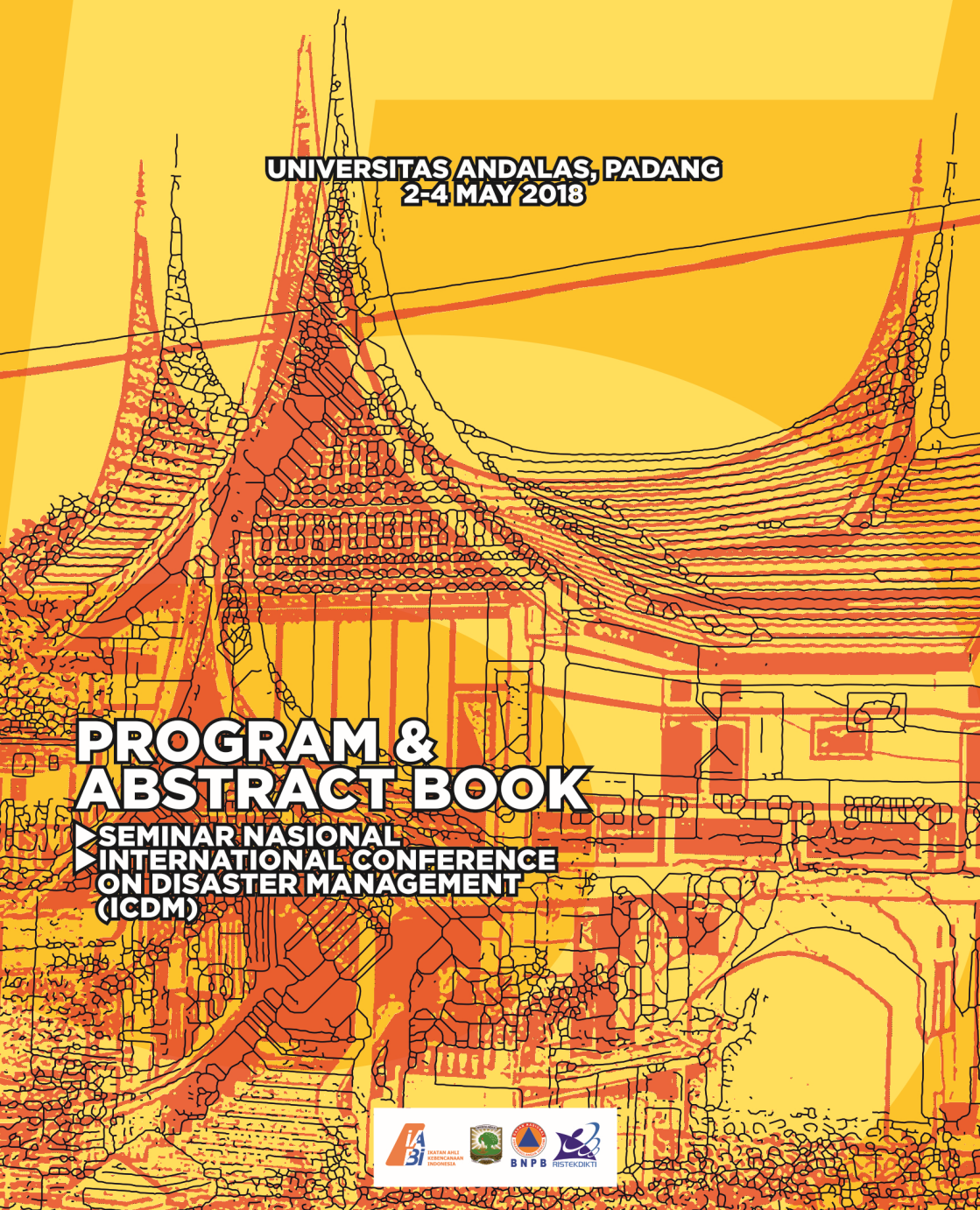
PERTEMUAN ILMIAH TAHUNAN KE-5
RISET KEBENCANAAN 2018
IKATAN AHLI KEBENCANAAN INDONESIA

UNIVERSITAS ANDALAS, PADANG
2-4 MAY 2018



PROGRAM & ABSTRACT BOOK

- SEMINAR NASIONAL
- INTERNATIONAL CONFERENCE ON DISASTER MANAGEMENT (ICDM)

IAI IKATAN AHLI KEBENCANAAN INDONESIA
BNPB
RISTEKDIKTI

PROGRAM BOOK

PIT5-IABI 2018

PERTEMUAN ILMIAH TAHUNAN (PIT) KE-5 RISET KEBENCANAAN 2018
IKATAN AHLI KEBENCANAN INDONESIA (IABI)

5TH ANNUAL SCIENTIFIC MEETING – DISASTER RESEARCH 2018
INDONESIAN ASSOCIATION OF DISASTER EXPERTS (IABI)

- **SEMINAR NASIONAL */ NATIONAL SEMINAR***
- **INTERNASIONAL CONFERENCE ON DISASTER MANAGEMENT (ICDM)**

ANDALAS UNIVERSITY
PADANG, WEST SUMATRA, INDONESIA
2-4 MAY 2018

PROGRAM BOOK

PIT5-IABI 2018

Editor:
Benny Hidayat, PhD
Nurhamidah, MT

Panitia sudah berusaha melakukan pengecekan bertahap terhadap kesalahan ketik, judul makalah, dan isi buku program ini sebelum proses pencetakan buku. Jika masih terdapat kesalahan dan kertinggalan maka panitia akan perbaiki di versi digital buku ini yang disimpan di website acara PIT5-IABI.

The committee has been trying to check the typos and the contents of this program book before going to the book printing process. If there were still errors and omissions then the committee will fix it in the digital version of this book which is stored on the website of the PIT5-IABI event.

Doc. Version: 11

OPENING REMARK FROM THE RECTOR

Dear the International Conference on Disaster Management (ICDM 2018) and The National Conference of Disaster Management participants: Welcome to Andalas University! It is our great honor to host the very important conference at our green campus at Limau Manis, Padang.

Andalas University (UNAND) is the oldest university outside of Java Island, and the fourth oldest university in Indonesia. It was officially launched on 13 September 1956 by our founding fathers Dr. Mohammad Hatta, Indonesia first Vice President. It is now having 15 faculties and postgraduate program and is home for almost 25000 students.

Disaster management is also our main concern. One of the research priority topics at Andalas University is disaster management. We also have the Center for Disaster Study as the main player in research and development of disaster management. Many useful research and community development products have resulted from this center.

At this wonderful occasion, we also invite you to explore our city and vicinity and experience all that it has to offer especially the food and the landscape.

Once again I would like to welcome all of you to the conference at Andalas University. Have a wonderful conference, and enjoy your stay.

Sincerely,

Prof. Tafdil Husni
Rector of Andalas University

WELCOME MESSAGE

It is a great pleasure to welcome you to The International Conference on Disaster Management (ICDM 2018) and The National Conference of Disaster Management (NCDM 2018) at Andalas University and to Padang City the capital of West Sumatra Province, the land of Minangkabau.
While much encouragement and progress on the disaster risk reduction, the disaster is still a huge global problem today.
In more than 200 scientific papers will be presented in ICDM 2018 and NCDM 2018 related to disaster including understanding disaster management, strengthening sustainability development, enhancing the framework for sustainability and improving lesson learned in disaster management.
The conferences are parts of the activities in PIT5-IABI 2018 at Andalas University. The conference will bring together leading researchers, engineers, architects, scientists, and other professionals in various disciplines of social science and engineering around the world related to the disaster.
We encourage you to participate in the discussion and hope the conference helps in the exchange of information and development of new collaborations among all stakeholders.
There is also a world of adventure waiting to be discovered in the land of Minangkabau. We hope you have planned some extra time in your diary to experience some of these activities.
We welcome you to an inspiring, educational and enjoyable program.

Conference Chairman,

Dr. Febrin Anas Ismail
Indonesian Association of Disaster Experts

REMARK FROM THE HEAD OF IABI

First of all I would like to welcome you on the PIT-IABI 5 at Andalas University Padang. It is our 5th annual meeting since the association established in 2012. The objective of the meeting is to bring together leading researchers, engineers, architects, scientists, and other professionals in various disciplines of social science and engineering around the world related with disaster to share their knowledge and experiences among stakeholders. It is in line with our association vision and mission that is to build and to develop the science and technology to reduce the risk of disaster through participating and playing an active role in the development of national disaster, striving for the advancement of science disaster knowledge and technology for the benefit of mankind and establishing close collaboration with stakeholders both national and internationally.

There are some activities have been set in this PIT-IABI 5: Pre Event Competition, National and International Conferences, Exhibition, Opening Disaster Education Park, and Geopark Tour. I hope all of you will enjoy the activities and come up with fruitful results to be implemented in risk reduction programs in future.

At this moment, I would like to thanks to Andalas University as the host, BNPB as the main support and sponsor, and all parties that have contributed to this annual meeting. May Allah bless you all.

Once again I would like to welcome all of you to the PIT-IABI 5 at Andalas University. Have wonderful activities, and enjoy your stay.

Head,

DR. Harkunti Pratiwi Rahayu
Indonesian Association of Disaster Experts (IABI)

JADWAL KEGIATAN / SCHEDULE

Rabu 2 Mei 2018 / Wednesday 2nd May 2018
07:30 – 12:00 Acara Pembukaan / *Opening Ceremony*

No	Waktu	Detail
1	07.30 - 09.00	Registrasi Peserta
2	09.50 - 09.53	Wakil Presiden RI memasuki Convention Hall Unand disambut tari Galombang
3	09.53 - 10.00	Menyanyikan Lagu Indonesia Raya
		diiringi oleh Paduan Suara Mahasiswa Universitas Andalas.
4	10.00 - 10.07	Persembahan Tarian Minang "Ranah Bundo Maratok"
		dilanjutkan dengan Penyerahan Lukisan Photo kepada Wakil Presiden Republik Indonesia
5	10.07 -10.12	Laporan Ketua Pertemuan Ilmiah Tahunan-Riset Kebencanaan (PT-RB) Tahun 2018
7	10.12 - 10.22	Sambutan Rektor Universitas Andalas
8	10.22 - 10.32	Sambutan Selamat Datang Gubernur Sumatera Barat
9	10.32 - 10.42	Sambutan Kepala Badan Nasional Penanggulangan Bencana
10	10.42 - 10.50	Persembahan Rabab Biografi Bapak Muhammad Jusuf Kalla
11	10.50 - 10.55	Penyerahan Anugerah Live Time Achievement Bidang Penanggulangan Bencana kepada Wakil Presiden Indonesia
12	10.55 -11.20	Sambutan dari Wapres Bapak Dr (HC) Jusuf Kalla
13	11.20 - 11.25	Peresmian dan Pembukaan PIT dan Pameran oleh Wapres dengan Pemukulan Gong
14	11.25 - 11.30	Pembacaan Doa
15	11.30-11.45	Pencanangan 1.000 lobang biopori Kampus Unand bertempat di halaman Masjid Nurul Ilmi Kampus
16	11.30 - 12.00	Sosialisasi RIPB (Rencana Induk Penanggulangan Bencana)
17	12.00 - 13.00	Break Lunch
18	13.00 - 17.00	Keynote Lectures (detail di halaman 7)
19	17.00 - 17.30	Pemaparan Preparedness for Asian Games 2018, exploratory data analysis on Hotspot Dataset

13:00 – 17:00 Keynote Lectures

13:00 – 13:10 Short Opening

13:10 – 13:35 Plenary Talk – I

Session Chair: Febrin Anas Ismail, Dr.Eng, Andalas University

Prof. Dwikorita Karnawati, M.Sc, Ph.D (Head of Meteorological Climatological and Geophysical Agency, Indonesia)

13:35 – 15:15 Plenary Talk – II,III

Session Chair: Prof. Dilanthi Amaratunga, Huddersfield Univ, UK - Director of the Global Disaster Resilience Centre at the School of Art, Design and Architecture]

Dr. Harkunti Pertiwi Rahayu (Bandung Institute of Technology | ITB)

Prof. Richard Haigh (Huddersfield Univ, UK - Co-Director of the Global Disaster Resilience Centre at the School of Art, Design and Architecture).

15:15 – 15:30 SouvenirAwarding and Photo Session

15:30 – 15:45 BREAK

15:45 – 17:00 Plenary Talk – IV,V,VI

Session Chair: Taufika Ophiyandri, PhD, Andalas University]

Prof. Louise Comfort (Professor of Public and International Affairs and Director, Center for Disaster Management, University of Pittsburgh)

Prof. Eun Chul Shin (Vice President of ISSMGE for Asia)

Prof. Abdul Hakam (Center for Disaster Studies, Andalas University, Indonesia)

17:00 – 17:15 Souvenir Awarding and Photo Session

Rabu 2 Mei 2018 / Wednesday 2nd May 2018

19:00 – 21:30 Welcome Dinner

Venue: Auditorium Gubernuran, Jl. Sudirman Padang.

Kamis 3 Mei 2018 / Thursday 3rd May 2018

08:00 – 17:00 Seminar Nasional (lihat halaman 14)

08:00 – 17:00 International Conference (ICDM) (see page 79)

17:00 – 17:30 Closing Ceremony

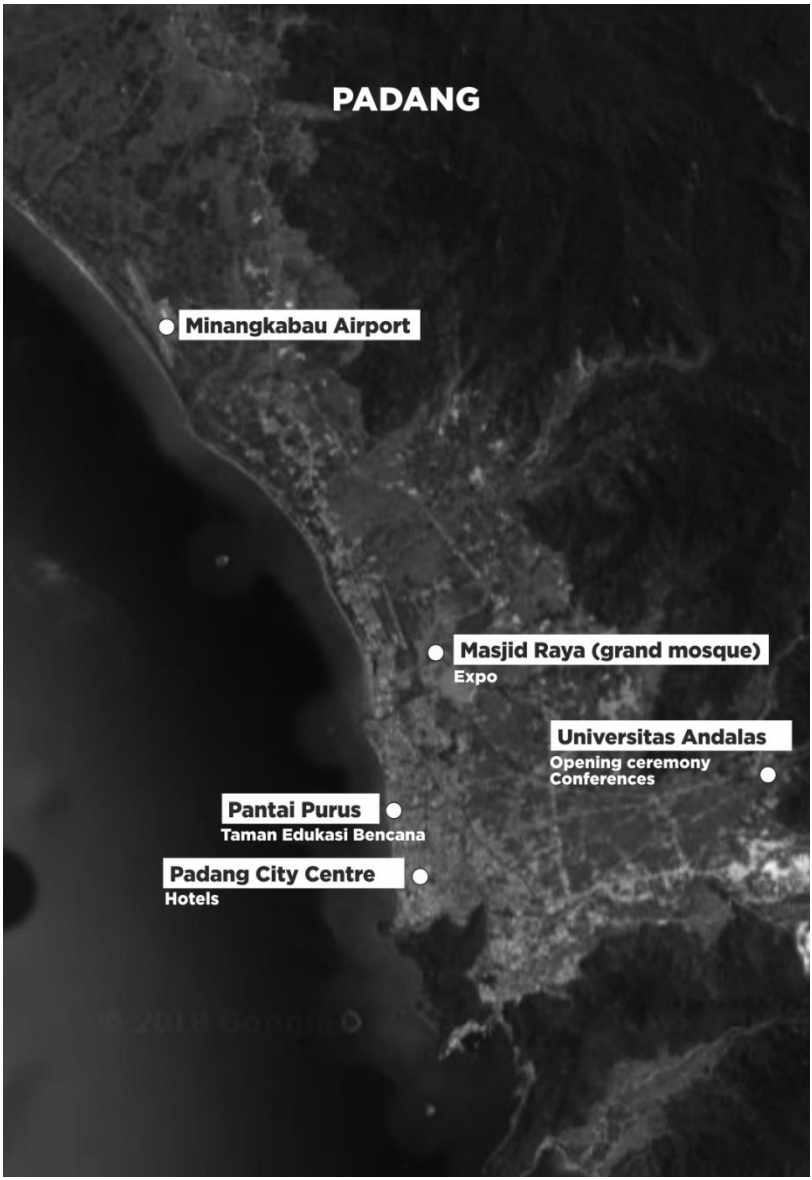
Jum'at, 4 Mei 2018 / Friday, 4th May 2018
07:00 – 18:00 Geopark Tour (Venue: Sianok Valley, Bukittinggi)

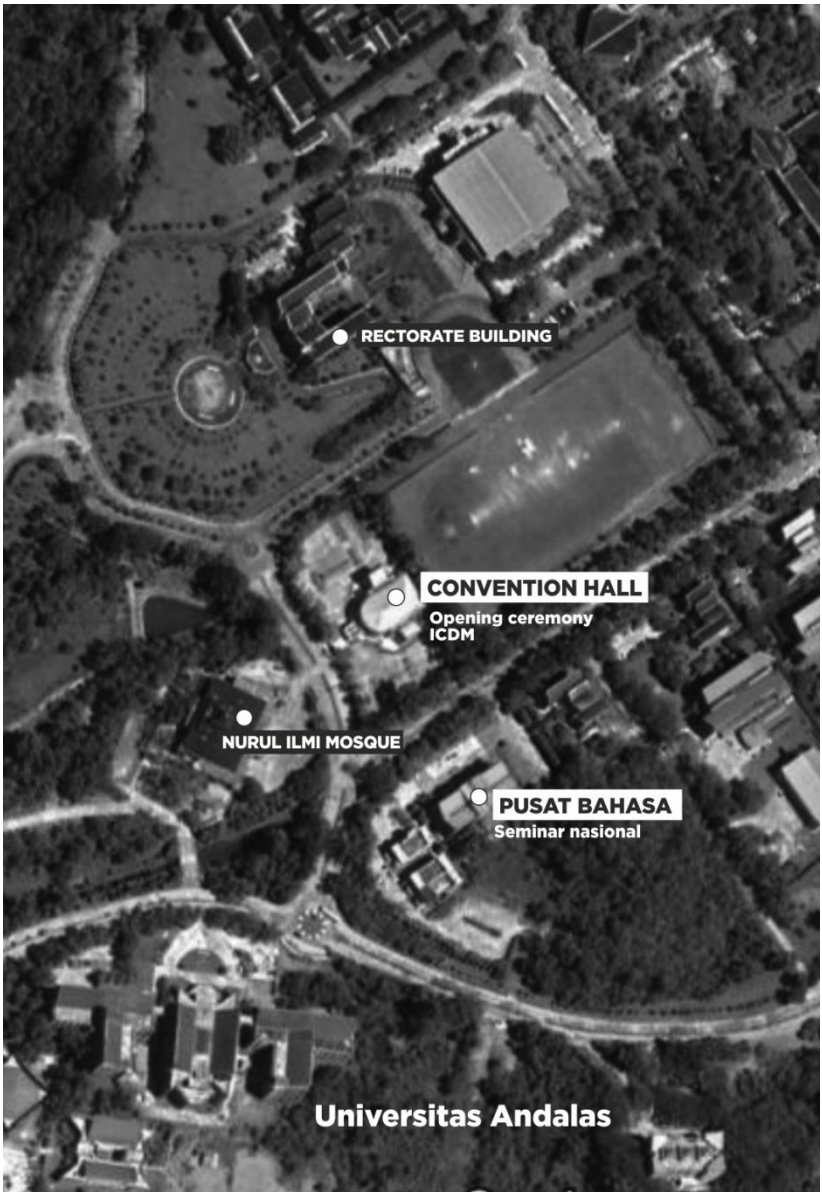
PETA LOKASI / *MAPS*

Dalam pelaksanaan PIT ke-5 IABI ini ada beberapa kegiatan yang dilaksanakan. Berikut lokasi dari kegiatan tersebut:

In this 5th Annual Scientific Meeting (PIT5-IABI) there are several activities. Venue of the activities are in the following table:

Tgl / *Date*	Kegiatan / *Activity*	Venue
01-05-18	Taman Edukasi Bencana (TEB) *Disaster Education Park*	Pantai Purus Padang
02-05-18	Acara Pembukaan / *Opening Ceremony*	Convention Hall (CH), Universitas Andalas
02-05-18	Welcome Dinner	Auditorium Gubernuran, Jl. Sudirman Padang
03-05-18	Seminar Nasional	Pusat Bahasa, Universitas Andalas
03-05-18	ICDM	Convention Hall, Universitas Andalas
04-05-18	Geopark Tour	Sianok Valley, Bukittinggi, West Sumatra


PADANG
Minangkabau Airport
Masjid Raya (grand mosque)
Expo
Universitas Andalas
Opening ceremony
Conferences
Pantai Purus
Taman Edukasi Bencana
Padang City Centre
Hotels


RECTORATE BUILDING
CONVENTION HALL
Opening ceremony
ICDM
NURUL ILMI MOSQUE
PUSAT BAHASA
Seminar nasional
Universitas Andalas

GEOPARK TOUR

NGARAI SIANOK / SIANOK VALLEY

Tanggal/Jam: 4 Mei 2018/ 07.00 – 18.00
Start : Mesjid Raya Sumatera Barat

APA ITU GEOPARK ?

Geopark Adalah sebuah konsep manajemen sumber daya keragaman bumi (geodiversity) sebagai daya tarik wisata, yang mencakup geologi, biologi, sosial-budaya dan pariwisata
Pengembangan geopark berpilar pada:

- Aspek konservasi
- Aspek edukasi
- Aspek pengembangan nilai ekonomi lokal melalui kegiatan pariwisata

Ngarai Sianok

Ngarai Sianok merupakan bagian patahan yang memisahkan pulau Sumatera menjadi dua bagian memanjang (Patahan Semangko). Patahan ini membentuk dinding yang curam bahkan tegak lurus dan membentuk lembah yang hijau hasil dari gerakan turun kulit bumi (Sinklinal) dan dialiri oleh Batang Sianok.
Patahan ini mengalami pergerakan rata-rata 2 cm pertahun relatif satu dengan lainnya. Akibat pergerakan ini dapat menimbulkan slip yang menyebabkan terjadinya gempa bumi. Tercatat gempa berulang terjadi di patahan ini yang menyebabkan kerusakan bangunan di sekitarnya. Gempa terakhir tercatat tahun 2006.

ABSTRACT & PRESENTATION SCHEDULE

Prosiding (berisi abstrak dan makalah) seminar nasional juga bisa diakses di website seminar, dengan alamat:
http://seminar.unand.ac.id/index.php/iabi/pit5iabi2018/schedConf/presentations

ICDM abstracts is also available at the conference's website at following address:
http://seminar.unand.ac.id/index.php/icdm/2018/schedConf/presentations

SEMINAR NASIONAL

National Seminar

JADWAL PRESENTASI

KAMIS, 3 MEI 2018
SEMNAS SESSION 1
VENUE : PUSAT BAHASA, RUANG1
Moderator : Dr. Adrin Tohari (Geoteknologi LIPI)
Yossyafra, PhD (Universitas Andalas)

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI I)	HAL
08:30 - 08:45	Invited Speaker	**Mikrozonasi Seismik Wilayah Pesisir Barat Sumatera** Adrin Tohar	-
08:45 - 09:00	Invited Speaker	**Pola birokrasi pemerintah daerah yang adaptif dalam merespon bencana alam (Studi Identifikasi ko-eksistensial Governing Tsunami di Mentawai)** Rijel Samaloisa	77
09:00-09:10	SEMNAS-01	**Korelasi Perubahan Penggunaan Lahan Dan Variabel Lain Sebagai Pemicu Amblesan Tanah (Studi Kasus: Semarang Utara)** Ghefra Rizkan Gaffara	24
09:10-09:20	SEMNAS-06	**Pengelolaan Hutan Lindung Dalam Kerangka Pengurangan Resiko Bencana** Bagus Herudojo Tjiptono	25
09:20-09:30	SEMNAS-16	**Ancaman Dan Potensi Gempa Bumi Di Kepahiang, Provinsi Bengkulu** Supartoyo, Litman	32
09:30-09:40	SEMNAS-29	**Pertolongan Psikologis Pertama (Psychological First Aid): Upaya Bantuan Psikososial Awal Pada Korban Bencana** Margaretha	39
09:40-09:50	SEMNAS-33	**Deteksi Potensi Dan Aktivitas Lahan Pertambangan Dengan Penginderaan Jauh** Atriyon Julzarika, Nanin Anggraini	42
09:50-10:00	SEMNAS-37	**Partisipasi Perempuan Dalam Penanggulangan Bencana Di Desa Pagerharjo, Kecamatan Samigaluh Kabupaten Kulonprogo** Titis Puspita Dewi, Anisa Eka Puspitasari, Dina Ruslanjari	45

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI I)	HAL
10:00-10:10	SEMNAS-71	**Komunikasi Guru Kepada Siswa Tentang Kesiapsiagaan Bencana Ditinjau Dari Fungsi Dasar Kelompok** Damayanti Wardyaningrum	65
10:10-10:20	SEMNAS-05	**Kesiapsiagaan Masyarakat Dalam Penanggulangan Bencana Banjir Di Lahan Pertanian Desa Sidobunder Kecamatan Puring Kabupaten Kebumen** Meita Eka Fitrianingrum, Dina Ruslanjari	24
10:20-10:30	SEMNAS-07	**Ancaman Tsunami Di Wilayah Bireuen, Aceh** Rahayu Robiana, Merry C. Natalia, Arianne P. Lewu	26
10:30-10:45		**BREAK**	
10:45-10:55	SEMNAS-13	**Pengurangan Resiko Bencana Melalui Pemanfaatan Bambu** Noverma Noverma, Asri Sawiji, Oktavi Hapsari, Yusrianti	30
10:55-11:05	SEMNAS-15	**Di Balik Proyek KNV: Perbaikan Reputasi Pemilik Lapindo** Lutfi Amiruddin	31
11:05-11:15	SEMNAS-20	**Mitigasi Banjir Melalui Operasi Pompa Dengan Pendekatan Hidrograf Satuan Sintetis Pada Waduk Tomang Barat, Jakarta** Ngakan Putu Purnaditya	34
11:15-11:25	SEMNAS-30	**Pemodelan Dan Evaluasi Mitigasi Bencana Tsunami Daerah Kota Padang** Dian Mustofa, Tika Maitela, Wedya Tri Utama, Winanda, Zuharnen	40
11:25-11:35	SEMNAS-31	**Potensi Daerah Terdampak Keruntuhan Bendungan Matenggeng Di Sungai Cijolang** Bagus Prio Utomo, Adam Pamudji Rahardjo, Djoko Legono	41
11:35-11:45	SEMNAS-34	**Penentuan Bidang Gelincir Dengan Menggunakan Metode Geolistrik Tahanan Jenis Konfigurasi Dipole-Dipole Di Kawasan Geopark Merangin** Ira Kusuma Dewi, Ichy Resta, Buhaira	43

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI I)	HAL
11:45-11:55	SEMNAS-36	**Identifikasi Kejadian Hujan Es Menggunakan Citra Radar Dan Satelit Cuaca** Immanuel Jhonson Arizona Saragih, Aries Kristianto, Gabriella Larasati, Kartika Akib	44
11:55-12:05	SEMNAS-38	**Peringatan Dini Bahaya Kebakaran Lahan Gambut Di Kesatuan Hidrologi Gambut Sungai Jangkang Sungai Liong** Nur Febrianti, Kukuh Murtilaksono, Baba Barus	46
12:05 – 12:15	SEMNAS-41	**Analisis Abrasi Dan Akresi Ujung Pangkah Dengan Menggunakan Modified Normalized Difference Water Index (Mndwi) Pada Citra Landsat** Nanin Anggraini, Atriyon Julzarika	47
12:15 – 12:30	Kata Penutup, Distribusi Sertifikat untuk penyaji dan pengumuman penghargaan paper terbaik		

KAMIS, 3 MEI 2018
SEMNAS SESSION 2
VENUE : PUSAT BAHASA, RUANG2

Moderator: Dr. Tri Handoko Seto (Balai Teknologi Modifikasi Cuaca (TMC) BPPT
Dr. Rudi Kurniawan (Universitas Andalas)

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI II)	HAL
08:30-08:45	Invited Speaker	**Building long-term national disaster resilience by promoting the Indonesian Disaster Management Master Plan 2015-2045** Suprayoga Hadi	-
08:45-09:00	Invited Speaker	**Teknologi Mitigasi Bencana Hidrometeorologi di Indonesia** Tri Handoko Seto	-
09:00-09:10	SEMNAS-23	**Deforesasi Dan Wilayah Jelajah Gajah Di Kabupaten Aceh Timur** Lady Hafidaty Rahma Kautsar, Amrih Halil	36
09:10-09:20	SEMNAS-48	**Analisis Strategi Pemeliharaan Infrastruktur Jalan Perdesaan Di Desa**	49

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI II)	HAL
		Sungai Rengas Kecamatan Sungai Kakap Kabupaten Kubu Raya Heri Azwansyah, Syafaruddin AS, Sutarto YM	
09:20-09:30	SEMNAS-22	**Pemanfaatan Limbah Oil Sebagai Bahan Bakar Pengolahan Limbah Cair** Apriliana, Syarnubi, Tiara Pradita, Arbi	36
09:30-09:40	SEMNAS-52	**Model Potensi Bahaya Gunung Api Terhadap Rencana Tapak Reaktor Daya Eksperimental (RDE) Puspitek Serpong** Anjar Heriwaseso, Mamay Surmayadi, dan I Gde Sukadana	51
09:40-09:50	SEMNAS-61	**Dampak Pengembangan Trayek Angkutan Pemadu Moda (Bus Bandara) Terhadap Penurunan Emisi Co_2** Momon	58
09:50-10:00	SEMNAS-65	**Identifikasi Penyebab Bencana Genangan Banjir Lokal Pada Sekolah-Sekolah Di Daerah Gunung Pangilun, Kota Padang** Riska Ratna Meilia, Benny Hidayat, M. Subhi Hadie	61
10:00-1010	SEMNAS-72	**Gotong Royong: Aplikasi Seluler Interaktif Dalam Manajemen Tanggap Darurat** Muhammad Anggri Setiawan, Jantan Putra Bangsa, Novia Putri, DKK	65
10:10-10:20	SEMNAS-73	**Implementasi Konseling Krisis Terintegrasi Sufi Healing Untuk Menangani Trauma Anak Usia Dini Pada Situasi Krisis Pasca Bencana** Hayatul Khairul Rahmat, Ela Nurmalasari, A. Said Hasan Basri	67
10-20 -10:30	SEMNAS-74	**Tinjauan Imbal Jasa Lingkungan Pada Daerah Aliran Sungai (DAS) Kampar Hulu (Studi Kasus Di Kecamatan Bukit Barisan, Kabupaten Limapuluh Kota)** Desi Widia Kusuma	67
10:30-10:40		**BREAK**	
10:40-10:50	SEMNAS-60	**Implikasi Jatuhan Piroklastik Dari Pemodelan Fall3d Dan Inasafe Realtime Di**	57

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI II)	HAL
		Indonesia Estu Kriswati, Oktory Prambada, Ivan Busthomi	
10:55-11:05	SEMNAS-62	**Analisis Risiko Bencana Tanah Longsor Sebagai Dasar Dalam Mitigasi Bencana Di Desa Selopamioro, Daerah Istimewa Yogyakarta, Indonesia** Yunalia Muntafi, Sri Aminatun	58
11:05-11:15	SEMNAS-64	**Pemahaman Tentang Manajemen Bencana Pada Siswa SDN Sempur Kaler Kota Bogor Sebagai Sekolah Aman Dari Bencana** Radhiya Bustan	60
11:15-11:25	SEMNAS-55	**Penggunaan Radar Cuaca Untuk Mengidentifikasi Sebaran Debu Vulkanik (Studi Kasus Letusan Gunung Sinabung 10 Januari 2014)** Teguh Setyawan, Rodhi Janu Putri	54
11:25-11:35	SEMNAS-56	**Analisis Zonasi Kawasan Perairan Dan Sempadan Danau Maninjau Dalam Upaya Mitigasi Bencana** Ana Nurganah Chaidar, Martius, Roni Kustiwan	54
11:35-11:45	SEMNAS-59	**Evaluasi Sekolah Di Daerah Patahan Opak Untuk Mitigasi Bencana Gempabumi Di Sekolah Dengan Menggunakan Perka Bnpb No 4 Tahun 2012** Muhammad Efendi, Iman Satyarno, Subagyo Pramumijoyo	56
11:45-11:55	SEMNAS-85	**IDENTIFIKASI TIPE PERAKARAN PADA LAHAN REHABILITASI BEKAS LONGSOR** Pranatasari Dyah Susanti, Arina Miardini, Alvian Febry Anggana, Beny Harjadi	76
11:55 – 12:30		Kata Penutup, Distribusi Sertifikat untuk penyaji dan pengumuman penghargaan paper terbaik	

KAMIS, 3 MEI 2018
SEMNAS SESSION 3
VENUE : PUSAT BAHASA, RUANG3

Moderator: Prof. Euis Sunarti (Pusat Studi Bencana (PSB), IPB
Yosritzal, PhD (Universitas Andalas)

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI III)	HAL
08:30-08:45	Invited Speaker	**Perspektif dimensi sosial dalam pengurangan risiko bencana** Euis Sunarti	-
08:45-09:00	Invited Speaker	**Disaster risk financing and insurance: Skema asuransi bencana alam nasional dukungan industri asuransi** Yasril Y Rasyid	-
09:00-09:10	SEMNAS-76	**Simulasi Numerik Pengaruh Konstruksi Jalan Elevated Terhadap Reduksi Dampak Gelombang Tsunami Menggunakan Dualsphycis** Tursina, Syamsidik	69
09:10-09:20	SEMNAS-77	**Pengaruh Beban Tsunami Pada Bangunan Gedung Blok B Taman Budaya Yang Berlokasi Di Pinggir Pantai Padang Sumatera Barat** Fauzan, Febrin Anas Ismail, Annisa Dalifa	70
09:20-09:30	SEMNAS-78	**Perbaikan Dan Perkuatan Bangunan Pasca Gempa Sumatera Barat Tahun 2009** Zaidir, Fauzan, Abdul Hakam	71
09:30-09:40	SEMNAS-79	**Pengaruh Beban Gempa Berdasarkan Peta Sumber Dan Bahaya Gempa Indonesia 2017 Terhadap Respon Struktur Gedung Rusunawa Universitas Andalas** Fauzan, Ruddy Kurniawan, Ravinda Mashelvia	71
09:40-09:50	SEMNAS-08	**Analisis Efisiensi Penerapan Kebijakan Penanggulangan Bencana Banjir Das Sampean** Hadi Wijono	27
09:50-10:00	SEMNAS-12	**Komunikasi Risiko Kesehatan Pencegahan Penyakit Dbd Akibat Banjir** Shinta Nasution	29
10:00-1010	SEMNAS-70	**Konservasi Pengelolaan (Umbul) Mata Air Dengan Pendekatan Budaya Lokal Masyarakat Lereng Gunung Merapi Di**	64

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI III)	HAL
		Kabupaten Klaten Latifah Widya Asri, Siti Taurat Aly, Suharjo, Miftahul Rozaq	
10:10-10:20	SEMNAS-11	**Tanah Longsor Sebagai Bencana Yang Paling Mematikan Dan Upaya Mitigasinya** Ratih Nurmasari, Nurul Maulidhini, Suprapto	28
10-20 - 10:30	SEMNAS-17	**Persepsi Petani Nilam Terhadap Asuransi Banjir Di Aceh Jaya** Agus Nugroho, Annisa Fitrah	32
10:30 - 10:45	SEMNAS-21	**Analisis Kepuasan Masyarakat Kota Palopo Terhadap Kegiatan Penanggulangan Bencana** Ratih Nurmasari, Ainun Rosyida, Supriadi	35
10:45 - 10:55		**BREAK**	
10:55 - 11:05	SEMNAS-67	**Pengaruh Perubahan Musim Terhadap Produktivitas Garam Di Kecamatan Pangenan Kabupaten Cirebon Tahun 2013 Dan 2014** Amrih Halil	62
11:05 - 11:15	SEMNAS-75	**Pemetaan Kerentanan Kebakaran Hutan Dan Lahan Berbasis Sistem Informasi Geografis Pada Wilayah Non-Gambut** Seniarwan, Muhammad Syarif, Syahrul, Ridwan Yunus	68
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11:35 – 11:45	SEMNAS-83	**Analisis Risiko Dan Mitigasi Bencana Banjir Untuk Daerah Muara Labuh Dan Sekitarnya**	74

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11:45 – 11:55	SEMNAS-82	**Kajian Bencana Abrasi Pantai Dan Akresi Provinsi Sumatera Barat Periode 2003-2016** Haryani	73
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KAMIS, 3 MEI 2018
SEMNAS SESSION 4
VENUE : PUSAT BAHASA, RUANG 4
Moderator: Dr. Hendro Wardhono (Wa. Ketua IABI PSBL, Univ. Dr.Soetomo)
Purnawan, PhD (Universitas Andalas)

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI IV)	HAL
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08:45-09:00	Invited Speaker	**Sains dan Teknologi untuk PRB di Asia, kondisi dan tantangannya** Sugeng Triutomo	-
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11:15-11:25	SEMNAS-53	**Implementasi Pendidikan Mitigasi Bencana Di Sekolah-Sekolah Di Indonesia Sebagai Upaya Pembentukan Karakter Siswa Siap Siaga** David Rizaldy	52

WAKTU	PAPER CODE	JUDUL & PEMAKALAH (SESI IV)	HAL
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SEMNAS-01 / ID-102

KORELASI PERUBAHAN PENGGUNAAN LAHAN DAN VARIABEL LAIN SEBAGAI PEMICU AMBLESAN TANAH (STUDI KASUS: SEMARANG UTARA)

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ABSTRACT

Semarang merupakan salah satu wilayah yang memiliki risiko terhadap beberapa bencana diantaranya adalah amblesan tanah. Tujuan penelitian ini mengetahui korelasi antara variabel yaitu perubahan penggunaan lahan, kepadatan penduduk, muka air tanah, dan amblesan. Metode penelitian yang digunakan yaitu (1) identifikasi penggunaan lahan dan faktor lainnya; (2) interpretasi citra untuk mengetahui perubahan lahan; (3) korelasi antar variabel. Hasil penelitian penelitian menunjukkan bahwa beberapa faktor termasuk penggunaan lahan menjadi penyebab amblesan tanah di wilayah studi. Persentase perubahan lahan sebesar 49,99 % untuk perubahan lahan kosong menjadi lahan yang akan dibangun dan industri pergudagangan. Korelasi antara perubahan penggunaan lahan dengan kepadatan penduduk adalah berbanding lurus, hal yang sama pada Muka Air Tanah (MAT), perubahan penggunaan lahan tidak memiliki hubungan terhadap amblesan tanah.

SEMNAS-05 / ID-113

KESIAPSIAGAAN MASYARAKAT DALAM PENANGGULANGAN BENCANA BANJIR DI LAHAN PERTANIAN DESA SIDOBUNDER KECAMATAN PURING KABUPATEN KEBUMEN

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ABSTRACT

Desa Sidobunder yang berada Kecamatan Puring Kabupaten Kebumen merupakan daerah rutin terjadi bencana banjir terutama di lahan pertanian. Banjir di wilayah pertanian dapat berdampak terhadap

kehidupan terutama masyarakat yang bermatapencaharian sebagai petani. Kesiapsiagaan masyarakat dalam penanggulangan bencana sangat diperlukan agar tetap bertahan di wilayah rawan bencana banjir. Penelitian ini bertujuan untuk menganalisis kesiapsiagaan masyarakat petani di Desa Sidobunder dalam menghadapi banjir di lahan pertanian berdasarkan wilayah rawan tinggi dan rawan sedang. Metode yang digunakan dalam penelitian ini menggunakan observasi, in-depth interview, dan kuesioner. Metode observasi dan in-depth interview kepada informan kunci (kepala desa dan ketua kelompok tani) digunakan untuk mengetahui kesiapsiagaan masyarakat dalam menghadapi bencana banjir di lahan pertaniannya. Parameter yang digunakan untuk mengetahui kesiapsiagaan pada tahap prabencana yakni, rencana kedaruratan, kesepakatan formal dan informal, dan sumberdaya pendukung; pada tahap tanggap darurat yakni penyesuaian diri dalam keadaan darurat dan pemulihan (coping); sedangkan tahap pascabencana yakni inisiasi pemulihan. Jawaban pernyataan 'ya' diberi skor 1 dan 'tidak' diberi skor 0. Pengkategorian pada hasil akhir penelitian menggunakan skor hipotetik dengan kriteria tinggi, sedang, dan rendah. Hasil penelitian ini menunjukkan bahwa tingkat kesiapsiagaan masyarakat Desa Sidobunder termasuk dalam kategori tinggi (69,35%). Tindakan kesiapsiagaan dipengaruhi oleh faktor pengetahuan, kepemilikan alat pertanian, dan penyuluhan pertanian. Terdapat perbedaan yang signifikan antara kesiapsiagaan di wilayah rawan tinggi dan rawan sedang yang disebabkan masyarakat petani di wilayah rawan tinggi memiliki karakteristik sosial dan ekonomi yang lebih baik.

SEMNAS-06 / ID-117

PENGELOLAAN HUTAN LINDUNG DALAM KERANGKA PENGURANGAN RESIKO BENCANA

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ABSTRACT

Pada beberapa tahun terakhir ini banyak terjadi bencana alam berupa bencana hidrometeorologis di Indonesia. Bencana tersebut antara lain

kekeringan, banjir dan tanah longsor. Tujuan penulisan makalah ini adalah untuk memberikan penjelasan peran hutan lindung dalam menurunkan resiko bencana hidrometeorologis, khususnya banjir, kekeringan dan tanah longsor. Berdasarkan pengetahuan peran hutan lindung tersebut diharapkan dapat menjadi acuan penetapan upaya-upaya konkrit dan tepat sasaran dalam kaitannya dengan pengelolaan hutan lindung dalam konteks penanggulangan bencana hidrometeorologis. Peran dan mekanisme hutan lindung dalam menurunkan kemungkinan terjadinya bencana hidrometeorologi yaitu banjir bandang, tanah longsor dan kekeringan berturut-turut adalah menjaga kondisi tutupan vegetasi tetap pada kerapatan yang tinggi, menjaga stabilitas lereng, meningkatkan nilai kapasitas penahanan air. Upaya peningkatan peran dan pengelolaan hutan lindung antara lain: Penyesuaian tata ruang dan pemanfaatan hutan, Penguatan regulasi dan organisasi pengelola hutan lindung, Pemanfaatan hutan lindung, penyelesaian konflik hutan lindung.

SEMNAS-07 / ID-126

ANCAMAN TSUNAMI DI WILAYAH BIREUEN, ACEH

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ABSTRACT

Hasil pemodelan menunjukkan wilayah Bireuen berpotensi terdampak tsunami terutama jika terjadi gempa bumi lebih besar dari Mw 8,9 dengan ketinggian tsunami di pesisir Bireuen antara 1-4 m dan waktu tiba gelombang antara 56-110 menit sejak terjadi gempa bumi. Berdasarkan pengamatan lapangan diketahui bahwa mayoritas pesisir pantai Bireuen merupakan wilayah pantai landai dengan kemiringan rata-rata sekitar 0-4^{o} serta tutupan lahan berupa pantai terbuka, pantai vegetasi lebat, dan pantai campuran, sehingga dapat diketahui jarak landaan maksimum di pantai Bireuen sekitar 30-900 m ke arah darat. Hasil tumpang susun dengan foto citra satelit, landaan tsunami akan berdampak terhadap pemukiman penduduk seperti terjadi di Samalanga, Simpang Mamplam, Matang Pasi, dan Blang Dalam

SEMNAS-08 / ID-127

ANALISIS EFISIENSI PENERAPAN KEBIJAKAN PENANGGULANGAN BENCANA BANJIR DAS SAMPEAN

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ABSTRACT

Penelitian ini bertujuan 1) mengetahui efisiensi penerapan kebijakan penanggulangan banjir DAS Sampean; 2) mengidentifikasi kekuatan, kelemahan, tantangan dan hambatan penerapan kebijakan penanggulangan bencana banjir DAS Sampean; 3) merumuskan strategi meningkatkan efisiensi penerapan kebijakan penanggulangan bencana banjir DAS Sampean di Kabupaten Situbondo. Metode penelitian yang digunakan adalah metode study kebijakan dan metode deskriptif kualitatf. Penelitian ini menggunakan data primer dan data sekunder. Data primer diperoleh melalui Focus Group Discussion (FGD) untuk mendapatkan identifikasi temuan dan penilaian efisiensi penerapan kebijakan penanggulangan banjir DAS Sampean Kabupaten Situbondo. Sedangkan, data sekunder diperoleh dari kajian literatur dan data yang dipublikasikan oleh lembaga resmi. Berdasarkan penelitian yang telah dilakukan didapat hasil bahwa 1) Penerapan kebijakan penanggulangan bencana banjir DAS Sampean cenderung dilakukan secara terpisah baik dari pemangku kebijakan maupun sasaran kebijakan yang akan di capai; 2) mengetahui potensi dan merumuskan strategi kebijakan penaggulangan bencana banjir DAS sampean ;3) Strategi yang dapat diterapkan dalam meningkatkan efisiensi penerapan kebijakan penanggulangan bencana banjir DAS Sampean adalah strategi pengelolaan DAS Sampean secara terpadu, baik struktural maupun non-struktural dengan mengikutsertakan seluruh elemen masyarakat.

SEMNAS-10 / ID-142

PENGARUH TINGKAT KEBISINGAN TERHADAP RENCANA LAY OUT BANGUNAN DI PANTAI CAROCOK PAINAN

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ABSTRACT

Pollution does not only occur in the air, soil, and water, but also including noise pollution in the form of noise. Noise is defined as unwanted sound or a loud noise that was not pleasant. Noise can give harmful effects to health that can cause deafness, neurological disorders, Menal disorders, heart problems, high blood pressure, dizziness and even insomnia. Teradap study the influence of the noise level with the building layout plan in Turkish Carocok Painan conducted Around Carocok Beach area. The purpose of this study is to determine the effect of the noise level with the Building Management Plan in Turkish Carocok Painan. Measurements were performed using an Soud Level Meter and interviews with people around Turkish Carocok Painan. From the results peneliiitian found that the noise level in Area Parking Beach Carocok, Housing Residents within ±300 m, at the Housing Residents within ±650 m and at the Housing Residents within ±900 m during holidays or during a regular day exceeds the quality standards set by the State Minister of Environment No. KEP-48/MENLH/11/1996 on Standards Noise Level endures areas Recreation is 70 db (A).

SEMNAS-11 / ID-168

TANAH LONGSOR SEBAGAI BENCANA YANG PALING MEMATIKAN DAN UPAYA MITIGASINYA

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ABSTRACT

Salah satu target prioritas pada Kerangka Kerja Sendai untuk Pengurangan Risiko Bencana adalah pengurangan kematian akibat bencana. Untuk itu, penting untuk diketahui bencana apa yang selama ini menyebabkan korban meninggal paling banyak. Berdasarkan data historis kejadian bencana selama 5 tahun terakhir, disimpulkan bahwa bencana tanah longsor adalah bencana yang paling mematikan. Wilayah yang paling rentan terhadap bencana tanah longsor adalah Provinsi Jawa Barat, Jawa Tengah, dan Jawa Timur. Beberapa upaya mitigasi bencana longsor yang dapat dilakukan adalah mengimplementasikan peraturan penataan dan pemanfaatan ruang

yang ketat, penerapan sistem peringatan dini tanah longsor yang lengkap, penguatan kelembagaan dan peningkatan partisipasi masyarakat.

SEMNAS-12 / ID-171

KOMUNIKASI RISIKO KESEHATAN PENCEGAHAN PENYAKIT DBD AKIBAT BANJIR

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ABSTRACT

Intensitas curah hujan yang tinggi pada bulan Desember-Februari menyebabkan banjir di beberapa wilayah di Indonesia. Genangan air akibat banjir sering menimbulkan risiko munculnya penyakit salah satunya DBD. Oleh karena itu, penting dilakukan peningkatan kegiatan surveilans dan upaya promosi kesehatan pada daerah yang berisiko terkena bencana. Komunikasi risiko kesehatan berperan menjembatani kegiatan promosi kesehatan melalui deseminasi informasi pencegahan DBD sebelum timbulnya banjir pada saat musim hujan tiba. Keterlibatan Sismantik (Siswa Pemantau Jentik) sebagai mitra strategis instansi kesehatan dalam upaya pencegahan penyakit DBD perlu didukung bentuk media yang tepat. Hasil penelitian sebelumnya menunjukkan komik manga menjadi media andalan bagi anak-anak. Sementara infografis berperan penting dalam situasi risiko dan krisis sebagai media penyebarluasan informasi. Penelitian ini bertujuan untuk menganalisis pengaruh media visual dan perbandingan efektivitas manga dan infografis bagi Sismantik dalam komunikasi tentang risiko kesehatan dan pencegahan penyakit DBD saat dan pasca banjir. Studi menggunakan true experiment dengan desain faktorial 2x2 yang membagi 116 siswa Madrasah Ibtidaiyah di Kecamatan Bojong Gede secara acak ke dalam empat kelompok perlakuan yang menerima pesan positif dan negatif dan 27 siswa sebagai kelompok kontrol. Perlakuan media visual terbukti mampu memberikan efek berupa peningkatan pemahaman informasi, persepsi risiko dan sikap Sismantik terhadap pencegahan penyakit DBD dibanding kelompok kontrol. Hasil uji Duncan dapat diketahui media visual yang paling efektif untuk meningkatkan pemahaman informasi adalah infografis, sedangkan dalam meningkatkan persepsi risiko adalah manga.

Namun, perlakuan media visual belum mampu meningkatkan persepsi risiko negatif Sismantik. Kedua media visual memiliki tingkat efektivitas yang sama dalam meningkatkan sikap terhadap pencegahan penyakit DBD.

SEMNAS-13 / ID-177

PENGURANGAN RESIKO BENCANA MELALUI PEMANFAATAN BAMBU

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ABSTRACT

Bambu merupakan tanaman yang mudah tumbuh di wilayah Indonesia. Sejak zaman dahulu masyarakat telah mengenal dan memanfaatkan bambu. Diantaranya digunakan sebagai bahan bangunan, senjata, alat rumah tangga, alat transportasi dan lain-lain. Namun saat ini beberapa jenis bambu mengalami kepunahan karena minimnya pengetahuan masyarakat dan asumsi tentang bambu yang identik dengan kemiskinan. Penelitian ini dilakukan untuk mengetahui pemanfaatan dan pelestarian bambu sebagai warisan budaya dalam upaya memperkecil risiko bencana, terutama gempa bumi, tanah longsor dan banjir. Metode penelitian dilakukan dengan mengumpulkan data, observasi dan eksplorasi dengan tenaga ahli, praktisi, masyarakat dan berbagai rujukan yang relevan. Hasil penelitian menunjukkan bahwa keunggulan dan morfologi bambu memiliki akar rimpang, ringan, elastis dan kekuatan tarik tinggi, sehingga bambu dapat menjadi bahan alternatif solusi untuk mengurangi risiko banjir, tanah longsor dan bencana gempa.

SEMNAS-14 / ID-180

KAJIAN REOLOGI LONGSORAN DAN MUDFLOW DI INDONESIA

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ABSTRACT

Analisis konvensional untuk penentuan keamanan lereng di dunia geoteknik umumnya berdasarkan pada konsep faktor keamanan. Pada kebanyakan

kasus, perhitungan ini berada hanya pada daerah sumber longsoran dan belum menjangkau proses transportasi dan deposisi setelah lereng mengalami pergerakan tanah. Oleh karena itu, pendekatan reologi misalnya model Bingham (yield stress dan viskositas) diaplikasikan pada penelitian ini. Sebanyak 12 kasus kejadian pergerakan tanah di Indonesia dikaji. Sejauh ini jenis tanah halus yang berpotensi menyebabkan longsoran dan mudflow adalah jenis tanah lanau berplastisitas tinggi. Analisis dilakukan dimulai dari pengumpulan data di lapangan, pengambilan sampel terganggu, pengujian di laboratorium, pemodelan numerik dengan software tertentu, dan interpretasi hasil. Makalah ini memberikan kontribusi, setidaknya dari seluruh longsoran dan mudflow yang terjadi di Indonesia, bagaimana mekanisme pergerakan, tipe tanah, rule of thumb untuk rasio posisi source hingga deposition area, inovasi uji laboratorium baru (flow box test), serta usulan klasifikasi longsoran dan mudflow berdasarkan pendekatan reologi. Beberapa contoh penanggulan pergerakan tanah disampaikan untuk memberikan gambaran proteksi terhadap longsoran dan mudflow.

SEMNAS-15 / ID-181

DI BALIK PROYEK KNV: PERBAIKAN REPUTASI PEMILIK LAPINDO

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ABSTRACT

Tulisan ini dilatarbelakangi oleh proyek pembangunan pemukiman kembali bagi penyintas lumpur Lapindo, yaitu Kahuripan Nirwana Village (KNV). Meski tak pernah tercantum dalam Perpres 14/2007, Lapindo justru getol memprosikan proyek ini kepada penyintas. Lalu, mengapa terjadi hal demikian? Dengan menggunakan metode kualitatif, dengan teknik wawancara dan observasi kepada beberapa informan, dan memanfaatkan data sekunder, tulisan ini berusaha mengungkap alasan-alasan di balik proyek KNV. Proyek penyediaan KNV sesungguhnya, bukan bertujuan memulihkan kondisi sosial ekonomi warga, melainkan hanya upaya memulihkan nama baik pemilik perusahaan.

SEMNAS-16 / ID-183

ANCAMAN DAN POTENSI GEMPA BUMI DI KEPAHIANG, PROVINSI BENGKULU

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ABSTRACT

Kepahiang merupakan salah satu daerah rawan gempabumi di Indonesia. Sumber gempabumi daerah Kepahiang berasal dari zona subduksi di laut dan sesar aktif di darat. Sumber gempabumi yang berpotensi untuk mengakibatkan terjadinya bencana gempabumi berasal dari sesar aktif di darat. Berdasarkan analisis data sebaran pusat gempabumi merusak, sebaran dampak gempabumi merusak, dan struktur geologi, sumber gempabumi daerah Kepahiang berasal dari pergerakan sesar aktif yaitu Segmen Musi Sesar Sumatera dan sesar Sempiang. Aktivitas pergerakan kedua sesar aktif tersebut berpotensi mengakibatkan terjadinya bencana, meskipun magnitudo yang dihasilkan tidak terlalu besar, namun mempunyai kedalaman dangkal sehingga bersifat merusak. Segmen Musi Sesar Sumatera pernah mengakibatkan terjadinya gempabumi merusak pada tahun 1979, sedangkan sesar Sempiang mengakibatkan gempabumi merusak pada tahun 1997 dan 2017. Oleh karena daerah Kepahiang rawan terhadap gempabumi, maka diperlukan upaya mitigasi melalui mitigasi struktural dan mitigasi non struktural. Upaya mitigasi tersebut bertujuan untuk meminimalkan risiko bencana gempabumi yang mungkin akan terulang di kemudian hari.

SEMNAS-17 / ID-184

PERSEPSI PETANI NILAM TERHADAP ASURANSI BANJIR DI ACEH JAYA

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ABSTRACT
Dampak kerusakan akibat banjir pada sektor pertanian semakin meningkat selama sepuluh tahun terakhir. Gagal panen dan kerusakan lahan yang disebabkan oleh banjir tidak pernah diiringi proses ganti rugi menyebabkan petani semakin rentan terhadap resiko bencana di masa depan. Penelitian ini bertujuan untuk menganalisis persepsi petani nilam di Aceh Jaya tentang asuransi bencana sebagai mekanisme perlindungan dari dampak banjir. Hasil studi ini menunjukkan bahwa banjir merupakan bencana yang paling sering terjadi dan menimbulkan dampak kerugian yang besar. Petani masih menggantungkan metode konvensional dalam menanggulangi dampak kerugian. Rendahnya tingkat pengetahuan petani terhadap manfaat asuransi menyebabkan rendahnya tingkat kesediaan petani untuk bergabung dalam program asuransi. Terakhir, studi ini juga merekomendasikan beberapa alternatif kebijakan pembiayaan bencana ex-ante yang dapat dilakukan oleh para pemangku kepentingan.

SEMNAS-18 / ID-186

ANALISIS PERBANDINGAN TINGKAT RESILIENSI ANTARA PETANI DAN PEDAGANG : STUDI KASUS PASCA GEMPABUMI PIDIE JAYA

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ABSTRACT
Dampak gempa di Pidie Jaya tidak hanya berupa kehilangan nyawa, rusaknya infrastruktur, tetapi juga kerungian pada sektor ekonomi dan sosial. Sektor perdagangan dan pertanian merupakan dua sektor yang terdampak besar pasca gempa tersebut. Penelitian ini bertujuan menganalisis tingkat reseliensi antara pedagang dan petani pasca gempa bumi di kabupaten Pidie Jaya. Hasil penelitian ini menunjukkan bahwa penghasilan pedagang mengalami penurunan sekitar 50 persen dari pendapatan sebelum gempa. Sedangkan dampak ekonomi yang dirasakan oleh petani adalah berkurangnya hasil panen akibat tidak dilakukan

perawatan tanaman karena rasa trauma. Pedagang memiliki kecepatan waktu sembuh dibandingkan dengan petani. Petani cenderung lebih memilih pekerjaan lain sebagai mekanisme bertahan hidup selama tahap rehabilitasi dan rekontruksi. Tidak terdapat perubahan mata pencaharian pada pedagang. Hasil penelitian ini juga menunjukkan bahwa pedagang memiliki tingkat reseliensi yang lebih tinggi di bandingkan dengan petani.

SEMNAS-19 / ID-202

PSIKOLOGI, MEDIA DAN BENCANA AVIASI

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ABSTRACT

Pada 28 Desember 2014, hilangnya flight QZ 8501 menjadi titik awal pengalaman keluarga penumpang menghadapi bencana. Bencana kecelakaan pesawat yang menyebabkan keluarga terpisah dari orang-orang yang dikasihi selamanya. Setelah bencana, sebagian keluarga masih berjuang memproses duka dan menunggu berita akankah bertemu kembali dengan jenazah keluarganya. Berita menjadi sesuatu yang ditunggu, bukan hanya keluarga namun juga masyarakat. Di awal tahun 2015, Indonesia menyaksikan pemberitaan peristiwa bencana QZ 8501 berkembang meluas, intensif dan terus-menerus. Himpunan Psikologi Indonesia (HIMPSI) terlibat dalam misi kemanusiaan ini, baik dalam memberikan layanan psikologis pada orang-orang yang terdampak dari bencana penerbangan ini, namun juga berperan dalam memberikan psikoedukasi bagi media dan masyarakat secara luas. Tulisan ini akan mengulas perspektif psikologi dalam dalam hubungan antara bencana aviasi, media dan psikologi manusia.

SEMNAS-20 / ID-204

MITIGASI BANJIR MELALUI OPERASI POMPA DENGAN PENDEKATAN HIDROGRAF SATUAN SINTETIS PADA WADUK TOMANG BARAT, JAKARTA

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ABSTRACT

Waduk Tomang Barat merupakan bagian dari sistem polder Tomang-Tanjung Duren, Jakarta Barat. Sistem polder ini terdiri atas 8 jaringan drainase, waduk dan pompa pengendali banjir. Sebagai kontrol dan mitigasi banjir pada sistem polder, kita tidak hanya membutuhkan saluran drainase dengan kapasitas yang mencukupi, tetapi juga kapasitas pompa dan pengoperasiannya mengingat elevasi pada sistem polder lebih rendah daripada saluran utama. Waduk Tomang Barat memiliki 8 pompa untuk kontrol banjir di kecamatan Tanjung Duren yang dibagi menjadi 2 tipe meliputi 4 pompa dengan kapasitas 1 m^3/dt dan 4 pompa dengan kapasitas 1,74 m^3/dt. Pengoperasian pompa bergantung pada debit inflow yang masuk ke waduk yang berasal dari sistem drainase. Paper ini menggambarkan mitigasi banjir melalui pengoperasian pompa dengan tujuan efektifitas pengoperasian. Debit inflow diukur dengan HSS-SCS dan hal tersebut mengubah level muka air sepanjang waktu. Skema operasi pompa bergantung pada periode ulang banjir rencana. Berdasarkan hasil analisa, untuk periode ulang 2 tahun (Q_{50}), pengoperasikan pompa tidak signifikan, untuk periode ulang 5 tahun (Q_{20}), pengoperasian pompa dilakukan bergantian, sedangkan untuk periode ulang 25 tahun (Q_4) dan 50 tahun (Q_2), seluruh tipe pompa harus dioperasikan. Skema ini dapat digunakan oleh operator pompa sebagai sebuah sistem peringatan dini untuk memulai pemompaan ketika level muka air waduk mencapai ketinggian tertentu.

SEMNAS-21 / ID-212

ANALISIS KEPUASAN MASYARAKAT KOTA PALOPO TERHADAP KEGIATAN PENANGGULANGAN BENCANA

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ABSTRACT

Kota Palopo adalah salah satu kota yang memiliki risiko bencana cukup tinggi, bahkan merupakan yang tertinggi di Provinsi Sulawesi Selatan. Pemerintah Kota Palopo sudah melakukan beberapa kegiatan terkait penanggulangan bencana di wilayahnya. Importance and Performance Analysis digunakan untuk mengevaluasi kegiatan penanggulangan bencana

yang telah dilakukan sekaligus untuk mengetahui kegiatan apa yang perlu ditingkatkan. Hasil yang diperoleh menunjukkan bahwa kegiatan yang perlu ditingkatkan adalah rehabilitasi dan rekonstruksi kawasan bencana serta pengelolaan sarana dan prasarana penanggulangan bencana.

SEMNAS-22 / ID-213

PEMANFAATAN LIMBAH OIL SEBAGAI BAHAN BAKAR PENGOLAHAN LIMBAH CAIR

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ABSTRACT

Dengan semakin pesatnya perkembangan industri dewasa ini, akan meningkatkan jumlah limbah dari proses basil. Hal ini berdampak pada semakin menurunya tingkat kesehatan pada mahluk hidup yang ada karena keseimbangan lingkungan yang terganggu. Penelitian ini mencoba untuk mengurangi jumlah limbah oil dengan Cara memanfaatkan limbah oil sebagai bahan bakar pengganti. Limbah cair berupa oil bisa dmanfaatkan menjadi bahan bakar untuk mengurangi penggunaan bahan bakar gas. Tujuan utama dari penelitian ini adalah untuk mengetahui pengaruh penggunaan limbah oil terbadap laju alir bahan bakar gas pada sistem insenerasi limbah cair. Metode penelitian yang digunakan adalah pengamatan secara aktual. Teknik pengumpulan data dilakukan dengan cara menambahkan laju alir limbah oil pada laju alir pembacaan control valve, dan teknik simak catat. Berdasarkan hasil penelitian, terbukti bahwa limbah oil dapat digunakan sebagai bahan bakar alternatif. Penurunan laju alir natural gas sebesar 14.4% berada pada kondisi laju alir limbah oil dan limbah oil ester berturut-turut sebesar 600 kg/h dan 400 kg/h.

SEMNAS-23 / ID-214

DEFORESASI DAN WILAYAH JELAJAH GAJAH DI KABUPATEN ACEH TIMUR

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ABSTRACT
Berkurangnya hutan atau deforesasi semakin meluas di Kabupaten Aceh Timur untuk keperluan perkebunan, pertanian dan permukiman. Hutan di Sumatera, termasuk di wilayah Kabupaten Aceh Timur merupakan habitat Gajah Sumatera (Elephas maximus sumatranus). Namun, perambahan mengakibatkan fauna ini terancam kelestariannya. Gajah Sumatera merupakan satwa langka yang dilindungi Undang-Undang baik sejak kolonial Belanda, pasca RI merdeka, maupun peraturan internasional. Gajah memiliki peran ekosistem yang penting, tetapi dipandang sebagai gangguan bagi ekonomi lokal di Kabupaten Aceh Timur, sehingga tidak sedikit disetrum, dibunuh dan dianiaya. Tulisan ini mengulas deforesasi terhadap Gajah Sumatera di Kabupaten Aceh Timur. Hasil studi menunjukkan wilayah jelajah gajah bersinggungan dengan deforesasi yang terjadi di Kabupaten Aceh Timur. Sebagai alternatif ekonomi lokal, masih ada potensi ekowisata dengan maskot Gajah Sumatera. Dengan demikian Gajah Sumatera masih tetap dapat lestari dan hutan sebagai habitatnya tetap terjaga.

SEMNAS-24 / ID-216

PEMANFAATAN TEKNOLOGI INFORMASI DALAM KESIAPSIAGAAN MENGHADAPI LETUSAN GUNUNG AGUNG PROVINSI BALI (STUDI: PENGGUNAAN APLIKASI INAWARE)

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ABSTRACT
Indonesia memiliki 127 gunung api aktif yang dapat meletus setiap saat. Pada tahun 2017 Gunung Agung mengalami peningkatan status ke level siaga pada tanggal 18 September 2017 dan naik level awas pada tanggal 22 September 2017. Peningkatan level ini direspon dengan mengungiskan masyarakat di Kawasan berbahaya ke tempat yang lebih aman. InAWARE merupakan aplikasi BNPB yang dapat digunakan untuk upaya kesiapsiagaan letusan Gunung Agung. Hasil dari InAWARE menunjukkan bahwa ada 127 unit sekolah dan 26 kantor pemerintahan di Kawasan rawan bencana letusan Gunung Agung. Ada 3 pelabuhan terdekat yang dapat digunakan untuk proses evakuasi jika letusan besar benar-benar terjadi. Selain itu,

InAWARE juga menampilkan lokasi rumah sakit terdekat yang dapat digunakan sebagai rujukan korban akibat bencana.

SEMNAS-25 / ID-225

HUBUNGAN MODAL SOSIAL BERKAITAN DENGAN KESIAPSIAGAAN KELUARGA DALAM MENGHADAPI BENCANA DI KOTA TERNATE

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ABSTRACT

Bencana muncul saat ancaman menemui orang-orang yang rentan yang memiliki kemampuan rendah atau tidak memiliki kemampuan untuk menanggapi ancaman tersebut. Kesiapsiagaan adalah fase paling kritis dalam pengelolaan bencana, ketidakcukupan perencanaan kesiapsiagaan bencana telah menciptakan situasi kritis, meningkatkan penderitaan orang-orang yang selamat dan kehilangan nyawa. Tujuan dari penelitian ini adalah untuk menganalisis faktor modal sosial yang paling mempengaruhi kesiapan keluarga menghadapi dampak bencana di Kota Ternate. Penelitian ini menggunakan desain deskriptif analitik dengan pendekatan Cross sectional study. Responden dalam penelitian ini adalah 113 Kepala Keluarga (KK) dengan menggunakan sistematik random sampling. Penelitian ini dilakukan di empat kecamatan yaitu Tubo, Maliaro, Toboko, dan Loto. Hasil uji Chi-square menunjukkan bahwa ada hubungan sosial modal (p = 0,000) terhadap kesiapan keluarga menghadapi dampak bencana di kota Ternate. Hasil uji regresi logistik menunjukkan bahwa modal sosial memiliki kekuatan hubungan yang paling kuat (p = 0,022, OR = 2,725) dibandingkan faktor lainnya. Hasil ini menunjukkan adanya hubungan positif antara modal sosial keluarga dalam menghadapi dampak bencana di Kota Ternate. Artinya modal sosial yang baik akan meningkatkan kesiapan keluarga dalam menghadapi dampak bencana. Hasil penelitian ini diharapkan menjadi bahan dasar dan referensi untuk layanan keperawatan bencana serta menjadi dasar bagi pemerintah daerah Ternate untuk mendorong sikap positif keluarga terhadap kesiapan dengan memanfaatkan modal sosial sebagai komponen penting dan memanfaatkan sosial. kohesi dan jaringan sosial dalam perencanaan dan pengelolaan bencana, akan mempersiapkan

bencana. Hilangkan hambatan kesiapsiagaan bencana seperti sikap negatif terhadap kesiapan, kurangnya partisipasi, penilaian risiko yang tidak realistis dengan pelatihan dan kampanye kesiapsiagaan bencana.

SEMNAS-26 / ID-226

GERAKAN TANAH PADA ZONA PATAHAN DI DESA BANTAR AGUNG, KECAMATAN JAMPANG TENGAH, KABUPATEN SUKABUMI, JAWA BARAT

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ABSTRACT

Gerakan tanah terjadi di Desa Bantar Agung, Kecamatan Jampang Tengah, Kabupaten Sukabumi, Provinsi Jawa Barat, yang secara geografis terletak pada koordinat $07^0$05˝ 12" LS dan 106^0 43" 12" BT. Gerakan tanah di daerah ini menyebabkan: Setidaknya 3 (tiga) rumah hancur dan beberapa rumah terancam. Jenis gerakan tanah berupa pergerakan rotasi dengan arah ke barat. Adapun factor-faktor penyebab terjadinya gerakan tanah di lokasi ini antara lain:Morfologi yang sangat curam, batuan yang relatif lapuk/ teralterasi, adanya indikasi struktur sesar, dan kemudian dipicu oleh curah hujan yang tinggi. Mekanisme terjadinya gerakan tanah adalah, kelerengan yang sangat curam >20^o akibat adanya struktur sesar dan juga lipatan tegak yang menyebabkan area ini menjadi labil. Batuan yang berupa perselingan batupasir dan batulanau yang dipengaruhi oleh struktur menyebabkan batas plastisitas batuan terlampaui dan mempermudah terjadinya gerakan tanah. Pengaruh air yang masuk kedalam tanah melewati retakan dan rekahan dapat memicu terjadinya pergerakan tanah.

SEMNAS-29 / ID-231

PERTOLONGAN PSIKOLOGIS PERTAMA (PSYCHOLOGICAL FIRST AID): UPAYA BANTUAN PSIKOSOSIAL AWAL PADA KORBAN BENCANA

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ABSTRACT
Setelah bencana, manusia dapat menghadapi berbagai kerusakan fisik, psikologis dan sosial. Hal ini berdampak besar karena dapat memunculkan persoalan psikis dalam jangka pendek dan jangka panjang. Pertolongan Psikologis Pertama atau Psychological First Aid (PFA) adalah suatu pendekatan bantuan psikososial manusia pasca bencana yang humanis, praktis, dan mendukung pada orang-orang yang mengalami bencana/krisis. PFA bertujuan untuk memberikan pertolongan agar korban bencana merasa aman; terhubung dengan lingkungan dan sumber bantuan fisik, psikologis, dan sosial yang ia butuhkan; serta mengembangkan kembali perasaan mampu mengendalikan hidupnya sendiri. Biasanya, PFA akan dilakukan hingga 4-6 minggu awal setelah kejadian bencana. Hal ini akan membuat orang-orang menjadi lebih tangguh atau resilien dalam menghadapi bencana/krisisnya. Oleh karena itu, tepatlah PFA untuk dilakukan dalam proses pemberian bantuan pada manusia di masa awal bencana. PFA dapat digunakan setelah peristiwa krisis atau traumatis, seperti: bencana alam/akibat manusia, situasi kedaruratan, atau krisis personal. PFA akan menangani pemenuhan kebutuhan dasar dan mengurangi stress dan tekanan psikologis yang dialami manusia dalam situasi bencana dengan cara melayani dengan kepedulian yang tulus dan peduli, serta memberikan psikoedukasi tentang bagaimana mengelola reaksi stress dalam situasi bencana. Hal-hal ini akan mengembangkan perasaan berdaya pada pengungsi, dan pada kelanjutannya dapat mendukung berkembangnya kemampuan pengelolaan krisis pada penyintas bencana.

SEMNAS-30 / ID-232

PEMODELAN DAN EVALUASI MITIGASI BENCANA TSUNAMI DAERAH KOTA PADANG

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ABSTRACT
Keberadaan lempeng tektonik yang ada di Indonesia menyebabkan berpotensi untuk terjadi tsunami. Banyaknya kejadian gempa di Sumatra Barat disebabkan oleh tatanan tektonik yaitu Zona Subduksi antara lempeng tektonik India-Australia dengan lempeng Eurasia. Batas antar 2 (dua)

lempeng ini terdapat zona subduksi dangkal atau yang disebut sebagai Megathurst Subduction Sumatera. Kepadatan penduduk yang tinggi pada kota Padang ini tentunya menjadi suatu masalah jika terjadi tsunami, terutama evakuasi saat terjadinya bencana. Penelitian yang dilakukan bermaksud untuk memperbanyak jalur evakuasi dengan mempertimbangkan kepadatan penduduk. Asumsi yang digunakan yaitu banyaknya orang yang menggunakan jalur evakuasi maka dapat memperlambat gerakan masyarakat untuk mencapai daerah yang lebih aman. Oleh karena itu penting adanya pembagian terhadap jalur evakuasi. Pemodelan tsunami dilakukan berdasarkan variasi ketinggian tsunami yang dipilih yaitu ketinggian 5 meter, 10 meter, 15 meter, hingga ketinggian gelombang 20 meter. Ketinggian gelombang 5 m masih belum terlalu berdampak signifikan terhadap kota Padang. Akan tetapi pada ketinggian 10-20 meter jelas terlihat bahwa gelombang tsunami sudah berada atau merambat ke dalam kota. Proses evakuasi dapat dilakukan dengan beberapa cara seperti ketika terjadi gempa pergi ke tempat yang lebih tinggi atau juga dapat dilakukan evakuasi vertical. Evakuasi

SEMNAS-31 / ID-245

POTENSI DAERAH TERDAMPAK KERUNTUHAN BENDUNGAN MATENGGENG DI SUNGAI CIJOLANG

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ABSTRACT

Bendungan Matenggeng yang rencana akan dibangun di Sungai Cijolang merupakan bendungan multifungsi yang memiliki banyak manfaat bagi masyarakat diantaranya untuk mengairi lahan irigasi, air baku, pengendalian banjir, pembangkit tenaga listrik, dan pariwisata. Selain memiliki banyak manfaat, pembangunan bendungan juga menyimpan potensi bahaya yang sangat tinggi. Salah satu potensi bahaya yang dapat terjadi adalah keruntuhan bendungan yang diakibatkan adanya rekahan karena limpasan air pada puncak bendungan (overtopping) ataupun rekahan karena adanya rembesan di tubuh bendung (piping). Keruntuhan Bendungan akan menimbulkan banjir bandang yang sangat besar sehingga dapat menyebabkan timbulnya korban jiwa dan kerusakan harta

benda.Dengan menggunakan program HEC-RAS 5.0.3, didapatkan hasil bahwa pada skenario keruntuhan overtopping, dimensi spillway Bendungan Matenggeng masih mampu untuk melewatkan debit Maksimum Boleh Jadi (QPMF) sebesar 9.067 m^3/s sehingga air tidak sampai melimpas ke puncak bendungan. Pada skenario keruntuhan piping, diperkirakan luas genangan mencapai 52.935 ha didominasi ketinggian genangan 1-3 m dengan prosentase 68,64%. Banjir ini diperkirakan akan menggenangi 158 desa, 1.313 km jalan, dan 768 fasilitas umum. Hampir separuh dari luas wilayah yang tergenang masuk kategori bahaya banjir tinggi hingga ekstrim dengan lahan sawah dan permukiman merupakan wilayah yang paling banyak masuk dalam kategori tersebut.

SEMNAS-33 / ID-252

DETEKSI POTENSI DAN AKTIVITAS LAHAN PERTAMBANGAN DENGAN PENGINDERAAN JAUH

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ABSTRACT

Saat ini satelit telah berkembang secara signifikan. Satelit penginderaan jauh berupa sensor optik, SAR, Microwave, dan LIDAR telah berperan dalam berbagai aplikasi seperti energi dan sumber daya mineral. Peran tersebut berupa pembuatan model tinggi dan pendeteksian potensi energi dan sumber daya mineral. Potensi ini berupa geothermal, batubara, tembaga, emas, tanah jarang, dan lain sebagainya. Penelitian ini bertujuan untuk pendeteksian potensi dan aktifitas lahan pertambangan dengan penginderaan jauh. Metode integrasi digunakan untuk pembuatan model tinggi, sedangkan metode backscaterring dan geodesi fisis digunakan untuk pendeteksian potensi energi dan sumber daya mineral. Integrasi model tinggi ini menggunakan data ALOS PALSAR, Icesat/Glass, SRTM, dan X SAR. Metode backscaterring ini menggunakan data ALOS PALSAR. Geodesi fisis ini berupa pendekatan dengan gaya berat, medan magnet, dan geodinamika dengan memanfaatkan integrasi berbagai satelit geodesi berupa Grace, Champ, GOCE, dan SWARM. Penelitian ini bisa dilakukan secara efisien biaya dan efektif dalam waktu pengerjaannya. Hasil penelitian bisa digunakan untuk berbagai aplikasi geologi dan pertambangan.

SEMNAS-34 / ID-254

PENENTUAN BIDANG GELINCIR DENGAN MENGGUNAKAN METODE GEOLISTRIK TAHANAN JENIS KONFIGURASI DIPOLE-DIPOLE DI KAWASAN GEOPARK MERANGIN

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ABSTRACT

Bencana tanah longsor dapat terjadi pada daerah kawasan Geopark Merangin terutama pada jalur akses menuju Air Terjun Muara Karing. Berdasarkan hasil penelitian diperoleh bahwa pada lokasi pengukuran, struktur lapisan dibawwah permukaan terdiri dari jenis batu pasir, batu lempung dan kandungan air. Nilai resistivitas dari batu pasir berkisar antara 83-503 Ώm, nilai resistivitas dari batu lempung adalah 916-1670Ώm dan kandungan air dengan nilai resistivitas yang sangat kecil (25 -45,6 Ώm). Pada lokasi pengukuran bahaya tanah longsor cukup besar dikarenakan ditemukan bidang gelincir yang mengindikasikan rawan terhadap pergerakan tanah. Adanya perbedaan ketinggian yang sangat besar dari setiap lintasan pengukuran yang menunjukkan bahwa lokasi pengukuran merupakan perbukitan yang sangat curam.

SEMNAS-35 / ID-256

STUDI POTENSI KAWASAN EDUWISATA SUNGAI (STUDI KASUS: HULU DAS ASAHAN, KABUPATEN ASAHAN, SUMATERA UTARA)

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ABSTRACT

Penelitian ini bertujuan untuk mengidentifikasi wisata alam berpotensi sebagai kawasan eduwisata di Hulu DAS Asahan dan memetakan sebaran potensi kawasan eduwisata di Hulu DAS Asahan. Populasi dalam penelitian ini adalah Hulu DAS Asahan. Teknik pengumpulan data dengan teknik survey dan studi dokumenter. Teknik pengolahan data secara deskriptif. Instrumen

untuk mengidentifikasi potensi eduwisata adalah kondisi fisik dan memetakan sebaran potensi dengan data persebaran wisata berpotensi eduwisata. Kondisi fisik DAS Asahan adalah sarana dan prasarana untuk pemukiman kurang memadai sedangkan untuk eduwisata belum memadai. Kondisi alam adalah letak wisata strategis di jalur Kabupaten Toba Samosir dan Kabupaten Asahan; kondisi hidrologi terdapat Sungai Asahan; kondisi geologi hasil tuff toba; penggunaan lahan sawah dan perkebunan. Kondisi aksesibilitas adalah lokasi strategis karena jalur Kabupaten Toba Samosir dan Kabupaten Asahan. Potensi pengunjung adalah Air Terjun Ponot, Bendungan Sigura-Gura, Air Terjun Siarimo, Sungai Asahan, Gardu PLTA Asahan, Air Terjun Batu Rangin.

SEMNAS-36 / ID-257

IDENTIFIKASI KEJADIAN HUJAN ES MENGGUNAKAN CITRA RADAR DAN SATELIT CUACA

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ABSTRACT

Hujan es (hail) merupakan salah satu bencana hidrometeorologis sulit diprakirakan karena berlangsung cepat. Metode terbaik untuk mendeteksi kejadian hujan es adalah menggunakan analisis citra radar dan satelit cuaca. Radar dan satelit merupakan metode penginderaan jauh (remote sensing) yang memiliki prinsip pengamatan yang berbeda. Citra radar dan satelit cuaca umumnya digunakan untuk prakiraan jangka pendek (nowcasting). Salah satu metode indentifikasi kejadian hujan es menggunakan citra radar cuaca adalah metode Severe Hail Index (SHI). Parameter citra radar yang dianalisis diantaranya adalah nilai SHI, Possibility of Severe Hail (POSH), dan Maximum Expected Hail Size (MEHS). Data citra satelit cuaca digunakan untuk menganalisis variasi suhu puncak awan secara temporal (time series) dan spasial. Dalam kajian ini dilakukan analisis kejadian hujan es di wilayah Surabaya dan Jakarta. Hasil kajian menunjukkan bahwa citra radar dan satelit cuaca dapat mengidentifikasi

kejadian hujan es di wilayah Surabaya dan Jakarta. Citra radar cuaca mendeteksi kejadian hujan es pada ketinggian -20°C. Di lain sisi, citra satelit mendeteksi kejadian hujan es pada suhu puncak awan kurang dari -80°C.

SEMNAS-37 / ID-265

PARTISIPASI PEREMPUAN DALAM PENANGGULANGAN BENCANA DI DESA PAGERHARJO, KECAMATAN SAMIGALUH KABUPATEN KULONPROGO

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ABSTRACT

Letak Indonesia yang berada pada garis khatulistiwa mengakibatkan negara ini memiliki iklim tropis sehingga rawan bencana hidrometeorologis seperti banjir, kekeringan, puting beliung maupun tanah longsor. Banyaknya ancaman bencana harus diimbangi dengan penanggulangan bencana yang matang sehingga ketika bencana terjadi masyarakat Indonesia sudah siap dalam menghadapi kejadian tersebut. Penanggulangan bencana dilakukan oleh seluruh masyarakat Indonesia baik perempuan maupun laki-laki tanpa harus membedakan gender. Salah satu wilayah yang telah melaksanakan penanggulangan bencana yang responsif gender, yaitu Desa Pagerharjo, Kecamatan Samigaluh, Kabupaten Kulonprogo, Provinsi Daerah Istimewa Yogyakarta. Desa Pagerharjo merupakan wilayah yang rawan longsor karena berada pada daerah perbukitan dengan lereng yang curam (>450). Bencana longsor tersebut memerlukan kepekaan dan keterlibatan dari semua bagian masyarakat termasuk perempuan. Adapun metode penelitian yang digunakan adalah deskriptif kualitatif dengan analisis gender CVA (Capacities and Vulnerabilities Analysis). Tujuan dari penelitian ini adalah menganalisa partisipasi perempuan dalam penanggulangan bencana di Desa Pagerharjo. Hasil dari penelitian ini adalah adanya partisipasi perempuan dalam upaya penanggulangan bencana seperti partisipasi perempuan dalam tim KSB (Kelompok Siaga Bencana), dalam kerja bakti membuat tanggul untuk mengurangi bencana longsor, dan keikutsertaannya saat terjadi bencana longsor. Keterlibatan yang dilakukan belum secara menyeluruh dan masih banyak perempuan yang belum berpartisipasi karena masih adanya ketimpangan gender. Partisipasi perempuan ini

setidaknya cukup untuk menunjukkan bahwa perempuan memiliki kapasitas dalam penanggulangan bencana.

SEMNAS-38 / ID-266

PERINGATAN DINI BAHAYA KEBAKARAN LAHAN GAMBUT DI KESATUAN HIDROLOGI GAMBUT SUNGAI JANGKANG SUNGAI LIONG

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ABSTRACT

Bencana kebakaran hutan dan lahan (karhutla) semakin hari semakin memperhatinkan. Kahutla 2015 tidak sebanyak 2014, namun kerugian yang dialami lebih banyak daripada akibat kahutla 2014. Karhutla di gambut hampir terjadi setiap tahun di Sumatera dan Kalimantan. Sifat tanah gambut yang mudah kehilangan air dan kandungan bahan organik yang tinggi menyebabkan tanah ini sangat sensitif terhadap api. Karena itu perlu suatu cara peringatan dini untuk mencegah potensi terjadi karhutla. Tujuan dari penelitian ini adalah menentukan tinggi muka air tanah (TMA) kritis sebagai indikator kebakaran lahan gambut. Penentuan titik kritis terjadinya kebakaran lahan gambut sebagai peringatan dini kebakaran dilakukan dengan cara menghitung selisih dari nilai TMA terdangkal dengan kisaran kemungkinan kesalahan yang diperoleh (RMSE). Model estimasi TMA data lapangan memiliki kisaran terjadinya kebakaran antara 74.3-107 cm. Pada model estimasi TMA indeks kekeringan diperoleh bahwa kebakaran terjadi pada TMA berkisar antara 27-101 cm. Model estimasi gabungan hasil rekomendasi memberikan nilai berkisar antara 66.8-98.8 cm terjadinya kebakaran di lahan gambut. Titik kritis kedalaman muka air tanah gambut berkisar antara 27 hingga 74 mm. Kedalaman muka air tanah lahan gambut hendaknya tetap dipertahankan kurang dari titik kritis, jika tidak kekeringan yang berimbas terhadap kebakaran gambut akan terjadi.

SEMNAS-40 / ID-280

SIMULASI NUMERIK PADA RESIKO BANJIR BANDANG PASCA BENCANA LONGSOR DI BANARAN, PONOROGO

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ABSTRACT

Bencana longsor yang menerjang kawasan permukiman di Desa Banaran, Kabupaten Ponorogo, Jawa Timur memberi pelajaran berharga tentang pentingnya untuk mengontrol kegiatan alih fungsi lahan. Tujuan dari penelitian terkait investigasi kawasan terdampak tanah longsor ini adalah untuk mengetahui dampak yang terjadi akibat bencana longsor tersebut. Dengan menggunakan pesawat tanpa awak atau UAV (Unmanned Aerial Vehicle) digunakan untuk mengetahui secara detail kawasan yang terdampak, kemudian dilakukan analisis spasial secara 3D terhadap volume tanah longsor yang menimbun Desa Banaran. Dengan teknologi SIG dan simulasi numerik maka dapat diketahui bagaimana kondisi kawasan terdampak sebelum terjadi longsor, sehingga dapat pula diketahui dengan pasti properti warga yang terkena longsor seperti jumlah rumah, luas lahan pertanian, dan asset lain yang berada di kawasan longsor

SEMNAS-41 / ID-287

ANALISIS ABRASI DAN AKRESI UJUNG PANGKAH DENGAN MENGGUNAKAN MODIFIED NORMALIZED DIFFERENCE WATER INDEX (MNDWI) PADA CITRA LANDSAT

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ABSTRACT

Pesisir sangat rentan terhadap bencana baik secara alami ataupun akibat ulah manusia. Salah satu peristiwa alam yang merusak pesisir adalah erosi pantai (abrasi). Proses abrasi menjadi penyebab berubahnya garis pantai oleh karena itu perlu adanya pemantauan, salah satunya dengan menggunakan teknologi penginderaan jauh. Landsat adalah satelit lingkungan yang dapat digunakan untuk monitor wilayah pesisir. Metode

Modified Normalized Difference Water Index (MNDWI) dapat digunakan untuk deteksi adanya perubahan di wilayah pesisir. MNDWI adalah algoritma sederhana yang menggunakan kombinasi dari sinar tampak dengan infra merah untuk membedakan antara objek badan air dan daratan dengan jelas. Hal ini disebabkan karena objek badan air mampu menyerap panjang gelombang sinar tampak dan infra merah dengan kuat. Tujuan dari penelitian ini adalah untuk deteksi abrasi dan akresi di Ujung Pangkah Gresik Jawa Timur dari data Landsat. Data yang digunakan adalah Landsat 7 tanggal 28 April 2000 dan Landsat 8 tanggal 9 September 2017 dengan path/row 118/065. Hasil pengolahan menunjukkan luas abrasi mencapai 2,5 km2 dan akresi 8,9 km2. Diharapkan hasil dari penelitian ini dapat digunakan sebagai referensi untuk pengambilan kebijakan pengelolaan pesisir yang berkelanjutan.

SEMNAS-47 / ID-312

PENGARUSUTAMAAN GENDER PADA IMPLEMENTASI DESA/KELURAHAN TANGGUH BENCANA DALAM RANGKA KAMPANYE BUDAYA SADAR BENCANA

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ABSTRACT

Pengarusutamaan gender sangat berperan dalam membentuk ketangguhan masyarakat dan sebagai sarana kampanye budaya sadar bencana. Yaitu dimana perempuan dan laki-laki mempunyai akses dan kontrol terhadap sumber daya, memperoleh manfaat pembangunan dan pengambilan keputusan yang sama disemua tahapan proses pembentukan Desa/Kelurahan Tangguh Bencana. Pengarusutamaan gender pada implementasi Kelurahan Tangguh Bencana di Kelurahan Panaragan, Kecamatan Bogor Tengah, Kota Bogor tidak hanya melihat ketimpangan akses, partisipasi, kontrol dan manfaat antara laki-laki dan perempuan namun juga menyangkut ketimpangan terhadap pemenuhan kebutuhan kelompok rentan lain seperti: anak-anak, lansia, etnis minoritas, penyandang disabilitas, dan warga miskin. Berdasarkan penilaian dan pengamatan fasilitator bersama para aktor yang terlibat langsung dalam kegiatan Kelurahan Tangguh Bencana, pengarusutamaan gender pada

implementasi Kelurahan Tangguh Bencana dalam rangka kampanye budaya sadar bencana di Kelurahan Panaragan, Kecamatan Bogor Tengah, Kota Bogor termasuk ke dalam kategori Baik. Dari 6 kategori dan 20 indikator keberhasilan penilaian Desa/Kelurahan Tangguh Bencana, indikator Pelibatan perempuan dalam tim relawan meraih skor tertinggi yaitu 78,3%. Hal ini merupakan kapasitas yang dimiliki kelurahan Panaragan yang perlu dipertahankan, sedangkan kapasitas untuk indikator lainnya perlu ditingkatkan lagi agar diseminasi budaya sadar bencana kepada masyarakat semakin optimal.

SEMNAS-48 / ID-315

ANALISIS STRATEGI PEMELIHARAAN INFRASTRUKTUR JALAN PERDESAAN DI DESA SUNGAI RENGAS KECAMATAN SUNGAI KAKAP KABUPATEN KUBU RAYA

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ABSTRACT

Studi ini bertujuan untuk menentukan strategi pemeliharaan jalan perdesaaan di Desa Sungai Rengas. Data yang diperlukan antara lain peta jaringan jalan, kondisi jalan, lingkungan jalan, dan manfaat jalan. Metode survei berupa observasi lapangan dan interview. Analisis dilakukan dengan metode IRAP. Penelitian ini menganalisis 6 (enam) jalan desa yaitu Jalan Pemuda, Jalan Budi Utomo, Jalan Bujang Taro, Jalan Markaban Darat, Jalan Tanjung, dan Jalan Raya Sungai Berembang. Hasil analisis bahwa Jalan Sungai Berembang memiliki nilai manfaat jalan terbesar yaitu 16,92. Jalan Sungai Berembang merupakan prioritas pertama dimana perbaikan jalan dilakukan dengan overlay.

SEMNAS-49 / ID-319

MENCERMATI KEUNIKAN BENCANA GEOLOGI DI INDONESIA

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ABSTRACT

Geological disasters are a naturally occurring disaster where the time of occurrence can not be predicted. based on the source of occurrence, geological disasters are divided into: earthquakes and volcanoes. The aim of this paper for more detailed derivation of major geological disasters in order to perform mapping in an area of potential disasters. The earthquake generally has a derivative of other disasters that tsunamis, landslides and subsidence. Volcanic disasters have derivatives, lava flows, hot clouds, cold lava floods and ash rain. To determine geological disasters and derivatives need to know the potential of major disasters. The layout of the area that has the potential geological disasters can be estimated by using the plates tectonic concept. Thus it can be concluded that an area that has been done geological disaster assessment and its derivatives will make it easier to plan its mitigation.

SEMNAS-51 / ID-325

PELIBATAN MASYARAKAT LOKAL DALAM PENANGGULANGAN ERUPSI GUNUNG SINABUNG

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ABSTRACT

Prinsip-prinsip dalam penanggulangan bencana di Indonesia adalah cepat dan tepat, prioritas, koordinasi dan keterpaduan, berdaya guna dan berhasil guna, transparansi dan akuntabilitas, kemitraan, pemberdayaan, nondiskriminatif, dan nonproletisi. Berdasarkan prinsip-prinsip tersebut, salah satu bentuk upaya yang dapat dilakukan adalah membentuk kelompok dukungan. Penelitian ini bertujuan untuk mengetahui bagaimana proses pembentukan salah satu kelompok dukungan yang ada di Tanah Karo yaitu Komunitas Beidar Sinabung. Selain itu ingin mengetahui bagaimana kegiatan yang dilakukan dan bentuk kemitraan yang dibangun. Penelitian ini menggunakan pendekatan kualitatif. Teknik pengambilan data yang digunakan dalam penelitian ini terbagi dua, yaitu data primer dan sekunder. Data primer terdiri dari: data observasi dan wawancara. Data sekunder terdiri dari studi dokumentasi dan studi pustaka. Teknik analisis datanya yaitu: koping terbuka, koding aksial dan koding selektif. Berdasarkan hasil penelitian diperoleh kesimpulan yaitu proses

terbentuknya Beidar Sinabung sebagai salah satu kelompok dukungan yang ada di Tanah Karo berawal dari adanya suatu kebutuhan akan dukungan masyarakat dalam menyebarluaskan informasi yang benar mengenai erupsi Gunung Sinabung kepada masyarakat yang berada di Lingkar Sinabung. Adapun kegiatan utama yang dilakukan oleh komunitas ini adalah sosialisasi terkait bencana erupsi Gunung Sinabung. Meskipun demikian, para relawan juga turut memantau aktivititas Gunung Sinabung dari titik-titik pantau yang berada di Lingkar Sinabung dan terus berkoordinasi dengan Pusat Vulkanologi & Mitigasi Bencana Geologi dan Pemerintahan Daerah Kabupaten Karo. Selain itu, relawan juga terlibat dalam proses evakuasi masyarakat dan membantu memperbaiki rumah warga. Relawan Beidar Sinabung juga membangun kemitraan dengan Komunitas Simfoni dan Forum Komunikasi Warga Sinabung & fihak-fihak terkait lainnya.

SEMNAS-52 / ID-327

MODEL POTENSI BAHAYA GUNUNGAPI TERHADAP RENCANA TAPAK REAKTOR DAYA EKSPERIMENTAL (RDE) PUSPITEK SERPONG

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ABSTRACT

Pemanfaatan energi nuklir sebagai energi terbaharukan menjadi harapan baru dalam pemenuhan energi nasional khususnya Indonesia sebagai negara berkembang untuk mencapai tingkat efektivitas dan efisiesi tinggi dibidang energi. Pengkajian dan penelitian detail dalam pembuatan tapak saat ini menjadi isu utama khususnya aspek keamanan dan keselamatan terutama terhadap ancaman potensi bahaya gunungapi dalam radius <150km. Potensi tersebut berupa bahaya letusan hidrotermal Ciseeng, aliran dan jatuhan piroklastik serta aliran lahar dari G. Gede dan G. Salak. Jarak tapak dari G. Salak sekitar 41 km dan 60 km dari G. Gede. Metodologi evaluasi potensi bahaya dilakukan secara terintegrasi dari pengambilan data lapangan, analisis laboratorium sebagai input parameter dan validasi pemodelan bahaya gunungapi baik secara deterministik dan probabilistik.Hasil evaluasi dari model potensi menunjukan kemungkinan

erupsi freatik hidrotermal Ciseeng hanya 3 km dan tidak berdampak, demikian juga ancaman aliran piroklastik G. Gede dan G. Salak sebagai representasi kapabilitas gunungapi tipe A yang mempunyai tipe vulkanian-subplinian hanya menjangkau hingga 8,5 km. Hanya potensi jatuhan abu vulkanik secara deterministik adalah berdampak terhadap tapak RDE dengan ketebalan endapan antara 0,2-1 cm yang berasal dari Gunungapi Salak, sedangkan yang berasal dari G. Gede antara 0,05-0,5 cm. Sedangkan Potensi aliran lahar dari G. Gede dan G. Salak hanya dapat mencapai tapak jika volume potensi lahar > 60 jutam^3.

SEMNAS-53 / ID-350

IMPLEMENTASI PENDIDIKAN MITIGASI BENCANA DI SEKOLAH-SEKOLAH DI INDONESIA SEBAGAI UPAYA PEMBENTUKAN KARAKTER SISWA SIAP SIAGA

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ABSTRACT

Indonesia merupakan negara yang rawan akan terjadinya bencana alam.Berdasarkan perspektif geografi, geologi, klimatologi, dan demografi, Indonesia menempati peringkat ke 7 sebagai negara paling rawan akan risiko bencana alam (UNESCO). Berdasarkan data BNPB Tahun 2017, tercatat 2.163 kejadian bencana alam di Indonesia dengan rincian korban meninggal sebanyak 264 jiwa, korban luka sebanyak 1.018 jiwa dan korban mengungsi sebanyak 3.220.739 jiwa. Bencana alam juga menyebabkan rusaknya fasilitas umum dengan rincian fasilitas kesehatan 99 unit, fasilitas peribadatan 524 unit dan fasilitas pendidikan 1.146 unit.Salah satu upaya pencegahan yang paling efektif untuk mengurangi dampak risiko bencana adalah dari sektor pendidikan.Pendidikan adalah usaha sadar dan terencana untuk membentuk karakter siswa melalui penanaman pengetahuan dan keterampilan.Pendidikan adalah hal yang fundamental dalam membentuk karakter generasi bangsa. Pendidikan dapat memberikan pengetahuan dan keterampilan siswa dalam menghadapi bencana alam. Pendidikan mitigasi bencana adalah kebutuhan esensial yang diperlukan siswa guna mengurangi dampak bencana alam baik di masa sekarang

maupun yang akan datang.Saat ini materi pendidikan kebencanaan masih sedikit dipelajari di sekolah-sekolah di Indonesia. Meskipun siswa telah diajarkan beberapa cara menanggulangi bencana alam namun hal tersebut masih kurang. Hal ini disebabkan oleh beberapa faktor seperti tidak adanya mata pelajaran yang khusus untuk mempelajari bencana alam,waktu pembelajaran yang kurang dan kurangnya simulasi bencana yang diajarkan di sekolah.Pendidikan mitigasi bencana dapat disisipkan kedalam beberapa mata pelajaran. Selain itu pendidikan kebencanaan juga kedalam kegiatan ekstrakurikuler yang ada di sekolah. Sehingga dengan strategi tersebut dapat memberikan dampak positif bagi perkembangan karakter siap siaga siswa.

SEMNAS-54 / ID-351

AKTIVITAS TERKINI GUNUNGAPI SINABUNG: ERUPSI 19 FEBRUARI 2018

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ABSTRACT

Lebih dari 7 tahun setelah G. Sinabung dinyatakan sebagai gunungapi tipe A, erupsi G. Sinabung masih berlangsung hingga saat ini. Sejak level aktivitas tertinggi, Level 4 (Awas), yang ditetapkan pada tanggal 2 Juni 2015, masih belum menunjukkan kapan erupsi G. Sinabung akan berakhir. Berbagai macam metode pengamatan mulai dari visual, seismik, deformasi, dan geokimia, digunakan dalam mempelajari tingkah laku dari G. Sinabung. Aktivitas vulkanik G. Sinabung sejak meletus September 2013 lalu, menunjukkan perubahan dimulai dari letusan freatik, ke letusan magmatik, berubah dengan munculnya kubah lava hingga terjadinya awan panas. Dua tahun belakangan ini erupsi lebih didominasi dengan guguran lava dan awan panas. Pada tanggal 19 Februari 2018, dengan 2 hari sebelumnya diawali swarm gempa-gempa Volcano-Tektonik (VT), terjadi letusan eksplosif yang cukup besar dengan tinggi letusan lebih dari 5 km dari atas puncak. Letusan ini juga diikuti dengan awan panas letusan (APL) dan kemudian diikuti dengan 11 APG. Jarak luncur ke arah sektor selatan-tenggara mencapai 4.9 km, sedangkan ke arah sektor timur-tenggara mencapai 3.5 km. Sebaran abu vulkanik menyebar hingga ke provinsi Aceh. Potensi bahaya

lain akibat penumpukan material awan panas ini adalah lahar yang alirannya masuk ke sungai Lao Borus.

SEMNAS-55 / ID-361

PENGGUNAAN RADAR CUACA UNTUK MENGIDENTIFIKASI SEBARAN DEBU VULKANIK (STUDI KASUS LETUSAN GUNUNG SINABUNG 10 JANUARI 2014)

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ABSTRACT

Pemantauan areal erupsi gunung berapi secara real time dan kontinyu diperlukan untuk memberikan informasi cepat kepada masyarakat dan user terkait karena rupsi gunung berapi aktif dengan formasi sebaran debu vulkanik merupakan salah satu ancaman bencana di Indonesia. Radar cuaca memiliki kemampuan mendeteksi partikel awan debu vulkanik akibat letusan gunung berapi, memiliki resolusi spasial dan temporal yang tinggi untuk mengidentifikasi material dan arah sebaran debu vulkanik. Penelitian ini menggunakan Radar Doppler single polarization untuk memantau debu vulkanik dalam erupsi Gunung Sinabung di Sumatra Utara pada tanggal 10 Januari 2014. Analisis menggunakan produk CAPPI V untuk memprediksi arah sebaran debu vulkanik dan MAX dBZ yang kemudian akan dilakukan cross section untuk melihat nilai reflektifitas debu vulkanik, mengidentifikasi tinggi kolom letusan, pola sebaran, dan klasifikasi material debu vulkanik. Nilai indeks reflektifitas diganti pada tampilan produk radar sehingga sesuai dengan klasifikasi material awan debu vulkanik dilihat dari nilai dBZ-nya. Hasil dari identifikasi menunjukkan material vulkanik saat erupsi primer Gunung Sinabung mencapai nilai maksimum 48 dBZ dan tinggi kolom erupsi hingga 12 km, dengan arah sebaran yang berbeda pada tiap lapisan ketinggiannya, namun dominan ke arah barat daya.

SEMNAS-56 / ID-363

ANALISIS ZONASI KAWASAN PERAIRAN DAN SEMPADAN DANAU MANINJAU DALAM UPAYA MITIGASI BENCANA

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ABSTRACT

Danau Maninjau yang terletak di Kabupaten Agam Sumatera Barat merupakan salah satu danau yang menjadi proiritas Nasional dalam kesepakatan 9 Menteri, untuk melakukan aksi penyelamatan danau, dari 15 danau yang menjadi prioritas nasional pada tahun 2015-2019. Saat ini kondisi Danau Maninjau yang mengalami pendangkalan sudah mulai mengancam keadaan ekosistem kawasan tersebut. Penelitian ini bertujuan menyusun Zonasi Pemanfaatan Perairan Danau Maninjau dalam rangka mendukung program kegiatan Grand Design penyelamatan ekosistim danau Indonesia untuk permasalahan penetapan Tata Ruang Kawasan Danau dan pengendalian pencemaran air agar kualitas air danau memenuhi persyaratan pemanfaatan air untuk masa sekaran dan yanga akan dating. Data-data yang dikumpulkan adalah data sekunder yang diperlukan untuk menganalisa kondisi kawasan Danau Maninjau yaitu data hidrologi, topografi, geologi dan data kondisi Keramba Jaring Apung (KJA). Selain data sekunder dilakukan pengumpulan data primer yaitu pengukuran bathymetri tahun 2014 yang dilakukan oleh BBWS Sumatera V. Berdasarkan hasil analisis ditetapkan KJA direkomendasikan lokasinya tidak boleh kurang dari kedalaman 30 meter dari dasar danau, dan 100 meter dari garis batas kedalaman 30 meter. Pengaturan Zona Sempadan Danau Maninjau direkomendasikan berjarak 100 m dari tepi muka air tertinggi yang pernah terjadi. Kawasan selingkar danau yang sudah dihuni diberlakukan kondisi status quo dan harus ditertibkan secara bertahap untuk mengembalikan fungsi sempadan. Tahun 2015 terdapat 1.067 bangunan yang keberadaannya perlu ditetapkan menjadi status quo. Untuk kegiatan KJA dirkomendasikan pembuatan KJA dengan bertingkat dimana ukuran KJA minimal 7x7x3 m dengan jarak antar KJA minimal 4,5 m.

SEMNAS-59 / ID-380

EVALUASI SEKOLAH DI DAERAH PATAHAN OPAK UNTUK MITIGASI BENCANA GEMPABUMI DI SEKOLAH DENGAN MENGGUNAKAN PERKA BNPB NO 4 TAHUN 2012

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ABSTRACT

Patahan opak yang membentang dari selatan Bantul merupakan patahan aktif yang menjadi sumber utama kejadian gempa tahun 2006 di Yogyakarta. Gempa bumi tahun 2006 silam telah menimbulkan banyak kerugian. Hampir 6000 jiwa meninggal dunia dan puluhan ribu luka luka. Kerugian juga berupa roboh dan hancurnya ribuan bangunan di kawasan ini. Fasilitas publik seperti sekolah tak luput dari bencana tersebut. Lebih dari 2900 sekolah luluh lantak terkena dampak bencana gempa bumi. Menurut LIPI dan UNESCO, sekolah adalah lingkungan paling rendah tingkat kesiapsiagaannya menghadapi bencana gempa bumi. Tingginya potensi gempabumi di Bantul harus diselaraskan dengan upaya mitigasi pada lingkungan sekolah agar pengguna bangunan aman saat terjadi gempa, terlebih saat ini telah diberlakukan sistem fullday school yang mengharuskan siswa menghabiskan waktu lebih lama di sekolah. Bentuk mitigasi yang dapat dilakukan adalah dengan menganalisis tingkat kerentanan sekolah dan mengevaluasi ketangguhan sekolah dalam menghadapi bencana. Menurut MODUL 1 KEMENDIKBUD, bahwa salah satu dari 3 pilar dalam mewujudkan sekolah aman bencana adalah fasilitas sekolah aman. Metode yang digunakan untuk mengevaluasi ketangguhan sekolah terhadap gempabumi menggunakan ceklis dari Perka BNPB No. 4 Tahun 2012. Hasil pengamatan akan dianalisis untuk menarik kesimpulan dan pengelompokan sekolah yang sudah aman dan memenuhi standar atau yang belum layak dari bencana gempa bumi.

SEMNAS-60 / ID-386

IMPLIKASI JATUHAN PIROKLASTIK DARI PEMODELAN FALL3D DAN INASAFE REALTIME DI INDONESIA

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ABSTRACT

Abu vulkanik merupakan ancaman bahaya letusan gunung api yang berdampak pada kehidupan masyarakat. Dampak yang ditimbulkan diantaranya berupa kerusakan infrastruktur dan pemukiman, gangguan kesehatan, lahan pertanian, dan sumber air. Sebagai langkah peringatan dini dan penanggulangan bencana dibutuhkan peta skenario dampak bencana yang memuat informasi mengenai dampak bencana abu vulkanik beserta usulan penanggulangannya Pemodelan komputer dilakukan dengan menggunakan perangkat lunak python-FALL3D untuk memodelkan penyebaran, ketebalan, dan probabilitas muatan abu di permukaan bumi. Aplikasi InaSAFE Realtime for Volcanic Ash disusun untuk memungkinkan pengguna melakukan analisis mengenai dampak jatuhan abu vulkanik yang meliputi luasan daerah terdampak, jumlah penduduk, tutupan lahan, jumlah kerugian, dan kebutuhan yang diperlukan di daerah terdampak bencana abu vulkanik. Hasil pemodelan dengan skenario untuk kolom erupsi 5 km menghasilkan peta sebaran abu dengan ketebalan 0.1-5 mm yang melanda daerah sekitar Gunung Sinabung ke segala arah hingga jarak lebih kurang 10km dari pusat erupsi dan ke arah baratdaya dengan jarak terdampak 20 km. Prakiraan dampak bencana abu vulkanik terhadap jumlah populasi dan tutupan lahan di permukaan yang diakibatkan oleh erupsi Gunung Sinabung 19 Februari 2018. Dampak dari erupsi G. Awu tersebut tercatat hampir 90.800 jiwa, 421 km^2 lahan hutan, 253 km^2 lahan pertanian/perkebunan, 12 km^2 pemukiman, dan 1 sumber mata air akan terdampak hujan abu dengan skenario erupsi dengan kolom 5 km. Pengetahuan akan dampak jatuhan abu membuat pemerintah dibantu oleh masyarakat mampu mengetahui dan menyusun perencanaan penanggulangan bencana yang berhubungan dengan fasilitas yang harus disiapkan.

SEMNAS-61 / ID-390

DAMPAK PENGEMBANGAN TRAYEK ANGKUTAN PEMADU MODA (BUS BANDARA) TERHADAP PENURUNAN EMISI CO_2

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ABSTRACT

Tingginya penggunaan mobil pribadi akan berdampak terjadinya peningkatan emisi CO_2 sehingga mengakibatkan penurunan kualitas udara. Untuk itu pemerintah dan pemerintah daerah perlu mengembangkan Trayek Angkutan Pemadu Moda ke berbagai daerah sehingga dapat mengurangi mobil pribadi serta dapat menekan terjadinya peningkatan emisi CO_2. Tujuan dari penelitian ini adalah untuk mengetahui dampak pengembangkan Angkutan Pemadu Terhadap Penurunan Emisi CO_2. Untuk mengetahui seberapa besar emisi CO_2 sebelum dan sesudah pengoperasian Angkutan Pemadu Moda, maka digunakan formula matematis yakni menggunakan persamaan, Emisi CO_2 per Tahun (T CO_2) = [P1 X P2 X P3]/1000. Data yang digunakan adalah data sekunder yang diperoleh dari instansi terkait. Berdasarkan hasil analisis, jumlah emisi CO_2 sebelum pengembangan Angkutan Pemadu Moda adalah sebesar 16.413 ton CO_2e, . Secara keseluruhan dampak pengoperasian Angkutan Pemadu Moda dapat menurunkan emisi sebesar 28,42% dari total emisi yang disumbangkan mobil pribadi.

SEMNAS-62 / ID-396

ANALISIS RISIKO BENCANA TANAH LONGSOR SEBAGAI DASAR DALAM MITIGASI BENCANA DI DESA SELOPAMIORO, DAERAH ISTIMEWA YOGYAKARTA, INDONESIA

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ABSTRACT

Desa Selopamioro, Bantul, DI. Yogyakarta merupakan salah satu desa yang rawan longsor karena terletak di morfologi punggungan ke perbukitan di wilayah timur Kabupaten Bantul. Tipikal lereng yang umumnya terdiri dari

tufs dengan ketebalan pelapukan tipis hingga sedang dan memiliki kerapatan relatif rendah (relatif gembur) menghasilkan retakan yang cukup padat, sehingga mudah terjadi longsor jika ada faktor pemicu, baik itu hujan atau getaran dari bumi. Kajian risiko bencana tanah longsor di desa tersebut sangat penting untuk dilakukan sebagai dasar dalam mitigasi bencana. Penelitian ini bertujuan untuk mengidentifikasi jumlah rumah penduduk yang berada di zona ancaman longsor, menghitung nilai risikonya dan menentukan program mitigasi bencana yang harus dilakukan pada masing-masing zona risiko tersebut. Metode yang digunakan dalam penelitian ini adalah metode deskriptif dengan pendekatan kualitatif yang dikombinasikan dengan metode kuantitatif. Penelitian diawali dengan melakukan investigasi jumlah rumah di masing-masing zonasi, kemudian melakukan pembobotan, perhitungan risiko dan menyajikannya ke dalam peta. Sumber data yang digunakan adalah sumber data primer dan sekunder melalui wawancara dan dokumentasi. Hasil studi menunjukkan bahwa 1) jumlah rumah di zona berisiko tinggi adalah 336 rumah dan di zona risiko sedang adalah 183 rumah, 2) desa Selopamioro memiliki ancaman yang tinggi, kerentanan sedang hingga tinggi, dan kapasitas menengah, yang berarti memiliki risiko sedang hingga tinggi, 3) bentuk mitigasi yang direkomendasikan untuk zona risiko tinggi adalah relokasi, sedangkan untuk zona risiko sedang adalah pembangunan dinding penahan tanah, saluran drainasi dan penanaman pohon.

SEMNAS-63 / ID-399

REFLEKSI KRITIS ATAS KETANGGUHAN MASYARAKAT AKIBAT RELOKASI PASCA BENCANA: STUDI KASUS MENTAWAI, INDONESIA

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ABSTRACT

Sendai Framework for Disaster Risk Reduction (SFDRR) menetapkan salah satu prioritasnya pada Kesiapsiagaan untuk Membangun Kembali Lebih Baik (Preparedness to Build Back Better). Makalah ini dimaksudkan untuk

memberikan gagasan bahwa Prioritas ke-4 dari SFDRR ini perlu mendorong perubahan paradigma dalam kebijakan dan implementasi pembangunan kembali kawasan pasca bencana, dimana salah satu aspeknya adalah relokasi terencana dan mandiri. Praktik relokasi mandiri maupun relokasi terpaksa bisa dilihat di Kepulauan Mentawai, Provinsi Sumatera Barat, khususnya setelah bencana gempa tahun 2007 dan tsunami tahun 2010. Selain itu, di Mentawai juga terjadi upaya relokasi masyarakat terkait ancaman gempa dari Mentawai Megathrust di masa datang. Upaya relokasi masyarakat Mentawai menjauh dari pantai ini menunjukkan adanya pendekatan yang berbeda dengan pembangunan kembali Aceh setelah tsunami 2004 yang cenderung tetap menempati tapak bencana. Relokasi di Mentawai dilakukan dengan dua pendekatan berbeda, yaitu; pertama bersifat top down dari pemerintah atau kerap disebut dengan relokasi paksa, dan kedua relokasi karena kemauan warga sendiri. Relokasi top down yang diinisiasi pemerintah ternyata memunculkan banyak persoalan baru, baik konflik politik maupun ekonomi. Di sisi lain, relokasi mandiri yang dilakukan masyarakat terlihat lebih minim masalah. Perbandingan kedua kasus ini bisa menjadi pelajaran tentang konsep "ketangguhan masyarakat" yang tengah dikampanyekan oleh berbagai pihak untuk kepentingan pengurangan risiko bencana.

SEMNAS-64 / ID-403

PEMAHAMAN TENTANG MANAJEMEN BENCANA PADA SISWA SDN SEMPUR KALER KOTA BOGOR SEBAGAI SEKOLAH AMAN DARI BENCANA

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ABSTRACT

Kota Bogor adalah salah satu kota di wilayah Jawa Barat Indonesia yang termasuk ke dalam kategori tinggi risiko bencana. Salah satu sekolah di kota Bogor yang berada pada daerah rawan bencana banjir adalah SDN Sempur Kaler karena bersebelahan dengan akses sungai Ciliwung. Untuk itu akhir 2016 dilakukan implementasi manajemen bencana dan pendidikan Pengurangan Risiko Bencana bekerjasama dengan BPBD Kota Bogor dan Badan Nasional Penanggulangan Bencana. Penelitian ini bertujuan melihat

bagaimana pemahaman siswa tentang manajemen bencana pasca kegiatan Sekolah Aman Bencana. Berdasarkan hasil kuesioner yang diberikan kepada 22 orang siswa kelas 5B yang diperdalam dengan wawancara dan triangulasi data, diperoleh hasil bahwa pelatihan-pelatihan yang sudah diberikan BNPB pada tahun 2016 dikatakan efektif, terbukti dari siswa SDN Sempur Kaler Bogor mempunyai pengetahuan dan pemahaman yang baik tentang mitigasi dan majajemen bencana. Jenis bencana yang paling dipahami dengan baik oleh siswa adalah banjir, didukung oleh penerapan materi kebencanaan pada mata pelajaran. Siswa mempunyai persepsi positif dan menganggap penting keberadaan sekolah mereka sebagai Sekolah Aman Bencana sehingga mereka memahami langkah-langkah yang harus dilakukan ketika bencana datang. Keberadaan SDN Sempur Kaler sebagai Sekolah Aman Bencana perlu mendapatkan dukungan semua pihak. Metode dalam pelatihan diharapkan lebih bervariasi agar siswa bersemangat dengan suasana baru dan diharapkan pelatihan dapat terlaksana secara rutin sehingga dapat melibatkan semua warga sekolah dan masyarakat sekitar yang lebih luas. Siswa yang terlibat aktif diharapkan mampu menularkan ilmunya kepada teman yang lainnya. Keterlibatan tim BNPB sebagai pendamping dan instruktur dalam pelatihan juga sangat dibutuhkan sampai sekolah mempunyai sdm yang dapat melanjutkan kegiatan secara mandiri.

SEMNAS-65 / ID-404

IDENTIFIKASI PENYEBAB BENCANA GENANGAN BANJIR LOKAL PADA SEKOLAH-SEKOLAH DI DAERAH GUNUNG PANGILUN, KOTA PADANG

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ABSTRACT

Daerah yang sering terjadi banjir di Indonesia salah satunya di kota Padang Sumatera Barat. Daerah yang sering dilanda banjir salah satunya adalah di daerah Gunung Pangilun kota Padang. Beberapa kasus terjadinya banjir di kota Padang tidak hanya terjadi di perumahan penduduk namun juga terjadi di lingkungan sekolah. Hal ini dinilai memberikan dampak yang besar bagi kegiatan siswa di sekolah. Banjir terjadi hampir setiap hujan lebat.

Untuk itulah diperlukan identifikasi penyebab bencana banjir pada sekolah-sekolah tersebut agar bisa ditentukan upaya penanggulangannya yang efektif. Untuk mencapai tujuan tersebut, terlebih dahulu ditentukan lokasi penelitian dan sekolah yang akan dijadikan objek penelitian yaitu sebanyak 3 sekolah yakni MIN 3 Padang, MTSN 6 Padang, MAN 2 Padang. Metode pengumpulan data yang dilakukan adalah observasi dan wawancara langsung dengan masyarakat sekitar sekolah, guru dan siswa. Hasil penelitian diolah menggunakan metode analisa kualitatif ditampilkan dalam bentuk persentase. Dari presentase tersebut dieroleh penyebab-penyebab banjir pada kawasan sekolah yang dijadikan objek penelitian tersebut, serta dampak dan upaya mitigasi yang telah dilakukan pihak sekolah sejauh ini. Terdapat beberapa hal yang menjadi penyebab terjadinya banjir tersebut, diantaranya adalah curah hujan tinggi dan intensitas lama, daerah tanah yang rendah, sampah, dan system drainase yang buruk. Ketinggian muka air banjir pada lokasi penelitian bervariasi, namun rata-rata lebih dari 20 cm. tergantung intensitas hujan dan durasi hujan yang terjadi. Bencana banjir ini memberikan dampak yang cukup besar bagi masyarakat umum juga warga sekolah tersebut. Hal ini dikarenakan kegiatan belajar mengajar siswa terganggu, baik karena air yang bisa masuk sampai ruang kelas siswa sehingga proses kegiatan belajar mengajar menjadi tidak efektif ataupun karena akses jalan yang sulit ditempuh ketika banjir sehingga memaksa siswa untuk tidak bisa menghadiri kegiatan belajar mengajar tersebut. Pihak sekolah sudah beberapa kali mencoba menanggulangi masalah tersebut meskipun hasilnya belum signifikan seperti diantaranya dengan mengadakan gotong royong, menaikkan elevasi lantai ruangan, dan perbaikan drainase. Terkait perbaikan drainase yang tidak maksimal dikarenakan dana masing-masing sekolah terbatas sehingga masih menunggu perhatian lebih dari pemerintah daerah maupun pusat.

SEMNAS-67 / ID-422

PENGARUH PERUBAHAN MUSIM TERHADAP PRODUKTIVITAS GARAM DI KECAMATAN PANGENAN KABUPATEN CIREBON TAHUN 2013 DAN 2014

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ABSTRACT

Garam sebagai komoditas akan selalu dibutuhkan manusia seperti halnya kebutuhan manusia akan makanan. Kondisi iklim, perubahan cuaca yang kurang bersahabat menjadi faktor alam yang menghambat proses produksi garam. Penelitian ini dilakukan untuk menganalisis perubahan produktivitas garam dan pendapatan petani garam akibat perubahan musim di Kecamatan Pangenan Kabupaten Cirebon sebagai penghasil garam terbesar di Jawa Barat. Adapun hal-hal yang menjadi variabel penelitian adalah kondisi musim, produksi garam, luas lahan tambak garam, produktivitas garam, harga jual, dan pendapatan petani garam, pada tahun 2013 dan 2014. Data variabel yang diperoleh dari Dinas Perikanan dan Kelautan Kabupaten Cirebon, dan hasil wawancara langsung dengan petani garam kemudian dilihat kaitannya melalui perhitungan statistik menggunakan metode Korelasi Pearson Product Moment. Hasil perhitungan menunjukan nilai korelasi antara perubahan musim dengan produktivitas sebesar 0.368 sebagai r_{hitung}, r_{tabel} sebesar 0.320 , dan signifikansi sebesar 0.023, dan nilai korelasi pendapatan dengan jumlah bulan kering sebesar 0.316 sebagai rhitung, rtabel sebesar 0.271 dan signifikansi sebesar 0.027 dengan korelasi signifikan pada 0.05 atau 5%. Hasil perhitungan menunjukan bahwa r_{hitung}> r_{tabel} dan signifikansi < korelasi signifikan yang menunjukan adanya pengaruh perubahan musim yang dilihat dari banyaknya bulan kering terhadap produktivitas dan pendapatan, dimana semakin banyak bulan kering dalam satu tahun maka semakin besar produktivitas dan pendapatan petani garam.

SEMNAS-69 / ID-464

MODEL PENDIDIKAN KEBENCANAAN DI KABUPATEN KLATEN

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ABSTRACT

Tulisan ini bertujuan untuk dapat memamparkan mengenai model-model pendidikan kebencanaan yang telah terselenggara di Kabupaten Klaten.

Model yang ada dibandingkan untuk mendapatkan pola pelaksanaan kegiatan yang ada dan mengetahui kelebihan dan kekurangan model-model pendidikan kebencanaan yang sudah berjalan. Data yang digunakan berasal dari stakeholder kebencaaan di Kabupaten Klaten, baik dari pemerintah daerah dalam hal ini adalah BPBD Klaten, serta perwakilan relawan kebencanaan di Kabupaten Klaten. Sebagai pendukung, dipergunakan data kajian efektivitas pembelajaran pendidikan kebencanaan di Kabupaten Klaten. Terdapat 5 (lima) model pendidikan kebencanaan di Kabupaten Klaten. Setiap model berkembang berdasarkan kebutuhan dan ketersediaan sumberdaya sekolah atau kelompok masyarakat baik yang fokus pada keberlanjutan, yaitu model ekstra kurikuler sekolah, maupun model fokus pada keterlibatan massal sebagai program pemerintah.

SEMNAS-70 / ID-469

KONSERVASI PENGELOLAAN (UMBUL) MATA AIR DENGAN PENDEKATAN BUDAYA LOKAL MASYARAKAT LERENG GUNUNG MERAPI DI KABUPATEN KLATEN

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ABSTRACT

Strategi pengelolaan sumberdaya air mempertimbangkan aspek perencanaan, pemanfaatan, pemerataan, dan penertiban, pemantauan dan pengawasan, pengaturan, pengendalian, dan pelestarian yang diarahkan untuk terjaminnya: (1) keberlanjutan ekologi (ecological sustaina-bility), (2) berkelanjuan ekonomi (economical sustainability), (3) berkelanjutan sumberdaya dan lingkungan (resources and environment sustaina-bility), (4) berkelanjutan sistem managemen (management sustainability), dan (5) berkelanjutan teknologi (tecnological sustainability). Tujuannya penelitian; identifikasi konservasi pengelolaan air tanah yang berkelanjutan daerah lereng Gunung Merapi yang memperhatikan faktor dinamika wilayah dan perkembangan permukiman penduduk. Metode Penelitian dilakukan di daerah Kabupaten Klaten Jawa Tengah, dipilih metode survei dan untuk mencapai hasil, kemudian dilakukan analisis diskriptif kualitatif. Hasil penelitian mengambarkan bahwa 1) aplikasinya teknis pengelolaan setiap

bentuklahan dan satuan lahan yang berbeda maka model pengelolaan air tanah juga berbeda. 2). Terdapat tiga model pengelolaan air tanah berbasis kebudayaan lokal

SEMNAS-71 / ID-471

KOMUNIKASI GURU KEPADA SISWA TENTANG KESIAPSIAGAAN BENCANA DITINJAU DARI FUNGSI DASAR KELOMPOK

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ABSTRACT

Penelitian bertujuan mengidentifikasi komunikasi guru dan siswa-siswa tentang kesiapsiagaan bencana dalam tinjauan fungsi dasar kelompok. Interaksi guru dan siswa dalam kelompok memberikan kesempatan bagi siswa untuk memperoleh pengetahuan dan mengembangkan kemampuan siswa dalam menyampaikan pesan tentang kesiapsiagaan bencana. Hasil penelitian menemukan komunikasi guru kepada siswa-siswa tentang kesiapsiagaan bencana dilakukan dengan metode ceramah, komunikasi visual siswa membuat gambar dan foto tentang kerawanan bencana dilingkungannya, pentas kesenian drama musikal dan pantomim yang mengandung pesan moral kerjasama bencana evakuasi, hingga melibatkan siswa dalam kegiatan bersama komunitas kesiapsiagaan bencana diluar sekolah. Dalam tinjauan fungsi dasar kelompok maka komunikasi guru kepada siswa memberikan pengetahuanÂ tentang adanya persoalan kelangkaan sumberdaya, inovasi, keeratan hubungan antar anggota kelompok, penanganan konflik, peran dalam pembagian tugas, ketergesaan dan adanya pusat-pusat kekuasaan dalam pengambilan keputusan terkait kesiapsiagaan bencana.

SEMNAS-72 / ID-485

GOTONG ROYONG: APLIKASI SELULER INTERAKTIF DALAM MANAJEMEN TANGGAP DARURAT

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ABSTRACT

Teknologi sistem informasi kebencanaan di Indonesia harus terus dikembangkan guna mendukung berbagai program pengurangan risiko bencana. Beberapa instansi telah menciptakan sistem informasi kebencanaan dengan memanfaatkan teknologi aplikasi seluler. Aplikasi seluler terkait kebencanaan di Indonesia masih fokus pada karakteristik fisik bencana yang sedang berlangsung (jenis, lokasi kejadian, intensitas,hingga dampak). Di sisi lain, tingginya tingkat kepemilikan dan kemudahan akses masyarakat Indonesia terhadap teknologi aplikasi seluler juga harus dimanfaatkan untuk manajemen tanggap darurat. Prinsip pengembangan dari aplikasi ini adalah i) bahwa pengurangan risiko bencana merupakan amanah bersama - bukan hanya tugas BNPB/BPBD, dan ii) adanya modal sosial masyarakat Indonesia yang selalu ingin bahu-membahu meringankan beban saudaranya. Kedua prinsip tersebut diwujudkan ke dalam sebuah aplikasi seluler "GOTONG ROYONG" yang dikembangkan untuk menginformasikan berbagai perkembangan kondisi posko pengungsian dari suatu kejadian bencana (karakteristik sosial dan kebutuhan para pengungsi). Kebutuhan para pengungsi yang sangat dinamis terkadang belum dapat terpenuhi dari ketersediaan logistik yang ada, ditambah lagi jika mereka harus tinggal lebih lama di dalam posko-posko.Teknis operasional dari aplikasi ini diawali dari laporan relawan GOTONG ROYONG (bisa berasal dari BPBD ataupun pihak berwenang) yang sudah terverifikasi oleh admin. Selanjutnya, masyarakat yang sudah menginstal aplikasi akan mendapatkan notifikasi dan memilih jenis serta jumlah bantuan yang akan dikirim. Jenis bantuan dapat berupa berbagai kebutuhkan barang ataupun dana sosial. Aplikasi GOTONG ROYONG merupakan sebuah instrumen yang dapat melengkapi prosedur pendistribusian logistik bagi para pengungsi untuk mendukung manajemen tanggap darurat berbasis masyarakat yang lebih efektif dan efisien

SEMNAS-73 / ID-486

IMPLEMENTASI KONSELING KRISIS TERINTEGRASI SUFI HEALING UNTUK MENANGANI TRAUMA ANAK USIA DINI PADA SITUASI KRISIS PASCA BENCANA

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ABSTRACT

Indonesia adalah negara kepulauan yang berada pada posisi geografis, hidrologis, dan demografis yang rawan bencana. Hal ini terjadi karena Indonesia terletak di jalur ring of fire kawasan Pasifik dan menjadi pusat pertemuan beberapa lempeng bumi seperti lempeng Indo-Australia, lempeng Eurasia, dan lempeng Pasifik. Hal inilah yang menjadi penyebab Indonesia rawan akan bencana. Tak dapat dipungkiri, setiap bencana ini akan memberikan dampak baik psikologis atau non psikologis. Dampak psikologis ini berupa traumatis yang lebih mendalam pada anak usia dini. Untuk itu perlu usaha untuk meminimalisir aspek traumatis yang disebabkan oleh bencana alam itu yaitu melalui konseling krisis yang dilaksanakan oleh konselor. Dalam pelaksanaan ini dilakukan pada saat situasi krisis pasca bencana dengan bentuk play therapy yang diintegrasikan dengan sufi healing. Harapannya, dengan pelaksanaan konseling krisis terintegrasi sufi healing dapat menurunkan traumatis pada anak usia dini sehingga tidak terganggu tugas-tugas perkembangan anak tersebut.

SEMNAS-74 / ID-489

TINJAUAN IMBAL JASA LINGKUNGAN PADA DAERAH ALIRAN SUNGAI (DAS) KAMPAR HULU (STUDI KASUS DI KECAMATAN BUKIT BARISAN, KABUPATEN LIMAPULUH KOTA)

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ABSTRACT

Bencana banjir dan longsor sangat erat kaitannya dengan kerusakan Daerah Aliran Sungai (DAS). Salah satu DAS yang saat ini telah mengalami

kerusakan dan menjadi DAS prioritas nasional adalah DAS Kampar yang terletak di Provinsi Sumatera Barat (hulu DAS) dan Provinsi Riau (hilir DAS). Kerusakan DAS Kampar diakibatkan adanya alih fungsi hutan di daerah hulu menjadi pertanian/perkebunan tanpa memperhatikan kaidah konservasiÂ tanah dan air yang ditandai dengan meningkatnya lahan kritis, erosi dan sedimentasi. Dampaknya adalah banjir yang hampir setiap tahun terjadi di Kabupaten Limapuluh Kota dan bahkan sudah mencapai sebagian Kota Pekanbaru. Untuk mengurangi kerusakan DAS dapat digunakan Imbal Jasa Lingkungan (IJL). Kajian ini bertujuan untuk mengidentifikasi penyedia jasa lingkungan dan para pihak yang terlibat serta identifikasi kebijakan/regulasi. Kajian dilaksanakan Bulan Februari-Maret 2018 di Kecamatan Bukit Barisan, Kabupaten Limapuluh Kota. Dari hasil kajian diperoleh hasil bahwa penyedia jasa penyediaan sumberdaya air di Nagari Mahat terdapat 10 Kelompok Tani Hutan (KTH) dan di Nagari Baruah Gunuang terdapat 2 (dua) KTH. Para pihak yang akan terlibat dalam IJL teridentifikasi sebanyak 23 pihak dengan 6 (enam) kategori yakni : penyedia jasa, pembeli jasa, intermediator/fasilitator, pembina, evaluator dan supporting. Untuk mendukung pelaksanaan IJL perlu dipersiapkan beberapa peraturan daerah tentang Pengelolaan Jasa Lingkungan, Pembentukan Institusi Multipihak Pengelolaan Jasa Lingkungan serta Peraturan Obyek, Tarif, Tata Cara Pembayaran dan Sanksi Administratif.

SEMNAS-75 / ID-490

PEMETAAN KERENTANAN KEBAKARAN HUTAN DAN LAHAN BERBASIS SISTEM INFORMASI GEOGRAFIS PADA WILAYAH NON-GAMBUT

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ABSTRACT

Tujuan dari penelitian ini adalah membuat peta indeks kerentanan kebakaran hutan dan lahan yang dilakukan dengan pendekatan statistik

menggunakan metode rasio frekuensi pada wilayah non-gambut di Kabupaten Luwu Timur, Provinsi Sulawesi Selatan. Data area terbakar diperoleh sebagai data sekunder dan digunakan sebagai variabel tidak bebas. Faktor-faktor yang dianggap menjadi pendorong terjadinya kebakaran hutan dan lahan terdiri dari faktor topografi, faktor aktivitas manusia, faktor klimatologi, dan faktor kebijakan pemerintah. Masing-masing faktor diturunkan menjadi variabel bebas yang diekstraksi dan diperoleh dari berbagai sumber database spasial. Hasil penelitian menunjukkan bahwa variabel yang paling berpengaruh terhadap penyebab terjadinya kebakaran hutan dan lahan di Kabupaten Luwu Timur adalah lereng, penutupan/penggunaan lahan, dan jarak dari jalan. Hasil validasi berdasarkan perhitungan nilai luas di bawah kurva antara jumlah area terbakar kumulatif pada tingkat prediksi dan tingkat kesuksesan model terhadap nilai indeks pemetaan, masing-masing adalah 79,09% dan 68.94%. Dari hasil tersebut, proses penyusunan dan keluaran peta kerentanan kebakaran hutan dan lahan dapat diterima dan valid.

SEMNAS-76 / ID-525

SIMULASI NUMERIK PENGARUH KONSTRUKSI JALAN ELEVATED TERHADAP REDUKSI DAMPAK GELOMBANG TSUNAMI MENGGUNAKAN DUALSPHYCIS

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ABSTRACT

Gelombang tsunami 26 Desember 2004 telah menyebabkan kerusakan parah di Kota Banda Aceh terutama pada kawasan radius 5 km dari garis pantai. Pasca tsunami 2004 pemerintah merevisi peraturan tata ruang Kota Banda Aceh supaya pembangunan kota ke depannya agar berlandaskan mitigasi bencana. Salah satu perencanaan pembangunan kota yang difungsikan untuk mitigasi bencana tsunami adalah Banda Aceh Outer Ringroad (BORR) atau jalan lingkar Banda Aceh yang akan dibangun sejajar pantai. Penelitian ini bertujuan untuk melihat pengaruh interaksi gelombang tsunami terhadap konstruksi BORR dengan beberapa variasi ketinggian

BORR dalam mereduksi gelombang tsunami. Metode yang digunakan adalah simulasi numerik 3 dimensi DualSPHysics dengan pembangkitan gelombang tsunami menggunakan wave maker tipe piston. Hasil simulasi menunjukkan bangunan BORR dapat memperlama waktu ketibaan tsunami dengan mengurangi kecepatan tsunami. Waktu ketibaan tsunami yang lebih lama akan sangat bermanfaat dalam proses evakuasi saat tsunami.

SEMNAS-77 / ID-511

PENGARUH BEBAN TSUNAMI PADA BANGUNAN GEDUNG BLOK B TAMAN BUDAYA YANG BERLOKASI DI PINGGIR PANTAI PADANG SUMATERA BARAT

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ABSTRACT

Secara Geografis, wilayah Indonesia terletak di pertemuan tiga lempeng tektonik yang mengakibatkan terdapatnya jalur-jalur rawan gempa bumi bahkan tsunami. Hal ini menyebabkan sebagian besar wilayah Indonesia, khususnya Kota Padang, Sumatera Barat sangat rentan terhadap bahaya gempa dan tsunami. Oleh karena itu, bangunan gedung yang berada di pesisir pantai seharusnya direncanakan sedemikian rupa sehingga gedung tersebut tahan terhadap beban gempa dan tsunami. Salah satunya yaitu gedung Blok B Taman Budaya yang berlokasi di daerah Pantai Padang. Gedung ini memiliki ketinggian total 29.40 m, panjang bangunan 80.3 m, lebar bangunan 34 m, jumlah lantai 6 (enam) lantai dan menggunakan struktur beton bertulang yang didesain berdasarkan SNI 1726-2012 dengan menggunakan peta bahaya gempa Indonesia 2017. Dalam makalah ini akan dibahas mengenai pengaruh beban tsunami berdasarkan FEMA P-46 terhadap gedung Blok B taman budaya Padang. Hasil analisis menunjukkan bahwa nilai simpangan antar lantai dari gedung blok B Taman budaya Padang tanpa menggunakan beban tsunami hampir sama dengan yang menggunakan beban tsunami, tetapi nilai-nilai bidang gaya dalam pada struktur gedung dengan beban tsunami lebih besar daripada tanpa menggunakan beban tsunami, terutama pada lantai dasar bangunan.

SEMNAS-78 / ID-524

PERBAIKAN DAN PERKUATAN BANGUNAN PASCA GEMPA SUMATERA BARAT TAHUN 2009

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ABSTRACT

Makalah ini membahas jenis kerusakan dan metoda perbaikan serta perkuatan bangunan yang terdampak gempa Sumatera Barat tahun 2009. Pengambilan data dilakukan dengan melakukan survey dan asesmen pada bangunan secara langsung, baik untuk bangunan engineered maupun non-engineered. Beberapa penyebab kerusakan, diantaranya adalah detailing tulangan yang tidak mengikuti standard yang ada, efek soft-story, kegagalan pondasi, kualitas material yang rendah dan tidak memenuhi persyaratan serta perencanaan dan pelaksanaan konstruksi yang tidak mengikuti kaidah-kaidah dan ketentuan teknis standard bangunan tahan gempa. Perbaikan dan perkuatan pada bangunan dapat dilakukan setelah diketahui jenis dan tipe kerusakan bangunan maupun komponen/bagian-bagian bangunan dan mutu bahan bangunan yang digunakan. Kemudian dilakukan analisis struktur untuk mengetahui penyebab elemen bangunan rusak dan jika hasil analisis dengan beban gempa sesuai peraturan terbaru, struktur bangunan mampu menahan beban gempa maka perkuatan tidak diperlukan, tetapi jika tidak, maka diperlukan perkuatan.

SEMNAS-79 / ID-512

PENGARUH BEBAN GEMPA BERDASARKAN PETA SUMBER DAN BAHAYA GEMPA INDONESIA 2017 TERHADAP RESPON STRUKTUR GEDUNG RUSUNAWA UNIVERSITAS ANDALAS

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ABSTRACT

Indonesia merupakan wilayah rawan gempa, khususnya di daerah Sumatera Barat. Aktivitas gempa di Indonesia meningkat tiap tahunnya sehingga Kementerian PUPR bersama para ahli pakar gempa telah melakukan

pemutakhiran Peta Gempa dan mengeluarkan Peta bahaya Gempa Indonesia terbaru tahun 2017. Dengan dikeluarkannya peta bahaya gempa terbaru ini, maka perlu dilakukan analisis terhadap pengaruh perubahan peta gempa ini terhadap bangunan-bangunan eksisting. Dalam penelitian ini dibahas tentang pengaruh perubahan peta bahaya gempa 2017 terhadap struktur bangunan gedung rusunawa universitas Andalas, Padang. Struktur gedung rusunawa memiliki total tinggi bangunan 15.45 m, panjang bangunan 64 m, lebar bangunan 19.20 m, jumlah lantai 4 (empat) lantai dengan jenis struktur beton bertulang. Beban gempa yang digunakan pada penelitian ini adalah beban gempa respon spektrum yang dihitung dari dua peta gempa, yaitu peta gempa tahun 2017 dan peta gempa berdasarkan SNI 1726-2012. Dari hasil analisis, diperoleh hasil bahwa terjadi peningkatan simpangan antar lantai dan displacement dari peta gempa SNI 1726-2012 ke peta gempa tahun 2017 yaitu sebesar 11.02% untuk simpangan antar lantai dan 10.27% untuk displacement, serta peningkatan pada gaya dalam yaitu: 0.06%-0.96% untuk gaya aksial, 0.69-7.26% untuk gaya geser, dan 0.43%-7.67% untuk momen pada kolom dan 2.93%-3.82% untuk gaya geser dan 4.22%-5.44% untuk momen pada balok.

SEMNAS-80 / ID-543

EVALUASI KELAYAKAN STRUKTUR BANGUNAN SHELTER NURUL HAQ YANG DIBANGUN DI ATAS TANAH BERPOTENSI LIKUIFAKSI

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ABSTRACT

Dampak yang disebabkan oleh gempa bumi adalah hilangnya kestabilan tanah (kegagalan struktur bagian bawah). Analisa Potensi likuifaksi pada shelter Nurul Haq, Padang menggunakan data Standard Penetration Test (SPT). Analisa potensi likuifaksi ini bertujuan untuk mengetahui nilai faktor keamanan (FS) yang didapat dari nilai perbandingan Cyclic Resistance Ratio (CRR) dan Cyclic Stress Ratio (CSR).

SEMNAS-81 / ID-542

KAJIAN INTERAKSI ANGIN LAUT DAN MONSUN DALAM KAITANNYA TERHADAP BENCANA KEKERINGAN DAN BANJIR DI WILAYAH BANDAR LAMPUNG

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ABSTRACT

Secara geografis wilayah Kota Bandar Lampung berbatasan langsung dengan Teluk Lampung di bagian selatan. Dataran wilayah pesisir Teluk Lampung tergolong sebagai daratan pantai sempit dan perbuktian. Wilayah Teluk Lampung yang luas tentunya mempunyai karateristik cuaca tersendiri yang berpengaruh terhadap daerah di sekitarnya yaitu Kota Bandar Lampung yang tentunya besar dipengaruhi oleh sirkulasi diurnal berupa angin laut dan angin darat. Penlitian ini akan menggunakan data observasi dari Stasiun Meteorologi Maritim Lampung dan hasil keluaran dari model WRF-ARW. Hasil yang didapatkan bahwa di Pesisir Teluk Lampung angin rata-rata bergerak dari arah selatan sepanjang tahun. Penyebab utama hujan di wilayah Bandar Lampung adalah uap air yang dibawa oleh angin dari arah laut.

SEMNAS-82 / ID-276

KAJIAN BENCANA ABRASI PANTAI DAN AKRESI PROVINSI SUMATERA BARAT PERIODE 2003-2016

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ABSTRACT

Dalam UU Kebencanaan No. 24 Tahun 2007, bahwa tindakan yang dapat dilakukan pada penanganan bencana antara lain tindakan pencegahan, mitigasi, kesiapsiagaan, dan penanggulangan kedaruratan. Salah satu tindakan yang dapat dilakukan pra bencana (mitigasi) yakni perlunya mengetahui karakteristik kebencanaan sebagai salah satu upaya mitigasi. Provinsi Sumatera Barat memiliki 19 Kota dan Kabupaten dimana 6 diantaranya sering mengalami bencana abrasi dan akresi karena merupakan wilayah pesisir yang berbatasan langsung dengan Samudera

Hindia. Penelitian ini bertujuan untuk mengkaji karakteristik bencana abrasi dan akresi disepanjang pesisir Provinsi Sumatera Barat periode tahun 2003 sampai dengan tahun 2016. Dengan mengetahui karakteristik abrasi dan akresi dari tahun 2003 dan 2016 akan diketahui pantai mana saja yang mengalami abrasi atau akresi. Penelitian ini bersifat penelitian deskriptif kualitatif dan kuantitatif dengan metode analisis Teknik Sistem Informasi Geografis (SIG) untuk mendapatkan karakteristik bencana abrasi dan akresi di wilayah pesisir Sumatera Barat. telah terjadi bencana abrasi dan akresi di 32 titik yang tersebar di 6 Kabupaten dan Kota, yaitu Kabupaten Pasaman Barat, Kabupaten Agam, Kabupaten Padang Pariaman, Kota Pariaman, Kota Padang dan Kabupaten Padang Pariaman. Terjadi bencana abrasi di pesisir Provinsi Sumatera Barat seluas 732.69 Ha dan akresi seluas 55,4 Ha. Hal ini membuktikan bahwa bencana abrasi menyebabkan berkurangnya daratan di Provinsi Sumatera Barat yang cukup besar yaitu rata-rata 56,3 Ha/tahun, sedangkan penambahan daratan hanya 4,26 Ha/tahun. Bencana abrasi terjauh terdapat di Kabupaten Pesisir Selatan yaitu sejauh 45,70 m atau rata-rata 3,52 m/tahun. Sedangkan akresi terjauh terdapat di Kabupaten Pesisir Selatan yaitu sejauh 36,91 atau rata-rata 2,84 m/tahun

SEMNAS-83 / ID-521

ANALISIS RISIKO DAN MITIGASI BENCANA BANJIR UNTUK DAERAH MUARA LABUH DAN SEKITARNYA

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ABSTRACT

Daerah Muara Labuh merupakan salah satu daerah dengan seluas 596,00 km^2 dengan jumlah penduduk tahun 2016 sebanyak 32.182 jiwa, yang mana bagian barat daerah Muara Labuh merupakan kawasan lembah di kaki pegunungan yang dilalui dua aliran sungai besar Batang Suliti dan Batang Bangko. Kerentanan kawasan Muara Labuh terhadap bencana banjir yang berulang dan penanganan yang tidak komprehensif menyebabkan korban dan kerugian yang cukup banyak. Kompleksitas penyelenggaran penanggulangan bencana memerlukan suatu penataan dan perencanaan yang matang, terarah dan terpadu. Kajian ini dilakukan dengan mengumpulkan data wilayah Muara Labuh kependudukan, topografi,

infrastruktur, tata guna lahan dan lain-lain. Pengumpulan data dilakukan observasi, interview dan literature. Hasil kajian menunjukan lahan tempat air tersimpan mengalami degradasi sehingga simpanan air berkurang dan mempengaruhi debit sungai. Sungai Batang Suliti, memiliki debit sebesar 27,8527 m^3/dt, sedangkan kapasitas sungai hanya mampu menampung sebesar 25,3429 m^3/dt. Sementara Sungai Batang Bangko, memiliki debit sebesar 41,3779 m^3/dt, sedangkan kapasitas sungai hanya mampu menampung sebesar 18,7624 m^3/dt. Setelah dilakukan analisis terhadap ancaman (hazard), kerentanan (vulnerability), dan kapasitas (capacity), sebagian besar kawasan ini memiliki resiko tinggi dan sebagian kecilnya beresiko sedang.

SEMNAS-84 / ID-500

DAMPAK PASCA KEJADIAN TANAH LONGSOR DI DUSUN TANGKIL DESA BANARAN PONOROGO TERHADAP KEJADIAN POST TRAUMATIC STRESS DISORDER

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ABSTRACT

Pada April 2017, Bencana tanah longsor terjadi di Kabupaten Ponorogo dengan jumlah korban 145 orang. Bencana tanah longsor memiliki beberapa dampak antara lain gangguan kesehatan seperti gangguan fisik dan gangguan psikis pada korban bencana tanah longsor. dampak tersebut menyebabkan korban menjadi trauma psikis dan akan mengakibatkan stress. Trauma psikis berkepanjangan akibat dari suatu kejadian yang disebut dengan Post Traumatic Stress Disorder (PTSD). PTSD merupakan reaksi maldaptif yang berkelanjutan terhadap suatu peristiwa traumatis. Penelitian ini bertujuan untuk mengidentifikasi kejadian PTSD serta mengidentifikasi tanda dan gejala PTSD. Desain penelitian Deskriptif Kuantitatif digunakan dalam penelitian ini. 50 dari 57 korban bencana tanah longsor di Dusun Tangkil Desa Banaran Ponorogo berpartisipasi dalam penelitian ini. Purposive sampling diterapkan untuk mendapatkan sample penelitian. Intrumen dalam penelitian ini adalah kuesioner Civillion. Data dikumpulkan dengan menggunakan kuesioner kemudian dideskriptifkan. Hasil penelitian ini menunjukkan bahwa korban bencana

tanah longsor mengalami PTSD sebesar 50% dari korban bencana tanah longsor.Tanda dan gejala PTSD yang dominan muncul pada korban adalah mengalami rasa ketakutan. Penanggulangan PTSD dapat dilakukan oleh Petugas Kesehatan atau Kader- Kader Masyarakat dengan memberikan suatu kegiatan seperti pemberian Konseling atau Penyuluhan.

SEMNAS-85 / ID-221

IDENTIFIKASI TIPE PERAKARAN PADA LAHAN REHABILITASI BEKAS LONGSOR

Pranatasari Dyah Susanti, Arina Miardini, Alvian Febry Anggana, Beny Harjadi

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ABSTRACT

Pengelolaan lahan untuk menjaga kestabilan lereng pada wilayah yang rawan longsor, sangat memerlukan pemilihan vegetasi dengan perakaran yang kuat. Tujuan penelitian ini adalah mengevaluasi tipe perakaran vegetasi pada lahan bekas longsor. Lokasi penelitian berada di Desa Sijeruk Kecamatan Banjarmangu Kabupaten Banjarnegara, Provinsi Jawa Tengah. Metode penelitian yang digunakan adalah survey biofisik lahan dan identifikasi tipe perakaran. Berdasarkan hasil Indeks Nilai Penting (INP) pada demplot penelitian, dipilih 9 jenis tanaman yaitu: jabon, cemara, suren, durian, mindi, picung, merbau, rasamala, dan pinus. Hasil penelitian menunjukkan bahwa terdapat tiga tipe perakaran. Perakaran tipe H terdapat pada jenis araucaria, merbau, durian dan rasamala; perakaran tipe R terdapat pada jenis mindi dan jabon; sedangkan tipe VH terdapat pada jenis suren, picung dan pinus. Diharapkan dengan diketahuinya kondisi tipe perakaran maka dapat menjadi dasar dalam pemilihan komposisi vegetasi pada wilayah-wilayah yang rawan terhadap longsor.

SEMNAS-100 / ID-230

POLA BIROKRASI PEMERINTAHAN DAERAH YANG ADAPTIF DALAM MERESPON BENCANA ALAM (STUDI IDENTIFIKASI KO-EKSISTENSIAL GOVERNING TSUNAMI DI MENTAWAI)

Rijel Samaloisa

Yayasan Kinapat Mentawai (Wakil Bupati Mentawai 2012-2016)
Balai Penelitian dan Pengembangan Teknologi Pengelolaan Daerah Aliran Sungai
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ABSTRACT

This research based on real desire for improving local bureaucracy in Mentawai Distric become more adaptively and optimally to enhance local capacity on mega-hazard-management without disappear their own core identity. To seek an adaptive model, it begin from fixed reasiong that beauraucracy can adopted all aspects surrounding itself inserted became behavior and organizational culture (Kingsley (1945), Niskanen (1969) called co-existential government. Indeed, this effort to gain political participating in optimum, which people to govern a common need by self, especially in mega hazards. Mentawai has tacit knowledge on self governing disaster as resulted from their experience a long their live. Mentawai Island like queen on fire, they life a long ago on tremors island, which is closed to disaster, such as tsunami and earth queke. This research found that local governance and Weberian Governance will simultating to improve adaptive governance on mega hazards. Both prosedures, structures, values, and logics will supporting each others in mutual co-existancy in right time, right place, and right actors.

INTERNATIONAL CONFERENCE ON DISASTER MANAGEMENT (ICDM)

CONFERENCE SCHEDULE

THURSDAY, 03rd MAY 2018
ICDM SESSION I : UNDERSTANDING DISASTER MANAGEMENT
VENUE : CONVENTION HALL, ROOM1
Session Chairs :
Prof. Dilanthi Amaratunga (Huddersfield Univ, UK)/Khalid N.D Bahauddin (Banglades) .
Dr. Deny Hidayati (The Indonesia Institute of Science)/Dr. Harkunti Pertiwi Rahayu (Bandung Institute of Technology)

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VENUE : CONVENTION HALL, ROOM 2
Session Chairs :
Dr. Phil Glassey (GNS Science, New Zealand)
Prof. Gunawarman, Dr.Eng/Dr. Yuerlita (University of Andalas, Padang-Indonesia)

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VENUE : CONVENTION HALL, ROOM 3
Session Chairs :
Dr. Teddy Boen (World Seismic Safety Initiative)
Prof. Zaidir, Dr.Eng/Rendy Thamrin, Dr.Eng (University of Andalas)

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VENUE : CONVENTION HALL, ROOM 4
Session Chairs :
Prof. S. Saravanan (National Institute of Technology, Trichy, India)
Dr. Revalin Herdianto/Jafril Tanjung, Dr.Eng (University of Andalas)

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ICDM-IP1 / ID-510

INDONESIAN EARTHQUAKE PROBLEMS 2018 AND NEEDED IMPROVEMENTS

Teddy Boen

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ABSTRACT

In 2008, the author wrote that the Indonesian earthquake problem is the damage and or collapse of non-engineered buildings [1] and since 2008 to-date, 17 earthquakes occurred, some causing substantial damage to non-engineered buildings: West Java, September 2, 2009 (7.782°S, 107.297°E, 46 km, M7.0); West Sumatra, September 30, 2009 (0.720°S, 99.867°E, 81 km, M7.6); Simeulue, April 7, 2010 (2.383°N, 97.048°E, 31 km, M7.8); Mentawai, October 25, 2010 (3.487°S, 100.082°E, 20 km, M7.8, causing tsunami); West Coast Sumatra, April 11, 2012 (2.348°N, 93.072°E, 33 km, M8.7); Reuleuet - Pidie, Aceh, January 22, 2013 (4.935°N, 96.172°E, 37 km, M5.9); Aceh, Bireun, July 2, 2013 (4.698°N, 96.687°E, 10 km, M6.1); Sorong, September 25, 2015 (0.629°S, 131.255°E, 24 km, M6.6); Aceh Pidie, December 7, 2016 (5.308°N, 96.269°E, 17 km, M6.4); Tasik, December 15, 2017 (7.734°S, 108.023°E, 91 km, M6.5); Lebak, Banten January 23, 2018 (7.196°S, 105.918°E, 43 km, M6.0). Those earthquakes are repetitions of all past occurrences and is a demonstration that until today not much has been done with regard to non-engineered buildings. With the re-occurrence of the same mistakes until today, it is clear the main problem is to make non-engineered buildings earthquake resistant. Apart from the non-engineered buildings, there are other important issues for Indonesia that needs to be improved. The Indonesian seismic hazard map was just revised in Dec 2017. The hazard map is produced using PSHA model. Since several years ago, many scientists / academics started questioning the correctness of PSHA, due to the fact that the characteristic earthquake paradigm is at odds with reality. Another issue that lately is causing scariness in the community is information to the media about the possibility of an M8.7 earthquake that will affect Jakarta based on interviews with various experts, results of meetings of government authorities related to earthquakes. Information for the public shall be in line with mitigation strategy and must be coordinated.

ICDM-IP2 / ID-517

CYCLONE VULNERABILITY ASSESSMENT OF CUDDALORE COAST IN TAMIL NADU, INDIA USING REMOTE SENSING AND GIS

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ABSTRACT

over the years, cyclones have left a deep and dark footprint on coastal Cuddalore in southeast India, which was one of the worst affected districts in the mainland. These disasters over the past several years have revealed the differential impacts due to social structure, economic conditions and level of infrastructure. Therefore, there is a need for strategies to address the aspects of socioeconomic and infrastructural vulnerability.Cuddalore district is one of the most vulnerable district for Cyclone. The present study investigates the vulnerability of eastern coastal states of India from potential cyclones using Remote Sensing and GIS. Mapping of cyclone vulnerability zone on 1:50000 scale along the Tamil Nadu coast has been carried out using Remote Sensing and GIS techniques with seven physical parameters like elevation, wind speed, historical cyclone event significant wave height, probable maximum precipitation, elevation, and landuse etc. The ordinary rank and weight method has been used to integrate the above parameters to achieve the cyclone vulnerability zone map. The resultant cyclone vulnerability zone map has been divided into five cyclone vulnerability categories, namely very high, high, moderate, low, and very low. The output of the study showed significant results, which reflect that the entire northern coastal taluks come under very high cyclone vulnerability zone whereas central and southern coastal taluks fall under high to low cyclone vulnerability zone. This information will be useful in advanced planning to minimize cyclone associated losses and reduce threats to future coastal development.

ICDM-IP3 / ID-532

THE USE OF TRANSDISCIPLINARY APPROACH (TDA) AND SCIENTIFIC KNOWLEDGE BASED DECISION MAKING SCHEME FOR IMPROVING TSUNAMI EVACUATION PLAN LEARNING FROM PADANG CITY, INDONESIA

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ABSTRACT

In many tsunami events, the high numbers of death toll in high-populated cities were due to the lack of several critical factors, which includes the existence of tsunami warning, the readiness and preparedness of the city toward tsunami events. The readiness and preparedness of tsunami high-risk cities are characterized by not only the existence of sufficient supporting infrastructure for emergency response and evacuation, but also how the whole people from tsunami prone area could evacuate safely after tsunami warning issued. Each community in this tsunami prone area should have the same right and opportunity to evacuate safely. However, in many tsunami prone area, beside the level of awareness and preparedness of the people, the high number of population, population density, building density and vulnerable group of people such as elderly, women and children coupled with insufficient tsunami evacuation infrastructure such as evacuation routes has prolonged the estimated time for evacuation. There are many cases that the estimated time for evacuation is much longer than the estimated tsunami arrival time minus time needed for warning dissemination. Thus, the capacity of horizontal evacuation infrastructures should be increased. Otherwise the existence of vertical evacuation infrastructure such as shelter in that area is necessary, e.g. using the existing tall structure, building special Tsunami Vertical Evacuation Shelter (TVES) and artificial hill. Vertical evacuation infrastructure is very complex and costly to build compare to horizontal evacuation, however for the aforementioned condition the existence of vertical evacuation shelter is a must. Many issues associated with the design criteria and planning should reviewed and solved, from physical to socio economic factors. The existence of TVES and all supported evacuation infrastructures are expected to reduce public anxiety toward tsunami hazard and to build better coastal community resilience. However, this has not been

shown during 2012 tsunami event in Banda Aceh, as if there were no disaster risk reduction intervention has been in place. Thus, this situation has encouraged an in-depth research funded by PEER Cycle 3 Research Grant in 2015-2017 in Padang City and presented in this paper. The research found several significant issues, i.e. how the disaster risk reduction intervention through building TVES has influenced social capital of coastal community to build their resilience, and how this improved social capital factors can be accommodated in designing tsunami evacuation plan. It has been also found that the existence of TVES in case study area has attracted the migrated coastal communities inland to move back to their abandon houses at the coastal region, renovating and upgrading into two-story houses, several new settlements have appeared in several empty lands with massive investment for housing. Using the DRR, migration and adaptation of logical model approaches, several factors related to perception to disaster, perception to tsunami threat and triggering factors for decision for moving out were recognized and mapped from the perspective of social demography, financial, physical environment and policy condition. Results of this study are not only to map the supporting and hindrance factors but also the influence from these factors to the communitiestrust to their home safety before and after the TVES built. Before TVES was built, the influence of these factors to the people trust to their own safety is strongly influenced by the hindrance factor came from perception to tsunami and disaster, triggering factors of decision for moving out, level of trust to their home before and after the existence of TVES. There are three components found which mostly affected people trust toward their residential, i.e. the perception toward disaster, the perception toward tsunami threat, and the support factors of the migration decision. Thus, it is expected by integrating all these improved social capital factors in the tsunami evacuation plan, which is used to develop the Indonesian Tsunami Evacuation Guideline, the public anxiety will be reduced and eliminated. Then the efficient disaster risk reduction measures through evacuation plan will be enhanced and the coastal resilience will be improved.

ICDM-IP4 / ID-503

MEASURING THE IMPACTS OF STIRRRD: A DISASTER RISK REDUCTION CAPACITY BUILDING ACTIVITY IN INDONESIA

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ABSTRACT

The Strengthening Indonesian Resilience: Reducing Risk from Disasters (StIRRRD) Activity, aims to reduce the impacts of natural disasters in Indonesia through increasing the Disaster Risk Reduction (DRR) capacity of local government and local universities. The activity, jointly implemented by Universitas Gadjah Mada Indonesia and GNS Science New Zealand is assisting ten selected districts/cities to understand their hazards and risks, manage these through developing prioritised DRR Action Plans and implement components of the plans. Stakeholders in this activity include central and local governments, local universities, NGOs, the private sector and ultimately the community. Developing relationships between local government and local universities is a key component of the Activity, with the universities developing teaching and research programs to support their local government and communities DRR activities. The StIRRRD Activity consists of study visits, focus group discussions, action plan workshops, training, education, and district peer support and research networks. Specific technical training has included base-isolation of buildings, risk modelling, and hazard and risk mapping. There have also been initiatives to understand the role that women play in DRR. Measuring the effectiveness of DRR activities is difficult and cost benefits are commonly only realised after a hazardous event, if at all. Defining good metrics is also difficult as much of DRR is about education, raising public awareness, robust planning and development processes that reduce the impacts of natural hazards. Some of these take longitudinal surveys to measure and sometimes significant time to implement such that the benefits are realised. Key successes of the StIRRRD Activity include (i) the adoption and funding of a modified version of the StIRRRD Activity in a least 5 other districts, (ii) Kemendesa adopting components of StIRRRD into a Resilient District concept, (iii) New or updated Disaster Risk Management (DRM) legislation and bylaws in 7 of the 10 districts, (iv) Increased budgets for DRM activities in 9 of the 10 districts, (v) Implementation of Tsunami Blue Line Awareness initiatives in Padang and Kota Bengkulu, and (vi) Collaborative multi-stakeholder projects such as the Palu Koro Fault awareness and Seismometer in Schools programs in Central Sulawesi led by NGO Skala and Universitas of Gadjah Mada, respectively.

ICDM-IP5 / ID-507

THE ROLE OF SOCIAL CAPITAL IN ENHANCING COMMUNITY DISASTER PREPAREDNESS AND BUILDING BACK BETTER IN RECOVERY

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ABSTRACT

As a country with high risk of disasters, the people of Indonesia have to prepare and anticipate these calamities. One of the most important aspects in disaster risk reduction at local level is social capital. This paper discusses the role of social capital in strengthening community disaster preparedness for effective respond and its potential for building back after recovery, focusing on local wisdom, prior experiences and re-establishment of community livelihoods. Local wisdom plays an important role in raising community efforts to find relief and recover from the impact of earthquake in Bantul and floods in Jambi. The spirit of community-self, mutual helps and fund raising helps the Javanese in Bantul to be strong and care among neighbors. The community that supported by the local leaders and institutions agreed to set up priority for affected people who need more help. Meanwhile, experiences of the people in Jambi on regular floods made them aware and assisted them to develop self-efficacy beliefs in disaster preparedness, including making plans as well as increasing skill to get ready for and respond to this disaster. This paper also shows that in addition to economic recovery programs from the government and donor in Bantul and Aceh, the community in Jambi used floods as a source of their alternative livelihood through fishing and its related activities, and perceived floods as economic opportunities. This paper utilises empirical evidence from cases across Indonesia that is collected from my research results under LIPI and Human Ecology research activities. Data is also collected from secondary sources that largely rely on desk reviews of relevant books, documents, papers, and other references.

ICDM-001 / ID-84

THE BACKUP RECOVERY STRATEGY SELECTION TO MAINTAIN THE BUSINESS CONTINUITY PLAN

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ABSTRACT

The Trilogy University's academic information system is one of the vital assets. With the increasing complexity of academic processes that exist in the Trilogy University, the demand for the availability and performance of information technology becomes high. Disaster recovery plan is designed to ensure the continuation of vital business processes in the event that a disaster occurs. The problem is how to make the best way in selecting backup recovery strategy at Trilogy University based on the ratio of benefits to the cost so as to minimize the business losses that will be caused by the failure or malfunction of an application system. The research aims to make decisions that can help make certain parties to take the best decision in choosing the backup recovery strategy selection for business continuity plan in the Trilogy University. The method used in this research is the multi-criteria decision making and analytical hierarchy process using expert choice software computer. From the results of data processing can be concluded that the first order is hot standby selection 59.4%; followed by second order of 23.3% cold standby; and then the third order is the choice of warm standby 17.4%. The data inconsistency rate is 0.02, smaller than 0.1 as the maximum value of inconsistency ratio.

ICDM-002 / ID-107

MAPPING OF LANDSLIDE HAZARDS PREDICTION USING GEOGRAPHIC INFORMATION SYSTEM IN SOLOK REGENCY

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ABSTRACT

Solok regency is one of the areas prone to landslide disaster in West Sumatera Province. Generally, landslides are caused by natural factors and human factors. This study aims to predict the location of the highest

landslide hazard distribution in Solok District and to know the level of vulnerability of landslide hazards in Solok District. This study consists of preparatory steps, field survey, data analysis data processing by collecting 5 types of maps (rainfall map, soil type map, geological map, and slope map) and then covering and scoring of 5 types of maps. Based on this research, it is known that the sub-districts are on the highest prediction of landslide that is Pantai Cermin Subdistrict, Lembah Gumanti Subdistrict, Hiliran Gumanti Sub-District, Lake Kembar Sub-District, Mount Talang, Payung Sekaki Sub-District, Tigo Lurah Sub-district, Bukit Sundi Sub-District, Kubung Sub-District, X Koto Singkarak and Junjung Sirih Sub-district then the level of vulnerability prediction of landslide hazard in Solok Regency is divided into 5 levels, which is very low 44511,71 Ha with percentage of 11,91%, low of 69179,34 Ha with percentage 18,51% , while 89894.35 Ha with the percentage of 24.05%, height of 86307 Ha with the percentage of 23.09%, and very high 83907,60 Ha with the percentage of 22.45%.

ICDM-004 / ID-135

ASSESSING COMMUNITY RESILIENCE TO NATURAL DISASTER AND CLIMATE CHANGE IN MAITARA SMALL ISLAND, NORTH MALUKU-INDONESIA

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ABSTRACT

Small Islands face some of the greatest problems of any coastal area due to climate change and natural disasters. The aims of this studies are to analyze the resilience of coastal communities on Small Island in terms of disasters and climate change and to identify the strategies and adaptations that communities have undertaken as anticipatory for disaster and climate change in the future. The descriptive, qualitative analysis combined with quantitative methods are used to provide a clear estimate of the categories of resilience in each village. The primary data was collected by using interviews and focus discussion group and secondary data acquired through the documentation on related stakeholders. The resilience index provided by Ministry of Maritime and Fisheries Affairs is used to categorize the resilience

scales of villages. The results of this study show that the human aspects and natural resources aspects have high scores in resilience, but disaster and climate change aspects; environmental/infrastructures aspects; and economic aspects should be improved. Furthermore, the community had been taking a participation in disaster mitigation

ICDM-005 / ID-138

THE IMPACT OF SOCIETY PERCEPTION TOWARDS FLOOD DISASTER INCIDENT RESPONSE PLAN IN LEDOK WETAN VILLAGE, BOJONEGORO DISTRICTS

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ABSTRACT

One of the areas affected by floods by the end of 2016 was Ledok wetan village, Bojonegoro district, Bojonegoro regency. The location was very concave or lower than the existence of Bengawan Solo River. The heavy rain was causing flood, moreover there was a flood continuation from the upstream river of Bengawan Solo.The area is always submerged with varying altitude of flood causing their belonging property washed away.The purpose of this research is to investigate the influence of public perception about the flood disaster emergency response plan in Ledok wetan, Kec.Bojonegoro, Bojonegoro. This research was conducted in February - April 2017 located in Ledok wetan Village,Bojonegoro, Bojonegoro District. This area was often inundated by flood either in rainy season or not.The research method used was a quantitative method within the survey approach. The population in this research is all head of family (KK) in Ledok wetan, Kec.Bojonegoro, Bojonegoro Regency of East Java Province, which had 46 head of family (KK). The sample we used justa simple random sampling method. Simple random sampling is a sampling method of randomly populated populations regardless of the strata present in the population. Data analysis technique in this research using quantitative analysis, using Statistical Product and Solution Program (SPSS) version 16.0. Data analysis technique used was Pearson Product Moment (PPM) technique Based on the results of the study,

it can be concluded that there was an influence between the public perception of flood disaster on the plan of emergency response of flood disaster. The results of analysis Pearson Product Moment obtained value (r) of 0.933 which means having a very strong relationship or influence. Based on the determinant coefficient (R), the figure is 87%. These results obtained information that theoretically the public perception of flood disaster was effectedon the flood disaster emergency response plan.

ICDM-006 / ID-139

ACTION PROGRAMS OF ROAD ENGINEERING NSPM IMPLEMENTATION TO IMPROVE ROAD WORTHINESS AND INFRASTRUCTURE RESILIENCE ON SUB-NATIONAL ROAD IN INDONESIA

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ABSTRACT

Fulfilment of road worthiness is close related to improve road infrastructure resilience as a part of disaster resilience. In this study the NSPM is the norm, standard, guidelines, and manual in Indonesia regarding road engineering for sub-national roads i.e. province road, regency road, and city road. Based on existing condition of road worthiness fulfilment in Indonesia, the aim of this study are identification and evaluation of existing sub-national road condition in Indonesia, find out challenges of road engineering NSPM implementation to improve road worthiness on the sub-national road, and provide recommended action program regarding monitoring, evaluation, and implementation of road engineering NSPM in order to improve road worthiness, i.e. reach 75% road worthiness length of sub-national road in Indonesia during year 2015-2019, and then to improve road infrastructure resilience. Case studies are carried out on sub-national roads in 6 provinces in Indonesia i.e. Riau province, Yogyakarta Special Region province, South Kalimantan province, South Sulawesi province, Bali province, and Maluku province. Field survey results indicate that existing condition of sub-national roads fulfil 66% of road worthiness on province road, 63% of those on regency road, and 81% of those in city road. Furthermore, challenges in

NSPM implementation are limited support of financial facility, human resource, NSPM dissemination, road technical guidance, performance evaluation, and field observation. Methodology used is based on existing road condition physically and the limited support. Finally, recommended action programs can be provided is i.e. dissemination of regulation of Public Work Ministry of Republic of Indonesia no 03/PRT/M/2012 regarding guidelines of road function and status in Indonesia, regular technical training and coaching about accurate location where road engineering NSPM will be implemented to local government by central government, regular technical training and coaching about road infrastructure resilience, and implementation of road engineering NSPM on sub-national road including internal and external monitoring and evaluation.

ICDM-007 / ID-140

PEDESTRIAN FACILITIES AS A PART OF ROAD INFRASTRUCTURE RESILIENCE IN LARGE CITIES IN INDONESIA

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ABSTRACT

Road infrastructure resilience is very important to reach disaster resilience. Disaster is not only occurs and impacts to the location outside cities, but also in location with a large number of population likes cities. In large cities, pedestrian facilities are the important road infrastructure facilities besides roadway infrastructure, both in the normal condition daily and during evacuation if there is disaster happened. Unfortunately, pedestrian facilities in the city are not yet take into account seriously. The aim of this study is first, identification of availability of pedestrian facilities, second, fulfilment of the facilities based on the regulation in Indonesia, and third, recommendation to implement items of pedestrian facilities based on pedestrians opinion. Case study is carried out on two major roads in large city Bandung, Indonesia, with high number of pedestrian because there are a number of activities along the roads, for examples working, studying, shopping, and sightseeing. Method used is interview, questionnaire, and important performance

analysis, with 18 pedestrian facility indicators. 782 pedestrians as respondents involved in this study. Analysis is done based on respondent demography and based on important rate and priority rate of respondent opinion. Result study indicated that not all of pedestrian facilities have been implemented according to regulation in Indonesia. Furthermore based on respondent opinion, the most important and priority items of pedestrian facilities to be implemented soon are street lighting, pedestrian ramp for disability person, CCTV, and trash bin. Fulfilment of all pedestrian facilities will enhance road infrastructure resilience through reduction of casualty if there is no disaster occurs and through reduction risk during evacuation if disaster occurs.

ICDM-008 / ID-151

A MODEL OF COLLABORATIVE MANAGEMENT OF HUMANITARIAN AIDS CASE OF DISASTER RELIEF

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ABSTRACT

This paper elaborates the collaborative management model in disaster relief by using systematic reviews. The focus point in humanitarian aids actors who collaborate in disaster relief approach. It does not focus on the collaborative management model in subdivision of one organization. The writer reviews bases on a disaster event or relevant activities. The result shows that most of collaborative management in this approach work with state level, representative of international organization located in affected country and international level. Less of case that society get involve. Some case they work with military in term of logistic that outstanding case. This approach can explain by umbrellas model of Proulx et al. (2014) that all actors make strategic direction and operate under umbrella organization. The importance obstacles are communication and networking.

ICDM-009 / ID-152

IMPORTANT ASPECTS IN BUILDING COMMUNITY RESILIENCE OF COASTAL DISTRICTS IN SRI LANKA

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ABSTRACT

This research is carried out to identify the important aspects in building community resilience of coastal districts to provide suitable recommendations in order to strengthen them. After carrying out a through literature review and interviewing key personnel related to the Disaster Management and Disaster Risk Reduction, existing status of the coastal hazards, multi hazard assessments, early warning systems, national policies, guidelines and efforts and regional cooperation were identified. During the literature survey, it was observed that Sri Lanka has developed a Hazard profile for the country and an Early Warning Dissemination System exists as well. Furthermore, the country is in the process of aligning the existing policies with the post 2015 global standards. When looking at the regional efforts, Sri Lanka is a member of Indian Ocean Tsunami Warning and Mitigation System (IOTWMS) and Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES). Even though the country lacks of proper and efficient resilience mechanisms focused on the coastal communities, national efforts are under way to build up the coastal resilience. Training and public awareness campaigns, efficient funds, properly maintained hierarchy and concern to the coastal eco systems are some of the enablers associated in building coastal resilience. Developing a multi hazard map, improving the interagency cooperation and focusing more on the development of a people-centered Multi Hazard Early Warning Systems (MHEWS) are some of the recommendations given.

ICDM-010 / ID-154

EFFECT OF SOIL EROSION AND TOPOGRAPHY ON DISTRIBUTION OF CADMIUM (CD) IN SUMANI WATERSHED, WEST SUMATRA, INDONESIA

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ABSTRACT

Sumani watershed is a main rice production area in West Sumatra. However, the soil characterization that is the basic information to make proper management of the agricultural fields has not been enough conducted. As no detail research on Cadmium (Cd) in soils has been conducted in the watershed, we characterized the distribution of heavy metals especially Cd in soils and river sediment in relation with soil erosion status and topography in the watershed. We collected 145 soil sample based on land use, soil type and topography, and 23 river sediments. The Cd were extracted by 0.1 M HCl and determined by ICP. The result showed that in general, concentrations of Cd Â in soil and river sediment were lower toxicity level of FAO which only 4 out of 168 sampling sites contained Cd exceeded the toxicity level of FAO(2003) (Cd 0.4 mg/kg). Relatively high of Cd were observed in sawah, vegetables and river sediment with a long-term fertilizer application and/or volcanic ash from Mount Talang volcano. The Contamination from fertilizer and/or volcanic ash accumulation were the possible causes. The Cd concentration tended to be lower in the sites with higher soil erosion. The Cd concentrations tended to be negatively correlated with soil pH (P<0.1). Then, The Cd concentration were well explained by soil erosion, topography, percentage silt and soil pH.

ICDM-011 / ID-162

DROUGHT RISK MAPPING IN EAST NUSA TENGGARA INDONESIA BASED ON RETURN PERIODS

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ABSTRACT

Drought has been one of the major causes of disaster in Indonesia. The Regional Disaster Management Agency (BPBD) of East Nusa Tenggara (hereafter denoted as NTT) Province in Indonesia has reported that there were 20 districts in NTT affected by drought in 2015. This study aims to map drought risk in NTT by using the Standardized Precipitation Index (SPI). The study is carried out by examining daily rainfall data recorded by several meteorological stations in NTT within the period of 1999-2015. The results of SPI analysis showed that NTT has experienced about 25 months of drought events within the periods of 1999 to 2015. This reseach estimated the drought duration as well as the magnitude based on return periods of 5 years, 25 years and 50 years, as the basis of mappring the drought risk. The mapping results showed that Gewayantana is a district with the longest drought duration and strongest drought magnitude for all specified return periods. Meanwhile, Komodo and Frans Sales Lega districts are two regions with the lowest risk indicated by shortest drought duration and lowest magnitude compared to the others. The longest drought duration are mostly started in November.

ICDM-012 / ID-170

INTEGRATION PROCESS OF INDIGENOUS AND SCIENTIFIC KNOWLEDGE FOR DISASTER RISK REDUCTION IN MENTAWAI ISLAND

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ABSTRACT

The purpose of this paper is to contribute to debates on the importance of indigenous knowledge for disaster risk reduction. Many research papers advocate the importance of indigenous knowledge and call for its recognition

and integration with modern science. The paper aimed to explore the importance of indigenous knowledge in the everyday practices of disaster preparation and response by indigenous peoples and explore the categorization of indigenous knowledge in the integration process. The paper was based on ethnographic research in indigenous communities in Mentawai Islands, Indonesia. Data were gathered in two categories: primary data and secondary data. Primary data were collected through in-depth interviews. Secondary data were collected from related document such as articles, books, web sites or government and NGO reports. In Mentawai island the authors found that some of indigenous knowledge is completely local and homogenous and shared among community member. The findings proved that indigenous knowledge is formed in a long observation and interaction with disasters even though some of these knowledge may come from success story in another area. Other findings were that indigenous knowledge can be classified into several categories, and indigenous knowledge based on technical aspect is more likely to be integrated with scientific knowledge. The research was exploratory in nature and could be replicated and expanded in other indigenous communities. This paper approached indigenous knowledge issues from the point of view of indigenous communities themselves.

ICDM-013 / ID-172

TSUNAMI MENTAWAI 25 OKTOBER 2010 (SIMULATION COMCOT 1.7) AND RECENT IMPACT TO THE WEST COAST OF MENTAWAI

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ABSTRACT

Tsunami on 25 October 2010 at Mentawai caused by subduction of Hindia-Australia and Eurasia plates. Earthquake with magnitude scale of 7.7 MW hit Mentawai at 14:42:22 UTC or 21:42:22 local time, which its epicenter at 3.484 oSL and 100.114 oEL, 20.6 km depth beneath the Hindia Ocean and distance 280 km from Padang or 110 km from the North Pagai Island. This earthquake is a tsunami earthquake because it is slow but produce a big

tsunami wave. Simulation of tsunami using COMCOT 1.7. Input parameters are strike fault 325o, dip 11.62o, and slip 101.4625o. This model using a linear equation principle to calculates the wave propagation time and height from epicenter to the shoreline. The result showed that tsunami height range is 3.4 to 4.3 meter and 9:33 to 18:44 minutes at shoreline. The impact of Tsunami 2010 to the West Coast of Mentawai is 14.6 m/year of shoreline change at Muntei and Sabeugunggung, heavy coastal abration about 0.11 m2/year at Ragi Island, lossing of the Sibigeu Island and 1.203 m^2/year of mangrove forrests at Macaronies

ICDM-014 / ID-173

THE USE OF GIS AND HYDRODYNAMIC MODEL FOR PERFORMANCE EVALUATION OF FLOOD CONTROL STRUCTURE

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ABSTRACT

Flood disaster in Palu River has repeatedly occurred, especially in the downstream segment near and around the estuary. The most recent flood occurred in July 2018 has inundated some areas of Palu City and resulted in a considerable impact on the socio-economic life of the community in the city of Palu. Actually, flood prevention efforts have been undertaken by the Palu City Government and River Basin Board of Sulawesi III, one of which is by constructing levee combined with revetment along more than 5 km measured from the estuary to the upstream reach. However, the flood disaster always happens almost every year in this area. This paper intends to evaluate the performance of the flood control structure using Geographic Information System and HEC-RAS hydrodynamic model. The use of these tools provide the ease and efficiency for flood simulation along the river being modelled. The analysis results show that the bank capacity of Palu River is currently only effective for flood discharge below 550 m^3/s, where the river bank capacity at the beginning of the levee and revetment design is approximately 550 m^3/s, equivalent to the 25 year return period of discharge.

The river bank capacity decreases due to sediment deposition on river bed which were originated from the upstream watershed. This decline in cross-section capacity is estimated to be the cause of the flood disaster in parts of Palu City.

ICDM-015 / ID-174

NUMERICAL SIMULATION TO OVERCOME THE FLOOD IN THE BATANG TAKUNG RIVER DUE TO ENCOUNTERING WITH THE BATANG PANGIAN RIVER

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ABSTRACT

The Batang Takung River is a tributary of the Batang Pangian River located in Sijunjung Regency, West Sumatra Province. When the flood flow occurs, the downstream of the Takung River, thats in the area near its encounter with the Pangian River, often overflows. This is due to the surface elevation of the Pangian upstream is higher than that of the Takung downstream. This is worsened by the base of the Takung River, which is relatively sloping. As a result, backwater occurs in the downstream of the Takung River. The backwater then floods up to the surrounding residential areas. The objective of this study is to overcome the flood in the downstream of the Batang Takung River by numerical simulation using the software of HEC RAS 4.10 to predict the flow depths. These simulations consist of five scenarios, i.e: (i) The Takung River, Pangian Hulu River and Pangian Hilir River are in the existing condition; (ii) Same as the first scenario but the Pangian Hulu is put aside; (iii) Same as the first scenario but the Takung River is put aside; (iv) Same as the first scenario but the upstream of the Pangian Hilir about 1013 m long is straightened; and (v) The intersection of the Pangian Hulu and Pangian Hilir is moved about 1762 m downward. The simulation results show that only the fifth scenario can overcome the flood in the downstream of the Batang Takung River.

ICDM-016 / ID-175

DISASTER RISK MITIGATION OF LANDSLIDE FOR SUSTAINABILITY OF GEOTHERMAL PRODUCTION ON WEST JAVA PROVINCE, INDONESIA

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ABSTRACT

Indonesia has huge sources of geothermal which are spreadly located in mountain hills and slopes, it makes geothermal area prone to landslide. one of which can be found in West Java Province, Indonesia. The increasing risk landslide phenomenon in Indonesia are related to natural physical factor and socioeconomic conditions. The aims of this article are to analysis the risk level of landslide reviewed by the level of hazard, vulnerability, capacity and to provide an alternative form of disaster mitigation. The methods of this paper are the assessment the level of risk by weighting and scoring with Geographic Information System (GIS), then spatial distributions are interpreted into a map. The result of the study shows that 57% area of the study is in the medium risk level of landslide. The alternative mitigation effort to keep the sustainability of geothermal field are reviewed in three aspects sustainability are environment, economic, and social.

ICDM-017 / ID-189

A TSUNAMI MODEL IN THE SOUTHERN PART OF THE SUMATRA SUBDUCTION ZONE (SSZ) WITH THE SCENARIO OF EARTHQUAKE MAGNITUDE OF MW 8.5

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ABSTRACT

In the last decade, there were several great earthquakes occurred along the Sumatra Subduction Zone (SSZ), and some of them have been producing giant tsunamis.For future mitigation and adaptation purposes, several

tsunami studies have been conducted in the northern and central parts of the SSZ for both the past and future anticipated events. However, in the southern part of the SSZ, studies on assessing potential seismic and tsunami hazards are still limited. Therefore, in this study, we aimed to model the potential for tsunami heights, arrival times and potential tsunami inundation map (exposure area) in the southern part of the SSZ. We used an estimated potential earthquake source derived from the Akaike's Bayesian Information Criterion (ABIC) inversion for Global Positioning System (GPS) deformation data. To calculate the vertical deformation of the seafloor as a tsunami source, we employed the Okada's formulation in an elastic half-space medium. Additional data of the General Bathymetric Chart of the Oceans (GEBCO) bathymetry and the Shuttle Radar Topography Mission (SRTM)-90 m topography were used in this study. The results from 5 observation points distributed along the western coast of the southern Sumatra showed that the tsunami height varies between 5-7 m with the direction of exposure up to 1 km from shorelines, depending on coastal morphology conditions. The time delay time between the occurrence of earthquake and the first arrival tsunami wave is ranged between 20-30 minutes. This time delay can be used for emergency evacuation when a potential tsunami earthquake occurs in the future. However, our result is still deterministic case, only depending on one scenario, therefore, in the future building tsunami model based on the probabilistic model that includes other possible seismic sources model is very important in order to better understanding potential tsunami hazard in the region.

ICDM-021 / ID-197

THE EFFECTIVENESS OF COMMUNITY RADIO INFRASTRUCTURE TO SUPPORT DISASTER PREPAREDNESS (CASE STUDY OF COMMUNITY RADIO IN MERAPI VOLCANO, YOGYAKARTA, INDONESIA)

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ABSTRACT

Information is crucial for people who live in hazardous areas. Community radio into one of the media is needed by the community, because it is crucial to get a quick and accurate information about how to cope with disasters. This study aims to know the effectiveness of community radio to support disaster preparedness. This research is a qualitative descriptive study, where the respondents are community, managers of community radio and Combine Resources Institution. The data collected was using interviews, questionnaires, observation and documentation, and was analyzed using qualitative analysis that is data reduction, data presentation and conclusion or verification. The results of this study is the effectiveness of community radio was 63.6%, or classified as high. The effectiveness of community radio to support disaster preparedness is affected by needs, response and adaptation of community towards community radio. Community needs followed by community response and adaptation will encourage people to utilize the community radio more effectively.

ICDM-022 / ID-200

RURAL TOURISM AND SUSTAINABLE DEVELOPMENT (CASE STUDY IN PENTINGSARI VILLAGE, YOGYAKARTA, INDONESIA)

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ABSTRACT

Pentingsari is one of the rural tourism destinations due to its unique culture and the beauty of the environment. This study aims to explore the community participation with the concept of sustainable development that promotes economic growth, social culture, and environment. Tourism development in Indonesia is familiar with rural tourism trends as one approach to tourism development. This research uses qualitative approach by adopting case study. The results show that the empowerment of rural communities in Pentingsari village can maximize the utilization of natural and environmental potentials, and to empower communities by maximizing the utilization of socio-culture, customs, and historical heritage by

maximizing agricultural and plantation potentials. The development of rural tourism contributes to the sustainable development dimension.

ICDM-023 / ID-203

THE REFERRAL OF LAND USE BASED ON THE LEVEL INSECURITY OF THE FLOOD (AREA OF STUDY: WATERSHED STEMS KURANJI)

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ABSTRACT

The purpose of this research Study is to produce land use Referrals based on the level of Insecurity at watershed stem Kuranji. watershed stem Kuranji is one of the watersehd stem Kuranji flow from upstream of the Bukit Barisan with highest elevation + 1,605 mdpl on top of the Hill Tinjau Laut and empties into the coast of Padang with the length of the main river 32.40 ± km and total, along with the whole child its all 274.75 km. Physical condition is being one factor causes the occurrence of floods in the region of study. Flood-prone area mapping is done using geographic information systems (GIS) or GIS. The parameters used in determining the level of Insecurity is Flooding: Rainfall, Land Form, The Slope, Land Use, The Slope of The River, Density of The River, Soil Type and Elevation. A map is a map associated with 8 (eight) parameters. Methods used in this analysis is to overlay a map of these parameters, after that gives the score, weighting and value on each of the variables and categories. As for the Flood levels of Insecurity are differentiated Over four (4) Tiers namely; The level of Insecurity Low with an area of 3.336 Ha, The level of insecurity rather low with an area of 9.084,16 Ha, The level of insecurity is being with an area of 3.259,64 Ha, Levels of insecurity Rather High with expansive 3,259.64 Ha in which the area overall is 19.832 Ha. Research results indicate that the direction of land use based on the level of the flood of Insecurity can be developed pattern room area is spacious Pond Retention 98.63 Ha, Retention Ponds with a total area of 162.94 Ha, Pond Retention with an area of 3 Ha, area 9 Education with an area of 121.70 Ha, protected forest with an area of 11,617.59 Ha, Forest Conservation with an area of 813.22 Ha, Settlement in the area of fields with extensive 701.92 Ha.

ICDM-024 / ID-208

CONSIDERATION OF COST-EFFICIENT EARLY WARNING SYSTEM UTILIZING EXISTING ANALOGUE RADIO BROADCASTING IN INDONESIA

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ABSTRACT

Early warning systems can increase disaster management capacity. Indonesia worked out the national development policy direction of 2015 - 2019 containing establishment of early warning systems. Japan is operating early warning systems using various ICT systems. Especially an emergency warning broadcasting system to activate correponding receivers automaticall is being operated since 1985. Considering a situation in Indonesia to develop early warning system from now, an updated system to be applied for an earthquake early warning, which can provides expected seismic intensity in each location based on an observed big earchquake prior to actual shaking, is developed. A cost-efficient early warning system, which can be depolyed nationwide in Indonesia is also considered by the combination of exisiting RRI's analogue radio broadcasting and existing loudspeakers in mosques. It is important to establish definitive operation rules to operate early warning systems effectively, therefore, an operation scenario to provide tsunami warning is considered as a first step in Indonesia utilizing existing Warning Reiceiver System in RRI stations.

ICDM-025 / ID-217

FLASH FLOOD IN ARAU WATERSHED, WEST SUMATERA: A MITIGATION STUDY

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ABSTRACT

Flash flood is very often occurred in West Sumatera. In spite of heavy rain, flash floods are also caused landslide in the river side blocks the river to be a natural dam. The natural dam can be broken at any time, it depend on storage capacity. Flash flood occurs when the dam is broken. The aim of the research is to mitigate flash floods based on parameters influencing flood and landslide. Parameters that have a direct proportion to floods are maximum daily rainfall, watershed shape, river gradient, drainage density, slope, and land cover. Parameter that influencing landslides are antecedent soil moisture content, slope, geological type especially fault line, soil depth, and land cover. Geographic Information System (GIS) is used to analyse factors influencing flash flood and landslide spatially. The research was conducted in Arau watershed, West Sumatera, where flash flood was very often took place. The results show that degrees of flash flood vulnerability in the Arau watershed. More than 50% of the Arau watershed is slighty and high vulnerability and it is due to nature condition. Furthermore, the locations of fault especially in the river side should be noticed because this location could become a natural dam causing flash flood. In order to reduce flash flood impact, the natural dam should be opened as soon as possible.

ICDM-026 / ID-220

CONSTRUCTION INDUSTRY FOCUS TOWARDS SUSTAINABILITY THROUGH CORPORATE SOCIAL RESPONSIBILITY

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ABSTRACT

Amidst the growing number of adverse impacts of construction industry, sustainability and sustainable development has become a ground-breaking challenge in the world in mitigating disasters related to build environment. Thus, Corporate Social Responsibility (CSR) will be an effective tool to introduce resilience in disaster management practices of construction stakeholders on their business decisions taken within the construction industry. Hence, this study has focused to assessing the contractors contribution towards sustainability in relation to their CSR activities within

their business environment and business process. The results revealed that there is a considerable gap in the prevailing practice and required practice in the areas of CSR related to business environment and CSR related to business process although CSR related to philanthropic activities in the industry was at a high level.

ICDM-028 / ID-224

THE RANK OF INCAPACITATION OF PEOPLE OF KARO DISTRICT IN ENCOUNTERING VOLCANO DISASTER

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ABSTRACT

It has been more than 400 hundred that the mount of Sinabung stay calmed, therefore people has built settlement at its slope. But at 2010, the mount began to erupt and consequently, more than 10.000 ha husbandry damage and more than 28.000 people should be evacuated. Until now, it has been 7 years eruption and no one knows when it stops. When disaster happens, the victims are people around the disaster. Who hoped to be helper at the time after disaster just happened? Can we hope aid helper from outside district? Humanity aid for disaster victim are usually come late or wrong targeted. Based on experience, the fastest aid come from adjacent community so, the first helper to be hoped is from adjacent community or from the victim themselves. This research tries to find the level of incapacitation of victim of Mt. Sinabung disaster to face the disaster in every process of disaster management. This research is a qualitative descriptive research. The data got from interview and focus discussion group (FGD). Interview did to get what the community did at every phase of management. Variables of this research are: action of community at every phase of management: prevention, mitigation, preparedness, early warning, response, relief, recovery, rehabilitation, and reconstruction and allocate their action to 8 classes of form incapacitation. This study found that rank of incapacitation of villagers at every phase of disaster management is very low, in common. At early warning system, villagers get used to search and get information fast to know how to react by cellular phone, by radio or by seeing the mountain. Better

incapacitation is at Pintu Besi villagers where they have 11 Handie Talkie to spread the information or warning fast.

ICDM-029 / ID-227

WHICH AFFECTING SMALL AND MEDIUN INDUSTRIES CREATIVITY TOWARD SUSTAINABLE SMALL AND MEDIUM INDUSTRIES BUSSINESS

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ABSTRACT

Globalization requires SMI(small and medium industries) to increase its existence in order to compete in the global world, SMI must always increase its creativity to be able to create products that have innovation in a sustainable manner. But at this time SMI still has many obstacles in increasing its existence, such as; it still has low ability of effort, difficulty of access capital and not fast following the development of science and technology. These SMI cases will become a threat for SMI to grow and develop. The purpose of this study is to describe the factors that influence the creativity of SMI in terms of industry ability, institutional, financing and technology. Knowing the influence of industrial capability, institutions, financing and technology to creativity. The type of research is descriptive and quantitative research. The sampling technique for the location and the respondents was porpursive sampling, chosen by the researcher himself for the selected location 7 (seven) locations, selected sample 200 respondents The analysis method using descriptive analysis and perivikatif analysis. The results of the research through descriptive analysis found that the condition of industry ability is quite good, but for institutional, financing, technology and creativity are still not good. Perivikatif analysis found simultaneously in a capability of industry, institutional, financing and technology to SMI creativity. Partially, industrial ability has positive and significant impact to SMI creativity, Institution does not have an effect on SMI creativity, financing has negative and significant influence to SMI creativity, and technology has no effect to the creativity of SMI.

ICDM-031 / ID-235

LANDSLIDE POTENTIAL AREA IN WONOSOBO, CENTRAL JAVA

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ABSTRACT

IIndonesia is an archipelago country located on the equator, so it only has two seasons of drought and rain. Entering the rainy season can certainly cause various disasters, such as landslides. National Agency for Disaster Management (BNPB) noted since early 2017 to December 4, 2017 recorded as many as 577 incidents of landslides throughout Indonesia. Landslide has occurred in one of the existing regencies in Central Java, namely Wonosobo district precisely in Wadaslintang sub-district where causing ftalities and material loss. Based on Indonesia Disaster Information Data (DIBI) within 2017 until now in Wonosobo regency there are 9 landslide. Many factors can cause landslides such as rainfall, slope, geological soil type and vegetation density, which is slopes are a major factor in some landslide disaster cases. Therefore, to anticipate the loss of both casualties and material losses more in Wonosobo district, it is necessary to conduct a study in order to obtain landslide potential areas. The model applied to determine landslide-prone areas is the SMORPH model approach by implementing slope morphology and angle / gradient of the slopes using Geographic Information System (GIS). From the results of data processing found that the area of landslide potential with the highest grade in Wonosobo district of 17% area, and for sub-district and the sub-district with the highest potential landslide is Wadaslintang with the percentage of 13.85% area.

ICDM-033 / ID-239

EXTREME ATMOSPHERIC CONTIDIONS FROM INTENSIVE OBSERVATION PERIOD IN 2016

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ABSTRACT

Meteorological hazard has been recurrently occurred in Indonesia in due to torrential rains. It is of the primary important to examine the characteristics of the atmosphere during rainy seasons for hazard mitigation. BBTMC has conducted a short Intensive Observation Program (IOP) during the period January 18th to February 16th, 2016 to collect meteorological data in the vicinity of Jakarta Region. During that period several instruments namely weather radar, radiometer, AWS and radiosonde have been used. All the data has been analyzed and the result will be discussed in the following. This paper discusses the comparison of atmospheric parameters obtained from radar and radiometer during extreme days. The results showed that there were differences of lability index of radiosonde and radiometer data which were significant 15 points for KI, 6 points for TT and 100 points for SWEAT where the atmospheric stability index of the radiometer tended to be lower than radiosonde.

ICDM-034 / ID-240

A COMBINATION OF GREEN AND GREY INFRASTRUCTURES APPROACHES IN FLOOD REDUCTION: KEDURUS CASE STUDY, INDONESIA

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ABSTRACT

Flooding is one of the key development problems in the Kedurus Sub-Catchment Area, downstream of the Brantas River in East Java Province, Indonesia. Current flooding indicates that discharging water into the sea by a drainage system (grey infrastructure approach) is insufficient in reducing the flooding. By using the water sensitive city (WSC) concept, the green infrastructure can be improved through two types of instruments, i.e., increasing the infiltration rate and rain harvesting. A simulation with the

SWAT model showed that the green infrastructure related to increasing the infiltration rate can only reduce flooding by 22.3%, while the rain-harvesting instrument only reduced the flooding up to 27.7 percent. Furthermore, a combination of the two types of green infrastructures can reduce flooding up to 45.5%. On the other hand, applying only grey infrastructures (increasing drainage capacity) to reduce the flooding up to zero will require more than double the current capacity. Thus, relying solely on the drainage system is unfeasible. Therefore, a combination of green and grey infrastructures can completely reduce the flooding in a water sensitive and feasible manner.

ICDM-035 / ID-241

MUNICIPAL WASTE MANAGEMENT POLICY OF PAREPARE CITY

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ABSTRACT

Municipal waste management policy still be a big problem in developing worlds. However, How to deliver and implement policy is still debatable. This study examines how the strategy of the municipal city in Managing Municipal Waste in Parepare City, South Sulawesi Province, Indonesia. This study laid the Edward III theory in adressing the implementation of policy base on 4 (four) major factors: communication, resources, disposition, and bureaucratic structure. This study examines the strategy of Parepare city government in combating muncipal waste under those 4 (four) aspect. Data come from the 5 key informants and other official municipals statistics of Parepare city. Results of this study show that communication, resources, disposition, and bureaucratic structure significantly interrelate each other and support the strategic in implementing the policy in municipal waste management of Parepare City. The findings suggest that communication, fitting bureacratic structure, use of technology, works in strategy through better collaboration among city agencies, and strengthening citizens awareness in winning and regaining beautiful city award , as like Adipura.

ICDM-036 / ID-242

TROPICAL CYCLONES CHARACTERISTIC IN SOUTHERN INDONESIA AND THE IMPACT ON EXTREME RAINFALL EVENT

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ABSTRACT

Southern region of Indonesia is one of the places where tropical cyclones grow in the southern hemisphere. During 1983-2017 there were 51 tropical cyclones occurring in the region. This study aims to understand the characteristic of tropical cyclones in southern Indonesia and their variations, both spatially and temporally, and their effect on extreme rain events in Indonesia. Historical data analysis results show that tropical cyclones in southern Indonesia generally occur in November-April with a lifetime of 7-8 days. The result of data analysis shows that the central pressure value of tropical cyclone in latitude 0°-10°S is more than 960 hPa. The value tends to be greater than the central value pressure of tropical cyclone in latitude 10°S-20°S, which has range of values about 920-960 hPa. This study also explains that there are 9 tropical cyclones in 35 years back that grow or move closer to the Indonesian archipelago in latitude 0°-10°S. The event of tropical cyclone Dahlia at the end of 2017 also affect the extremely increase of rainfall in Gunungkidul, Yogyakarta region with the increase of rain reaches 750% from the historical average.

ICDM-037 / ID-243

THE FINANCIAL RESILIENCE FOR DISASTER RISK MANAGEMENT IN INDONESIA

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ABSTRACT

Disasters can cause a significant financial loss on the human livelihoods. Indonesia is located in very vulnerable area to disasters. So that Indonesia needs a good disaster management to handle any possible disasters exposure. Resilience is an essential concept in disaster risk management which is defined as the ability to recover quickly from or resist being affected by various disaster impacts. Financial resilience is a kind of ability to fund every disaster response, recovery and reconstruction in an efficient and effective manner. Financial resilience to manage the disaster risk is very crucial for Indonesia in order to avoid financial loss caused by any disasters. This study is aimed to identify the importance role of financial resilience for disaster risk management in Indonesia, describe the current financing mechanism of disaster costs in Indonesia, and explore some recommendations to build better financial resilience in the future. This research is using a qualitative approach method by conducting documentation study and in-depth interview. The finding of this study describes the current condition of financial resilience for disaster risk management in Indonesia. This research develops some practical recommendations for improving the financial resilience in Indonesia. The study result is expected to provide important contribution in strengthening the financial resilience for disaster risk management especially in Indonesia. Recommendations are proposed that minimizing hazards and exposure of financial loss from disasters need a high collaboration and synergy of any related parties such as public and private sectors, domestic and foreign institutions, and local and worldwide communities.

ICDM-038 / ID-246

DETECTION OF DRY SEASON ANOMALY DURING INTENSIVE OBSERVATION PERIOD (IOP) IN 2017

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ABSTRACT

Normally, in the period between July - August 2017, Indonesia experiences drought which was caused by The Australian Monsoon wind. Radiosonde data obtained from launches conducted at the Palembang Meteorological Station during the IOP of 17 July - 16 August 2017, and those from cities that represents monsoon area (Pangkal Pinang, Jakarta and Surabaya) were also added to analyze the connection between Australian monsoon and precipitation in Indonesia. During IOP, the Australian Monsoon Index (AUSMI) is weaker than those during normal conditions. Australian Monsoon index is normally around 6 m / s. Here, The Australian Monsoon Index chart shows a sinusoidal pattern, where during the peaks and troughs of the index, will then result in drought anomalies in the afromentioned four cities. In addition, medium to heavy rainfall also occurs during the Australian Monsoon index peaks and troughs. During the drought anomalies in all of the four cities, moisture profile at the surface to 6000-8000m is quite wet (65-100%) with the vertical wind profile dominated by the southeasterly-southerly direction. In the event of a drought anomaly, the wind speed in these four cities at the level of 850mb is not more than 10 m/s.

ICDM-039 / ID-247

STUDY ON ESTABLISHMENT OF NATIONAL CLUSTER DISASTER MANAGEMENT (KLASNASLOG PB) TO FACILITATE DISASTER RELIEF TRANSPORTATION IN INDONESIA

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ABSTRACT

Activities to build information management by establishing Klasnaslogpal for disaster prevention efficiency in Indonesia have been undertaken by the National Disaster Management Agency (BNPB) as a non-departmental government institution since several years ago with the help of other stakeholders such as WFP (World Food Program), FORLOG PBI (Forum Indonesia Disaster Management Logistics) and the Ministry of Social Affairs and other humanitarian actors since 2014.This research is to understanding

the activity of Klasnaslogpal formation in Indonesia from 2014 until 2016. This research was conducted by using qualitative approach to depict clearly and deeply the activity of Klasster National Logistic Disaster Relief (Klasnaslog PB) in accordance with Perka BNPB No 10 Tahun 2012 on "Management of Logistics Assistance in Disaster Emergency Status" and Perka BNPB No. 3 of 2016 on "Emergency Response Command System"

ICDM-103 / ID-253

THE CONCEPT OF POLLUTION CONTROL IN COASTAL AREA THROUGH INDONESIAN COASTAL EDUCATION

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ABSTRACT

Litter become one serious threat for coastal area in Indonesia. Those litters are derived from various anthropogenic activities and various land usage. Even in 2015, Indonesia is declared as the biggest second country after China in contributing marine debris. But marine debris in Indonesia not all derived from domestic product. In coastal area of Aceh province there are found marine debris which derived from foreign. One right way to overcome the pollution in coastal area is by incorporating Marine education in educational curriculum. In anticipating the effect of destruction in marine environment occur today, Indonesian Ministry of Marine Affairs and Fishery has launched a coastal education model namely Indonesian Coastal Education. The aim of this study is to (1) identify the types of pollution in coastal area, (2) arrange the steps of observation, and (3) arrange the action plan of Indonesian Coastal Education (ICE) in overcoming pollution in coastal area. This study use literature study type by searching the reference of theories which are relevant with the case or problem of litter/waste pollution in coastal area. By applying 4A learning method in ICE, students can directly understand the problem occur in their area, particularly related to litter pollution in the beach. In this study concept, students of ICE are expected to be able to arrange action plan based on result of observation and analysis.

ICDM-041 / ID-261

SENSITIVITY PATTERN OF DROUGHT REGION IN BOJONEGORO

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ABSTRACT

Bojonegoro Regency is one of regency in East Java which affected by drought. Badan Penanggulangan Bencana Daerah (BNPB) Bojonegoro reported 17 districts which most affected by drought in south of Bojonegoro Regency, such as Kedewan, Sugihwaras, Kedungadem, Sukosewu, Tambakrejo, Balen, Kasiman, Ngasem, Baureno, Trucuk, Kepohbaru, Dander, Ngraho, Bubuan, Malo, Tambakrejo, dan Margomulyo. This study aims to determine the region sensitivity patterns in Bojonegoro Regency in connection by drought disaster which are reviewed accordingly of physic aspect and social aspect. Physic parameter such as precipitation, the average of total precipitation during 30 years (1986-2015), type of soil for identification texture and depth of soil, and slope. While social parameter is total population for identification of the populations water needs. The method of this study is overlay and scoring method. The classification of region sensitivity are low, medium, high and very high. The low classification which spread in Gayam Dictrict. The medium classification which spread in Kedawen, Kasian, Malo, Padangan Purwosari, Temayang and Sukosewu District. The high classification which spread in Tambakrejo, Kapas, Balen, Kanor, Sumberejo, Kedungadem and Gondang District. The very high classification which spread in Margomulyo, Ngrahu, Dander, Bojonegoro, Trucuk, Baureno, Kepohbaru, Kedungadem, Gondang and Sekar District.

ICDM-042 / ID-262

THE EFFECTIVENESS OF EXTERNAL COMMUNICATION ON REGIONAL DISASTER MANAGEMENT AGENCY AT PADANG CITY IN IMPLEMENTING THE TSUNAMI EARLY WARNING SYSTEM

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ABSTRACT

This study aims to describe the effectiveness of external communication on Regional Disaster Management Agency at Padang city in Implementing of Tsunami Early Warning System. The organization external communications problem in implementing tsunami early warning system became the background of the study. The lack of public understanding about tsunami early warning, unorderly in evacuation, the reluctance in using shelter as the evacuate place and the decreases number and quality of communication media in implementing tsunami early warning system by Padang Regional Disaster Management Agency named BPBD. This descriptive research is using quantitative method which the population is the people residing in the tsunami hazard zone area. In order to get the sample, the cluster random sampling technique is used. The data were collected using questionnaire and measure with likert scale and supported by documentation study. The results showed that the effectiveness of external communication on Regional Disaster Management Agency of Padang City in implementing the tsunami early warning system is quite effective. The effectiveness of 65.48 is in the range of 60-79.99. In fact, there are two ineffective factors. First, the community action (taken from effectiveness communications indicator) showed the value is 59 which means the indicator is in the range 40-59.9 9. The second is from affect factors of the effectiveness communication with value 59.66 means the indicator is in range 40-59.9 9.

ICDM-043 / ID-269

DEVELOPING DASHBOARD MONITORING SYSTEM FOR PUSKESMAS RESILIENCE TOWARDS DISASTERS INDEX (PREDIX)

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ABSTRACT

Puskesmas is a government-mandated community health centre in a sub-district level that provides comprehensive health development services and strengthens the function of both public and personal health efforts. Puskesmas has a critical role in minimizing the impact of a disaster. Thus, it is essential to promote the concept of Puskesmas resilience towards disaster. This paper aims to design dashboard system for performance monitoring and evaluation based on the general framework of Puskesmas resilience. We developed a Puskesmas Resilience towards Disasters Index (PREDIX) dashboard to visualize of Puskesmas resilience indicators designed to enable tracking of resilience index performance data in a clear, more user-friendly format. Steps to create a dashboard monitoring system for PREDIX include: identify parameters and indicators of Puskesmas resilience; proof of concept; build the technological infrastructure necessary to host the dashboard; design the visual interface for multiple platforms, and create systems to support the integration of finer-scale data. A conceptual framework was constructed for documentation of the measurement component of puskesmas resilience, which integrates possible measures for future development of an evaluation instrument. This framework has five parameters to measure the puskesmas resilience, namely: physical conditions, institutional issues, human resources, external relationships, and exposure to disaster. We developed the PREDIX dashboard to provide a visual interface which consolidates and presents information on an interface screen that can assist the process of strategic decision making to increase Puskesmas resilience toward disaster. This PREDIX dashboard provides charts showing structural and non-structural measurement of Puskesmas resilience and lays the foundation for a web-enabled, interactive resilience index dashboard. This new tool will assist to track progress toward the Puskesmas resilience, monitoring and reporting, and inform outcome-based policy making to increase resilience toward disaster.

ICDM-044 / ID-271

PREDICTION OF AGRICULTURAL DROUGHT PROPAGATION BASED ON REMOTE SENSING DATA AND PHYSICAL CONDITIONS OF UPPER PROGO WATERSHED

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ABSTRACT

Upper Progo watershed is a critical agricultural region in Temanggung Regency. A protracted rainfall deficit has an impact on agricultural activity in this region. The purposes of this research were to analyze the pattern of agricultural drought propagation in Upper Progo watershed, and to analyze the physical conditions of the land that have the most influence on the agricultural drought propagation, to devise a prediction model of agricultural drought propagation based on the variables of land physical condition. This research mostly used remote sensing image analysis to reveal spatial-temporal drought changes. The mapping of agricultural drought used the iTVDI method on nine images from Landsat 8. Subsequently, the slope, landform, land use, and soil texture variables were ranked based on their effects on soil moisture deficit using multiple regression analysis. Pixel sampling for regression analysis was done purposive sampling method based on land unit. The results revealed the rapid spatial-temporal agricultural that occurs mainly on the slopes and the foot of Mount Sindoro and Mount Sumbing. Agricultural drought extends steadily along with the increase in rainfall deficit days. Landform has the highest effect on agricultural drought propagation. The modeling of agricultural drought propagation prediction using the land physical condition variables yields an average value that is almost similar with the iTVDI value from pixel image calculation.

ICDM-046 / ID-277

RISK LEVEL OF LANDSLIDE HAZARD AT PROBOLINGGO DISTRICT EAST JAVA

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ABSTRACT

Approximately 50% of Probolinggo regency is a potential landslide region. This area is located in the southern part of Probolinggo regency with bumpy

terrain and slopes. The number of landslide events in 2016 reached 21 events. Potential landslide hazard was analyzed by SINMAP method. The level of landslide hazard risk is derived from the crosstab between landslide hazard potential and vulnerability index covering exposure aspect, sensitivity, and adaptive capacity with variables consisting of population density, livelihood, proportion of vulnerable population, building quality, and number of poor households. The high risk of landslide hazard in Probolinggo regency is found in 4 districts of Lumbang, Pakuniran, and Kota

ICDM-047 / ID-281

DEFORESTATION AND THE SUMATERA ELEPHANT EXPLORE AREA IN ACEH TIMUR REGENCY

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ABSTRACT
Reduced forest or deforestation is widespread in Aceh Timur Regency for plantation, agriculture and settlement purposes. Forests in Sumatra, including in Aceh Timur Regency are Sumatran Elephant habitat (Elephas maximus sumatranus). However, encroachment resulted in this fauna threatened sustainability. Sumatran elephants are endangered species protected by law both since Dutch colonialism, post-independence, and international regulations. Elephants have an important ecosystem role, but are seen as a nuisance to the local economy in Aceh Timur Regency, so it is not electrocuted, killed and abused. This paper reviews deforesation of the Sumatran Elephant in Aceh Timur Regency. The results of the study show that elephant roaming areas intersect with deforesation that occurred in Aceh Timur Regency. As an alternative local economy, there is still the potential of ecotourism with the mascot of Sumatran elephant. Thus the Sumatran elephant is still able to be sustainable and the forest as a habitat is maintained.

ICDM-048 / ID-282

ETHICAL AND LEGAL ASPECTS OF DISASTER RESPONSE UNDER INDONESIAN LEGAL SYSTEM

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ABSTRACT

Indonesia is a vulnerable country to disaster. Because almost all islands in Indonesia has its volcanoes, Indonesia is in the ring of fire, which potentially triggers volcano eruption disaster.Moreover, earthquake, flood, tsunami, land slide is regularly happened in Indonesia. It is very important to response such disasters. Recently, many regulations had been issued by the government, yet many unjust or indecent treatment have been experienced by displaced persons or the victims of disasters. Some illustrations concerning how bad legal position of disasters victims, especially their private rights, will be explored. It is common that in a contract, a natural disaster will be considered as force majeure. A legal consequence of this condition is, the disasters victims must defray or restore the damage by themselves. This condition could be very unfair or inhumane, because after the disaster usually many victims lose their capacity to perform their previous legal obligation. In this issue, law fails to protect, because legal solution could be formally legitimate but substantially unfair. In this case, ethical consideration must be endorsed, for increasing their capacity to recover from the disaster. This paper will describe disaster response in Indonesia legal system, especially in the context to protect displaced persons or victims of disasters; and to explore justification to use legal ethics to protect them, in case legal protection fails to provide substantive justice for disasters victims.

ICDM-049 / ID-283

EXTREME WEATHERS AND OLDER DISABILITY IN INDONESIA

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ABSTRACT

We aim to explore and explain how hazardous events of climate change such as rising sea levels, floods, and storms throughout the Indonesian archipelago impacted on the disability scores in Indonesian adults aged 15 and over, exploiting new internationally comparable measure of disability in the population namely Washington Group on Disability Statistics Short Set of Questions (WGSS). The main data come from the Indonesia inter-censal survey 2015 managed by The National Central Bureau Statistics which consist of 1,467,266 young adults (15-59 years old) and 227,854 older adults (60 years and over). Multilevel analysis was used to examine the effect of hazardous events of climate change on individual score of disability and shows that the magnitude association of hazardous events of climate change on older adult disability is substantially large than young adult disability. Disparities in education and wealth deepen the detrimental effect of hazardous events of climate change on older adult disability. Null findings are shown between local mitigation facilities, public health services, public transport and sports facilities, and social protection fund on older adult disability score, indicating diffuse targeting directed at reducing disability in vulnerable groups.

ICDM-055 / ID-290

UNDERSTANDING TYPOLOGY OF RESIDENTS LIVING IN DISASTER PRONE-AREA

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ABSTRACT

Research about population immobility associated with disaster, are very limited. This causes a lack of understanding about population immobility in disaster prone areas. This research contributes in understanding population immobility by explaining the typology of residents who remain stay in disaster-prone areas. The survey was conducted to the residents of Kampung Tambak Lorok Semarang, which is prone to rob inundation (rob). The research sample was 235 heads of households selected using proportional sampling area technique. Data were collected using a questionnaire

consisting of two parts: (1) demographic, social, and economic characteristics of people who did not move from disaster prone areas; and (2) staying intention in disaster prone areas. Data analysis using descriptive analysis by using table and graph of respondent characteristic and relation between respondent characteristic and staying intention in research area. Three (3) typologies have been identified, namely: Type-1 are residents who wishes to stay; Type-2 are residents who still have not decided whether to stay or move; and Type-3 are residents who do not want to stay. Each of these typologies is described by place of birth, age, length of stay, education, occupation, and income. Understanding of the typology of residents living in disaster prone areas is important for inputs for policy-makers, especially regarding the relocation of people from disaster prone areas to be more effective.

ICDM-056 / ID-293

PRIORITY SETTING FOR COMPETENCY DEVELOPMENT TRAINING TOPICS FOR ROAD CONSTRUCTION SITE MANAGERS USING EXPECTATION-PERFORMANCE ANALYSIS TO REDUCE THE RISK OF CONSTRUCTION FAILURE

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ABSTRACT

Road construction project disaster could be triggered by employing a less competent Site Manager either in terms of knowledge and skills or in attitudes in the project. Therefore, an evaluation of the competency of the current Site Manager and seeking required development training to improve the relatively weaker items of competency is needed. This paper presents an evaluation of the competency of Site Manager of road construction project in the West Sumatera Road Construction Project 2014. The evaluation was conducted using expectation and performance analysis and the evaluated items of competency were extracted from Indonesian Standard of Competency for Labour especially for Site Manager of Road Construction. The study found that construction management system, project administration

and resource procurement are among competency factors that falls under average and should be improved in the future. Therefore, development training on those items could be initiated by owner to reduce the risk of road construction project failure in the future.

ICDM-058 / ID-305

FISHERMAN 'S VULNERABILITY OF POVERTY AND EMPOWERMENT IN PESISIR SELATAN REGENCY

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ABSTRACT

Fishermen are a group of people who are vulnerable to poverty. Thus, the empowerment is the Governments way to increase the fishermen prosperity. So that, this study aims to describe the vulnerability of fishermen's poverty and to see how far the empowerment program is able to improve the fishermens life in Pesisir Selatan Regency. This research was conducted by using descriptive qualitative research method where the result showed that the vulnerability is due to the lack of access and assets the fishermen have to economic resources. In addition, the empowerment is not optimal in developing the assets and access by the government of Pesisir Selatan Regency so that the fishermen condition has not been entirely entities from poverty.

ICDM-059 / ID-306

EVALUATION OF LANDSLIDE HAZARD LEVEL ON SPATIAL PATTERN OF TANAH DATAR DISTRICT

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ABSTRACT

Natural disasters have caused many harm to human life. Minigration through disaster based planning is one way to minimize risks. The purpose of this study is to evaluate the level of landslide hazard in the planning of spatial pattern in Tanah Datar District. To determine the landslide hazard level using scoring method through overlay of thematic map. Indicators used are slope, rainfall, soil type, geology, landform, and land use. Furthermore, evaluation of landslide hazard on spatial planning is determined by overlaying hazard level maps with land use plans in spatial pattern planning. The results showed that the 26% landslide hazard rate was high danger level, 46% moderate hazard level, and 38% low hazard level. In addition, hazard level evaluation on spatial patterns resulted in approximately 37.3% planning for residential areas having high hazard levels. Therefore, it is necessary to revise the pattern of regional space and include the element of disaster in the planning of spatial pattern.

ICDM-060 / ID-308

THE PREDICTION OF TSUNAMI TRAVEL TIME TO MATARAM CITY INDONESIA BASED ON NORTH LOMBOK EARTHQUAKE AS THE INITIAL CONDITION

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ABSTRACT
The past earthquake records in North Lombok show the high level of earthquake hazard in this area. The maximum magnitude of earthquake was 6.4 Mw in May 30th, 1979. But, there were no tsunami events records due to those earthquakes. Nevertheless, this area is very close to Mataram City (province capital city) and tourism area. Therefore, the assessment of tsunami hazard is very important. The tsunami simulation is conducted by using COMCOT Model, which is based on the North Lombok Earthquake as the initial condition. The simulation result shows the prediction of tsunami travel time is about 18 ~ 20 minutes from the source location until Mataram

City. The tsunami height is small, i.e. about 0.13 ~ 0.20 meters due to the earthquake magnitude is relatively small (about 6 Mw).

ICDM-061 / ID-311

CHARACTERISTIC OF RAINFALL IN THE FLOOD PERIOD IN DKI JAKARTA IN 1996, 2002, AND 2007

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ABSTRACT

Abstract Spatial and temporal studies of rain characteristics were carried out in DKI Jakarta. This study aims to: assess the rain characteristic as the cause of flood in DKI Jakarta. Flood is studied from geography using spatial approach. The data collection of physical condition of the landform is obtained through interpretation of Topographic Map, Geological Map, and RBI Map. Data on flood areas (area, depth and length) were obtained from survey and flood incident data obtained from Kimpraswil (PU) of DKI Jakarta, and West Java, rain data obtained from BMKG. The analysis of spreading and spatial distribution is done spatially and temporally using Geographic Information System (GIS) tools, while rain analysis is done descriptively on a scale of 1: 50,000. The results of the research suggest that there are differences and similarities of rainy anomalies in the prone areas of flooding in DKI Jakarta.

ICDM-062 / ID-316

DISASTERS RISK REDUCTION OF LAHAR FLOW AND DAM BREAK IN SINABUNG VOLCANO AREA

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ABSTRACT

Sinabungs volcanic activity has lasted almost 5 years. During its period of activity, Sinabung has produced thick, slow-moving lava forming a lava dome. When collapsed, it creates a dome-collapse pyroclastic flow. Since 2013 to 2017, the amount of volcanic material spewed has been around 50 million m3. This has been spread on the slopes of South, Southeast, and East. The unconsolidated material during the rainy season has the potential to cause lahar flow. During its activity, volcanic ash is carried by the wind to the Western slopes. The exposure of volcanic ash on the Western slopes to rainfall causes landslides made up of material from an ancient eruption, triggering lahar flow. On April 10, 2017, there was a pyroclastic flow and ash, sliding as far as 3.5 km toward the Southeast - East sector which reached the Lau Borus River, forming 2 natural dams. Pyroclastic flows from the current activity of Sinabung causes river dams to continue forming, potentially causing a dam-break. The method of problem-solving in this assessment uses a rationalistic approach and descriptive qualitative method. The results of vulnerability analysis and disaster risk assessment are used as the basis for disaster countermeasure in the area.

ICDM-063 / ID-318

PLAN AND DESIGN PUBLIC OPEN SPACES INCORPORATING DISASTER MANAGEMENT STRATEGIES WITH SUSTAINABLE DEVELOPMENT STRATEGIES: A LITERATURE SYNTHESIS

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ABSTRACT

Current focus of planning and designing public open spaces has been mostly given on creating sustainable cities contributing to its three pillars; economic, social and environmental. However, the negative implications of rapid urbanization and the implication of climate change has increased disaster risk in cities mounting more pressure on the path of sustainable development. Therefore, it is imperative to incorporate the enhancements of disaster resilience with the sustainable development strategies. Yet, the integration of disaster management strategies with planning and designing public open spaces, remains unrehearsed within the urban planning context.

Accordingly, this ongoing research study emphasize the need of incorporating disaster management strategies with sustainable development strategies when planning and designing public open spaces in cities. This paper first analyses the disaster management literature, providing evidences of potential use of public open spaces as an agent of recovery, to provide essential life support, as a primary place to rescue and for shelters and potential for adaptive response. Secondly, the paper cross analyses planning and designing literature with disaster management literature to find out the methods and approaches that can be used to harness the identified potentials. Finally, the paper suggests set of strategies to plan and design public open incorporating disaster management strategies with sustainable development strategies.

ICDM-064 / ID-321

CORRELATION BETWEEN TYPE OF GROUND BASED ON B-VALUE AND THE IMPACT ON BUILDINGS DUE TO SUMATRA EARTHQUAKES

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ABSTRACT

The destructive earthquakes occurred in Sumatra are dominated by small to medium magnitude earthquakes, which generally come from the Sumatra fault and have directly impact on the land and buildings and around residential buildings. These earthquakes can be classified into high frequency earthquakes with low-vibration periods.The hazards were caused by the earthquake mostly from damage and collapse of the residential buildings. This study aims to observe the characteristics of rocks and ground in Sumatra areas in related to the resistance of the earthquake on residential buildings.The method that used is the seismicity estimation, to observe seismic characteristics based on the b-value constant. The b-values obtained from some previous researches and observed in the pattern, so that they could be calculated, and then analyzed type and condition of local ground and then evaluated its effect on the surrounding buildings. Based on the

outcomes, the estimation of b-value seismic parameters in Sumatra from some previous researches was found 0.6 to 1.1.It means that the type of ground in areas of Sumatra has hard rock layer.Physically, high-frequency earthquake waves and low vibration periods will travel efficiently on hard layer, having direct impact on local buildings and the risk of earthquakes as a result the collapse of buildings will be higher.

ICDM-065 / ID-322

DAMAGE AND LOSS PROBABILITY ASSESSMENT OF REINFORCED CONCRETE BUILDING DUE TO YOGYAKARTA EARTHQUAKE SCENARIO USING PUSHOVER AND HAZUS ANALYSIS

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ABSTRACT

Yogyakarta is one of the cities in Indonesia that is prone to earthquake. The seismic hazard map of Indonesia shows an increase in the peak ground acceleration (PGA) values of bedrock from SNI 1726-2002 code to SNI 1726-2012 for Yogyakarta area. The building of the Faculty of Social Science, Yogyakarta State University (UNY) is one of the educational facilities built in 2012, using the earthquake code of 2002. Seismic vulnerability assessment of the building is very essential to do as one of earthquake disaster mitigation efforts. The study aims to determine the seismic building performance level based on ATC-40 criteria and to obtain the percentage of building damage probability caused by earthquakes for various levels of damage according to HAZUS. The research begins by modelling building structures in 3D followed by performing pushover analysis until the base shear and displacement values are depicted in the capacity curve. The capacity curve developed in the form of capacity spectrum (ADRS format) to obtain drift ratio as a determinant of building performance level, then proceed to calculate the probability of building damage based on HAZUS method. The determination of the spectral displacement is based on the attenuation equation that corresponds to the characteristics of the Yogyakarta earthquake, so that the result is close to the real condition. The results show that the building is included at the Immediate Occupancy (IO) performance level which means

that if an earthquake happens, only a little structural damage occurs. The total vulnerability value based on the HAZUS method analysis reached 48.12%, in which the probability of damage for the slight, moderate, extensive and complete level reached 22.59%, 21.60%, 3.71% and 0.23% respectively. In addition, based on the damage loss assessment obtained that the building has the damage economic risk of 4.692%.

ICDM-066 / ID-329

THE ROLE OF CULTURE IN INFLUENCING RESILIENCE: UNDERSTANDING MINANGKABAU WOMEN STRATEGIES TO COPE AND RECOVER FROM DISASTER

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ABSTRACT

West Sumatra is very well-known with their adat basandi syara', syara' basandi kitabullah and matrilineal culture. This province puts Islam as guidance and at the same time prioritizes and respects the role of women. Aside from its religious and cultural aspects, this province is also famous as a disaster-prone area. Since 1990s many disaster occurred in this province, with major ones include Padang Pariaman, with earthquake and tsunami threats, and also Solok, with volcano eruption, and galodo or big flood threats. These disasters are impacted directly on Minangkabau people's livelihood, especially women. In West Sumatra or Minangkabau society, women hold a crucial role in households and community because they are chosen as Bundo Kanduang or leader of the Rumah Gadang (big house owned by community) and kaum (clan). This situation makes them as the person who gave solutions in any occasion, especially when disaster happened. The aim of this study is to understand the resilience of Minangkabau's women, which focused on their coping strategies at pre, during and post disaster, and how the local knowledge applied in this condition. Some of the strategies taken include; mamagang sawah or organizing the paddy field activity (from seeding, harvesting until the storing process) and this strategy is very useful to be applied when disaster

happened, they still can use the rice which has been kept to fulfill their needs). In the post-disaster situation, strategies taken include badoncek, an ancient tradition in Minangkabau which remained until now, similar with arisan in general culture of Indonesian women, women not only collected the money and ameh (gold), but also the livestock such as buffalo, cow and goat. At this situation, the collected assets are used to damaged houses and mosques. This study used a qualitative approach; observation, in-depth interviews (with local leaders and Bundo Kanduang) and also used secondary data in two districts; Padang Pariaman and Solok which showed link between women, traditional practice and resilience. The findings of this study showed that by involving women and practicing those local practices, community could be more resilient to disaster. In the future, hopefully this study will give wider contribution to DRR issue, especially in analyzing other local practices and how community tied to their local practices and make them more resilient to disaster.

ICDM-067 / ID-330

SPATIAL AND STATISTICAL ANALYSIS THE CAUSE OF FLOODING IN NORTHWEST JAKARTA FLOODPLAIN (ANGKE BASIN)

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ABSTRACT

Jakarta, as the Capitol City of Indonesia is also one of the most flooded area in Indonesia [1]. The floods were occurred annually and heavy floods were usually occurred once in few years. This paper will address the geographic distribution of floods and statistical analysis of the flood's causes using rain intensity, tidal height, elevation, and floods occurrence as the parameters in Angke and Penjaringan District, located in Northern Jakarta where the floods hit the most.

ICDM-068 / ID-331

AN ALTERNATIVE ARCHITECTURE OF DISASTER NOTIFICATION SYSTEM IN A COLLEGE FOR SMARTPHONE DEVICES

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ABSTRACT

Disasters are things that can come suddenly wherever and whenever. If a disaster occurs in a quiet area it may only cause a slight loss. On the contrary, if it happens in a crowded center like a city, a market, or a college it can cause enormous losses, it can even cost you lives. In the past, the notification of the disaster is a very big problem, but now along with the development of technology, we as human beings can use it as a way out so as not to be hit by the disaster. Various ways and methods have been proposed to minimize the damage and casualties caused by a disaster. Through this article, we try to propose an alternative way of notification or the early warning about disasters occurring in college environments such as fire, floods, or other highly dangerous disasters. As for what we propose here is the architecture of disaster notification system in college for smartphone device users. With the proposed architecture, the disaster notification for smartphone devices can be done in massive, multi-platform and in a short of time. So that students can immediately take action, such as running to a safe place, which in turn can minimize the victim and damage that may occur.

ICDM-069 / ID-332

A RESILIENT ENVIRONMENT THROUGH THE INTEGRATION OF CCA AND DRR- AN OVERVIEW OF EXISTING CHALLENGES

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ABSTRACT

Creating a resilient environment to disasters is a primary contemporary challenge. Disaster Risk Reduction (DRR) and Climate Change Adaptation

(CCA) are well known concepts and practices used to reduce vulnerability and thereby contribute to the creation of a resilient environment. There is growing recognition that the theory and practice of CCA and DRR are converging and therefore, CCA and DRR efforts should be integrated to bring about effective solutions to reduce vulnerability and to create a resilient environment to disasters. However, the integration of CCA and DRR has always been a challenge due to several factors that hinder the process.Asia is highly vulnerable to disasters due to its geographical location, unplanned development, undistributed internal migration for urban areas and so on. Within this context it is extremely important that the region undertakes strategies to create a resilient environment. In order to create a resilient environment, CCA and DRR integration plays a vital role, but within the current social, economic, political and demographic context of Asia, integration of CCA and DRR has become difficult. Based on the findings of a global analysis conducted as part of the research project ESPREssO, funded by the EU Horizon 2020 programme, this paper provides a critical review of the existing challenges associated with integrating DRR and CCA in order to create a resilient environment in Asia. During the first phase of the study, a narrative desk-based literature review was conducted and during the second stage, extensive primary data collection was undertaken. The primary data collection methods were semi-structured expert interviews, expert focus group discussions and an online questionnaire survey. Analysis revealed that a chaotic institutional set-up, political priorities, funding issues, stakeholder interests and communication barriers are the prominent challenges to the integration of CCA and DRR in Asia, which must be overcome in order to establish a resilient environment.

ICDM-072 / ID-336

SPATIAL ANALYSIS OF SOCIAL VULNERABILITY TO EARTHQUAKE HAZARD IN BENGKULU CITY

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ABSTRACT

Bengkulu City which is located on the western coast of Sumatera Island is a vulnerable region to earthquake, but the risk among the city parts are not equally formed. Based on exposure, sensitivity, and adaptive capacity using variables such as population density, proportion of workers in informal sector, proportion of vulnerable age population, proportion of non-permanent houses, proportion of prosperous households, proportion of high school graduates and above, and social capital aspect. This research aims to find and mapping the region's vulnerability based on social indicators associated with the Peak Ground Acceleration of ≥ 5,0 RS earthquake in 2000-2015. Region's vulnerability assessment based on social indicators to earthquakes was done on the basis of villages using the overlay method and scoring. The results showed that the further from the city center, the lower the vulnerability level is, except for the southern part. The pattern of vulnerability level to earthquakes indicated that on the magnitude 5,0 to 5,9 RS, the region's vulnerability level are high and very high in the high PGA region, while on the magnitude of 6,0 to 7,9 RS, the region's vulnerability are high and very high in the low PGA region.

ICDM-073 / ID-338

CONSTRUCTION INDUSTRY IGNORANCE TO DISASTER RISK REDUCTION

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ABSTRACT

Previous scholars have found that ignorance is one of the problem in disaster risk reduction implementation. But until now there still little works have been done in elaborating this issue.This paper explores the conception of ignorance and its relationship with disaster management and construction project management. The different characteristics of both management types create a mental-blocked for construction industry players to implement disaster risk reduction. Moreover, motivation and intention will influence an individual for being an aware or an ignorant person. This paper indicates

that construction industry players need to study thoroughly about human behaviour, like what they did with technical issues and disaster policies. These three subjects are similarly important and complementary to each other. Ignoring human-interest subject will make difficulties for construction industry to implement disaster risk reduction.

ICDM-074 / ID-342

NEED OF STRONG UNIVERSITY-INDUSTRY COLLABORATIONS: A CASE STUDY IN SRI LANKA

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ABSTRACT

Sri Lanka is a disaster-prone country where most of the disaster management activities are undertaken by the governmental and private sector organizations and volunteers. The university industry collaborations (UICs) in this field have produced several tools, services and advancements of industrial applications globally. When looking from the Sri Lankan perspective, UICs are seemed to be significantly low compared to the global context. Therefore, this study attempts to identify the reasons for being so, by the means of a literature survey and gathering stakeholder opinions. After identifying the existing status of said collaborations; stakeholders from academia and the industries were asked to provide their expertise on the barriers and challenges, needs and requirements and opportunities in creating UICs which led to identifying best practices and recommendations in creating strong and sustainable UICs. A policy that addresses the aspects of knowledge diffusion, production, relationship and engagement, increasing the awareness and the exposure of the academia for the industry and capacity building in universities were some of the recommendations given in order to tackle the barriers and challenges which occur in UICs. The most significant fact raised was the need of a strong and innovative leadership from universities for the sustainability of UICs in Sri Lanka.

ICDM-075 / ID-343

AN ANALYSIS OF PROBLEM IN COMPOSING OF TSUNAMI CONTINGENCY PLAN IN PADANG CITY

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ABSTRACT
Padang city as one of the most vulnerable areas of an earthquake potentially tsunami on the west coast of Sumatra Island should formulate policies to minimize the impact of the disaster. The government and all relevant stakeholders should focus on disaster risk reduction efforts. As part of this effort is making policy in formulating contingency plans to deal with tsunami risk. Padang City Government has developed a contingency plan on tsunami risk since 2013 as a form of public policy. Even though the tsunami has not occurred in Padang City yet, but as a form of evaluation of this policy, it is necessary to analyze the problems in developing the contingency plan of the tsunami for the improvement of its future. Therefore, this article describes the results of the review of problem analysis in the policy of composing tsunami contingency plans in Padang City.

ICDM-076 / ID-344

CITY CLIMATE CHANGE IDENTIFICATION ON REPRESENTATIVE CONCENTRATION PATHWAYS (RCP) SCENARIO 4.5 AND 8.5 (CASE STUDY IN SERANG)

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ABSTRACT
The issue of climate change is a global issue often discussed lately. But deeper study is needed to identify and analyze the risks of climate change. Thisstudy takes Serang, Banten as the study area because Serang is a densely populated city . It is necessary to analyze the impact of the climate

change to the city. The climate change is indentified by rainfall parameter analysis and temperatures during the baseline periods (1981-2015), the period of 2016-2039 as the future (near), the period of 2040 to 2069 (middle) and the period of 2070 to 2099 (far) taken from GCM models. The output of this projection willÂ be corrected by the equation Bennet and Eisner. Then, the Mean Absolute Error (MEA) in each data modeling scenarios is used to find the best scenario models in the future. The results show that in projecting three periods (near, middle, far), each climate parameter hasdifferent correction. The projection of monthly rainfall average in the future will decrease while the air temperature (maximum and minimum) is increasing.

ICDM-078 / ID-346

HOTELS CONTINGENCY ASSESSMENT IN PADANG CITY AGAINST COASTAL HAZARD

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ABSTRACT

Padang city has a variety of regional conditions. Where coastal areas dominate. Viewed from the condition, the city of Padang is very vulnerable to coastal disaster (Coastal Hazard). In response to these statements, it is necessary to optimize the Multi-Hazard Early Warning System (MHEWS) for contingencies against coastal hazard referring to the four major components of MHEWS under UNISDR. One is the use of shelters for public evacuation buildings such as hotel use. The purpose of this study is to assess and plan for the things necessary for a hotel contingency against the coastal hazard. To achieve the goal,some hotels selected firstly near the beach as the object of research are five for four stars hotels, one for the one-star hotel, and three for two stars hotel. The research result is processed by qualitative and quantitative analytic method in the percentage form. By contingency, assessment can be concluded that contingency percentage is affected by leveling hotel star. Things that need to be planned for the hotel contingency against coastal hazard is the installation of evacuation route map, and signs of evacuation direction in a place that is easy to find. Separation of signs of

evacuation direction and gathering point between earthquake and tsunami disaster, hotel feasibility test as shelter, pay attention to availability and condition of siren/alarm device as information dissemination media, in collaboration with BPBD Padang City and implementation of training and simulation periodically.

ICDM-079 / ID-347

ACHIEVEMENTS AND LESSON LEARNED FROM THE 2010 MERAPI ERUPTION DISASTER MANAGEMENT: AN INITIAL STAGE TO SUSTAINABLE VOLCANO DISASTER RISK REDUCTION

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ABSTRACT

The Mw6.3 of 2006 Yogyakarta earthquake and the VEI4 of 2010 Merapi Volcano eruptions at Yogyakarta Special Province (YSP) have shocked the Yogyakarta community in one side but it provided invaluable lesson learned how to manage the natural disaster in other side. It is necessary, therefore, to identify and to explore the achievements and the lesson learned mainly during the early warning, evacuation, emergency response and disaster recovery phases of the 2010 Merapi eruption. Research on the 2010 Merapi eruption disaster management (DM) focusing in the emergency response and disaster recovery up to 2014 has been done. Research on the emergency response included the field/site observation, site and office interview of respondents. Involvement in the Merapi disaster recovery covers scrutinizing the technical drawings of earthquake resistant buildings, supervising the building construction at the resettlement site and conducting site Hammer and laboratory tests of concrete specimens. Results of investigation showed that in general Disaster Management has been applied appropriately including material qualities and construction quality of earthquake resistant structure. Among the achievements in the DM respectively were: 1) the accuracy of monitoring the direction of mountain summit deformation; 2) successfully prediction and evacuation of people before 2010 Merapi eruption; 3) quick resettlement buildings based on the principles of earthquake resistant structure. Lesson learned to improve the DM are : 1) the

early warning should be presented as clear as possible; 2) the government should officially carried out regular "tell story" to community about the development of the disaster threat ; 3) building disaster knowledge and awareness to community for reducing the risk should be regularly carried out and 4) the skills of the builders should be well prepared .Implementation ofresilience schools and villages , sister school and village are effortstowardSustainable Disaster Risk Reduction

ICDM-080 / ID-352

STRONG GROUND MOTION ESTIMATION IN YOGYAKARTA, INDONESIA, BY STOCHASTIC GREEN FUNCTION METHOD

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ABSTRACT

The Yogyakarta earthquake (Mw = 6.3) occurred in May 27, 2006, killed 5,716 people and injuried 37,927. Although the magnitude of the earthquake was not so large, the damage was extremely high because 15,664 and 202,032 houses were totally destroyed and partially damaged. In this study, the simulation of strong ground motion is done by using stochastic Green's function method of Irikura and Miyake (2011). The location of the earthquake 6.3Mw (7.962°S - 110.458°E, depth 10km) reported by USGS has been used. The source of the earthquake is modeled by a simple rectangular fault of which size is 20km x10 km. The depth of the fault is assumed to be 10km under surface. The fault plane is divided into 50 rectangular subfaults with 2km x 2km in each and each subfault is represented as a point source. Amplification of surface layers is linearly taken into account.

ICDM-081 / ID-360

COMMUNITY RESILIENCE ELEMENTS AND COMMUNITY RISK PERCEPTION AT BANDA ACEH PROVINCE, ACEH, INDONESIA

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ABSTRACT

Abstract - Issues related to community resilience became more popular after the Indian Ocean was hit by earthquake and horrible Tsunami hit Aceh, Indonesia in 2004. Community resilience is the ability of communities to withstand and mitigate the stress of a disaster, there is less clearness on the detailed resilience-building process. Risk perception, is concerns how an individual understands and experiences the phenomenon and believed to affect people's preparedness for, responses to and recovery from natural disasters. This study was conducted to measure the relationship between community resilience elements (community experience, community exposure, community reaction, community attitude, and community knowledge) and community risk perception using questionnaires gathered from 542 samples of the Banda Aceh Province community at Aceh, Indonesia. The outcomes of SmartPLS version 3.2.5 path model showed five important findings: firstly, community experience significantly correlated with community risk perception. Second, community exposure significantly correlated with community risk perception. Third, community reaction significantly correlated with community risk perception. Fourth, community attitude significantly correlated with community risk perception. Fifth, community knowledge significantly correlated with community risk perception. Statistically, this result confirms that the implementation of community resilience elements such as community experience, community exposure, community reaction, community attitude, and community knowledge act as an important determinant of community risk perception towards disasters risk management in the studied Banda Aceh Province community area sample. In addition, discussion, implications and conclusion are elaborated.

ICDM-082 / ID-362

QLUE APPLICATION IN JAKARTA FLOOD

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ABSTRACT

Flood occurs in the capital city of Indonesia every year and many endeavours plan to solve this disaster. In technology era, government attracts to use ICT in giving the best service to the citizen. Qlue is one of many applications that Jakarta Provincial Government provides in giving services to citizen, including the effort to face the disaster problems. This paper explores the relation of ICT in Jakarta's flood through Qlue application. Initially, it will enunciate citizen roles by using Qlue application and the function of Qlue application in flood management cycle from government officer googles through interview. Next, it will inform the citizen behaviour of Qlue application from citizen's acceptance and use through questionnaires. The findings show Qlue application makes citizen roles as a microtasker which usefull in mitigation, response and recovery stage. The benefits of Qlue application in flood management cycle are increasing public awareness of flood, enabling missed flooding or puddles from government control, and giving information of the flood damage. Citizen argues that Qlue application is useful (showing from the performance) and easy to use. This study suggests that government should introduce Qlue more enthusiastic and expand the connection to other related applications to get higher benefits.

ICDM-083 / ID-367

COMMUNITY-BASED TOURISM DEVELOPMENT VIEWED FROM ECONOMIC, SOCIAL CULTURE AND ENVIRONMENT ASPECTS IN MANDEH'S INTEGRATED MARINE TOURISM AREA

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ABSTRACT

Development of community-based tourism became the forerunner of its formation a tourist village that has been increasingly accepted in most

developing countries as a strategy against poverty reduction. In the tourism development should pay attention to the economic, social and cultural aspects as well as the environment. West Sumatera Provincial government is actively developing the tourism sector including Mandeh's tourism area . One of the reasons why this area become any parties concern is because this place has great potential in social, economic, cultural and environmental. Mandeh Tourism Area is not only having a beautiful scenery but many activities related to the potential that are related to each other. Therefore, this article aims to describe the development of sustainable tourism and a positive impact for the welfare of the community.

ICDM-084 / ID-368

IDENTIFICATION OF SANITATION BEHAVIOR AMONG PEOPLE AFFECTED BY FLOOD DISASTER IN BUKITTINGGI - WEST SUMATRA

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ABSTRACT

Bukittinggi is one of city in West Sumatra that is potentially flooded that happen at the highest rainfall periods. Only 3 from 24 urban villages in Bukittinggi have low sanitation risk and it increase the flood-following disease. This research was done with quantitative approach to indentified sanitation behavior among flood affected people and showed the frequency distribution and percentage of each variable. Most flood-affected people in the Bukittinggi have toilets but half of them use dissposable diapers for their children and end up in trash cans. A small percentage of people dispose their wastewater through toilets and their sewers are in poor condition. Most people do not segregate their solid waste and almost all of the solid waste have been dumped to the temporary dump site. Most people wash their hands with soap but only small number do it before cooking. It is suggested to government to socialized the importance of sanitation and strengthen the role of community leaders to increase community awareness to have clean and healthy lifestyle.

ICDM-085 / ID-369

GENDER MAINSTREAMING AND SUSTAINABLE DEVELOPMENT GOALS (SDGS): A SYSTEMATIC LITERATURE REVIEW ON POST DISASTER RECONSTRUCTION AREAS

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ABSTRACT

This paper explores the linkage between gender mainstreaming and Sustainable Development Goals (SDGs) in the field of post disaster reconstruction. A systematic review was conducted using Systematic Reviews and Meta-Analyses (PRISMA). We found a significant contribution of gender mainstreaming in achieving SDGs in the context of post disaster reconstruction.Some facilitators and barriers of mainstreaming gender into sustainable post disaster reconstruction were identified. Policy makers and implementers should aware those factors by reducing barriers while at the same time strengthening facilitators.

ICDM-086 / ID-376

REHABILITATION AND RECONSTRUCTION MANAGEMENT OF PHYSICAL INFRASTRUCTURE POST EARTHQUAKE

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ABSTRACT

The earthquake that occurred on September 30, 2009 in the city of Padang, West Sumatra cause many of school buildings damaged. Building damage is divided into three categories: light damage, medium damage, and serious damage. Buildings that hserious damaged will be followed up in the form of Rehabilitation and Reconstruction. To achieve the objectiv to identify the systems and factors that influence the decision-making for the rehabilitation or reconstruction of damaged school buildings. As the purpose of the research are identify system and affecting factors of rehabilitation and

reconstruction decision of serious damage school buildings. Therefore six rehabilitation and five reconstruction schools were determined. Furthermore, do the data collection interviews with headmaster of school, the Education Office of Padang City, and the Regional Disaster Management Agency (BPBD) of Padang City. The result of the research was processed by using software named Nvivo based on BNPB Law Number 11 Year 2008 about Rehabilitation and Reconstruction. From the data processed, it found the result of research that the affecting factors of consideration of Rehabilitation and Reconstruction decision of age of year plan and physical strength of building structure. The decision-making of school buildings system starts from government coordination, identification of school buildings, data collection of damage to buildings, determination of category of damage to buildings, discussion of Rehabilitation and Reconstruction decision, fund, make contract and MOU, Mayor and Governor's approval, and implementation.

ICDM-087 / ID-382

A REVIEW OF RESILIENCE INFRASTRUCTURE SYSTEMS IN FLOOD-PRONE AREAS IN MALAYSIA

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ABSTRACT

A community is very dependent on the functioning of infrastructure systems such as energy, water and waste, transportations, telecommunications and buildings. The dependency of a community to infrastructure systems highlighted after the disruption of those systems due to the natural disaster event.As natural disaster event frequently happened around the world and caused a significant loss of infrastructure systems, there is an extreme need to have resilient infrastructure systems which can absorb the shock, recover its functionality and operate appropriately after the natural disaster event. The infrastructure systems itself is a combination of several systems, and

each system consists of several subsystems.Therefore, the purpose of this paper is to identify the significance of infrastructure systems and resilience criteria to strengthen infrastructure systems in flood-prone areas particularly in Malaysia from the literature. The review of the literature identified five main infrastructure systems and 17 infrastructure sub-systems. In another hand, based on the literature reviewed, there are four main resilience criteria incorporate with 13 sub-criteria.

ICDM-088 / ID-383

STEP-A: INDONESIAN CONTRIBUTION TO THE FIRST STEP IN ASSESSING AND STRENGTHENING SCHOOL DISASTER PREPAREDNESS

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ABSTRACT

Countries in the Indian Ocean and the Pacific rims are among the fastest in its development growth, yet at the same time highly prone to coastal disasters, including tsunamis. This includes rapid growth of school infrastructures and institutions.However, the Indian Ocean tsunami on 26 December 2004 had shown its significant impacts to communities including schools resulting the highest fatalities and infrastructure damages.Communities, schools and local government were left utterly unprepared. It became important to understand the level of preparedness to

ensure appropriate interventions in the future. In 2006, the Indonesian Institute of Sciences (LIPI) and UNESCO supported by UNISDR developed a tool to assess the tsunami preparedness level of schools based on five parameters, which were; 1) Policy, 2) Knowledge, 3) Preparedness and Response Plan, 4) Early Warning System, and 5) Resource Mobilisation Capacity. LIPI also developed an initial web based application of this tool. As of January 2018, over 200 schools in 10 provinces in Indonesia have been assessed using this tool. In mid-2017, a UNDP Regional programme funded by the Government of Japan called Partnerships for strengthening school preparedness for tsunami in the Asia Pacific Region supported a multi-disciplinary team to improve the tool and developed a mobile-based application and a web-based application; both are now called STEP-A application for a more convenient, faster, and easier process to assess school disaster preparedness capacity. Currently, the tool focused on tsunami risk, but in the future, the tool will be expanded to assess not only tsunami risk, but also other risks that threaten the safety and well-being of people in schools, particularly children. UNDP Regional will promote the STEP-A application to be utilised in schools in 18 countries across Asia-Pacific that are prone to earthquakes and tsunamis.

ICDM-089 / ID-384

IDENTIFICATION OF ELEMENTARY SCHOOL BUILDINGS INFRASTRUCTURE READINESS IN PADANG COASTAL AREA AND MITIGATION EFFORTS IN AGAINST OF COASTAL HAZARD

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ABSTRACT
Padang is very vulnerable to coastal hazard because its predominantly coastal area. Therefore, it is necessary to identify the readiness of elementary school building infrastructure and mitigation efforts in against coastal hazard. To achieve the objective, 24 coastal elementary school were determined as objects of research. The methods of data collection are observation and interview with the principal or teachers who know about disaster in the school. Interviews were also conducted to BPBD Padang to

confirm the data obtained from the respondents in the school. The collected data were processed using qualitative and quantitative analysis method which is displayed in percentage form. The percentage of elementary school readiness to coastal hazard obtainable based on the important components underlying MHEWS according to UNISDR, especially earthquake, tsunami and flood. The results show that only 6 of the 24 elementary schools have a percentage of 50% to 58%, while the other have a percentage of 25% to 49%. This result means that Padang's coastal elementary school is not well prepared for coastal disasters.

ICDM-091 / ID-388

3D MODEL AND MORPHOMETRY OF BERINGIN WATERSHED AS AN EFFORT FOR FLASH FLOOD DISASTER RISK REDUCTION IN SEMARANG

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ABSTRACT

Flood disaster in Beringin Watershed during 2010-2017 occurred 8 times, from two incidents of the flood experienced a change of type from flood puddle into flash flood. Most of the residents in the area have dwellings adjacent to rivers, however, the population's understanding of river characteristics, particularly those associated with flash flood is still low. The objectives of the research are to make the morphology of the watershed, as stated in the first and second objectives, namely: 1) to create a three-dimensional (3D) spatial model of the Beringin Watershed and to describe the physical profile and shape of the watershed; 2) to construct spatial based data (image map) on disaster-risky of flash flood in Beringin Watershed. The next objective (3) is to measure and map the morphometry of the watershed, which consists of landslide potential, constriction of river bodies and calculating peak discharge, so as to obtain the trigger factor of flash flood. Objective 4) is to map the flood vulnerability of Beringin Watershed to make the conservation priority of Beringin Watershed to minimize the risk of flash flood disaster. Methods The research was conducted with a combination of qualitative and quantitative approaches. To achieve the first and second

objectives are used qualitative approaches by way of interpretation of digital maps and satellite imagery. To achieve the first objective, namely to make 3-dimensional model, done digital map processing by entering the elevation data (Digital Elevation Model). The second objective is obtained by overlaying the result of image interpretation with the administrative map until the image of the target of the settlement at risk of flash flood is obtained. The third and fourth objectives are done by quantitative approach by calculating landslide potential, peak flood discharge and measurement of river morphometry with GPS tracking and measuring river body constrictioning so that the trigger factor of flash flood can be known. The fourth objective is obtained by elaborating the results achieved in the previous three objectives to obtain the priority zonation map of flash flood conservation in Beringin Watershed. It is clear that the output of this research will contribute to the conservation of Beringin Watershed whose outcome is the reduction of flash flood disaster risk in affected communities in Beringin Watershed.

ICDM-092 / ID-389

REGIONAL COOPERATION TOWARDS EFFECTIVE MULTI-HAZARD EARLY WARNINGS IN ASIA

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ABSTRACT

Coastal hazards are significantly increasing and affecting communities across the world. Hence leading global initiatives emphasise the need of multi-hazard early warnings for effective disaster risk reduction and resilience. Even though, Asia records the largest share of deaths and economic losses from natural hazards, present level of early warnings is uneven across countries in Asia. Hence, this project aims to develop capacity building among higher-education institutions in Asia to enhance regional cooperation for an effective risk reduction and resilience through capacity building among higher-education institutions for effective multi-hazard early warning mechanisms. This paper is based on the initial stage of a project aimed to enhance capacity building in Asian higher education institutions. Based on the survey carried out among experts in multi-hazard early

warnings, the study found that governance, risk warnings, awareness and education, preparedness culture and resources as the enablers that enhance the effectiveness of multi-hazard early warnings. The study also found that weak preparedness and response capacities, weak monitoring and weak regional and political support are the barriers that hinder the effectiveness of multi-hazard early warnings in Asia.

ICDM-094 / ID-395

LESSON LEARNED FROM RETAINING WALL FAILURES: A GEOTECHNICAL DISASTER

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ABSTRACT

This article presents five failure cases of retaining wall and lesson learned to avoid similar events repeated in the future. The failure of retaining wall is categorized as a geotechnical disaster because it is not only causing major economic losses but also some casualties also been reported. The main reason for the failure was the improper design of the retaining and supporting system. One of the good indication before failure would occur was excessive movements induced by excavation or fill. Hence, it was recommended to install a proper geotechnical instrumentation in the excavation or fill and the nearby area. Moreover, an excavation or fill project should be strictly operated by a safety management to avoid any casualties, and the safety regulations should be supported and understood by all of the people involved in excavation or fill projects.

ICDM-095 / ID-398

INVESTIGATION OF PANGKALAN FLOODS: POSSIBLE CAUSES AND FUTURE DIRECTIONS

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ABSTRACT

Two flood events in Pangkalan, Lima Puluh Kota Regency, triggered some questions whether or not the dam downstream the catchment is solely responsible. To understand the flood, three contributing factors were discussed, and relevant data were analysed. Flood inundation model, land use changes, and rainfall data were analysed and discussed. Flood inundation were estimated using Digital Elevation Models (DEM) of 30 m. Land use changes from year 1994 were analysed using Landsat and EVI (Enhanced Vegetation Index). Rainfall data were collected from ground Station from year 1980. Analysis showed that dam spillway at an elevation of 80 m is unlikely the main reason, since maximum flood elevation occurred at 92 m. Rather, the flood was likely induced by a constriction in the river at midstream catchment. Furthermore, land conversion from forest to palm plantation and gambir was thought to increase runoff and also responsible to the floods. Yet, this manuscript needs to be followed by a model with reliable data

ICDM-097 / ID-401

ANALYSIS OF CHANGES IN DAILY TEMPERATURE AND PRECIPITATION EXTREME IN JAKARTA ON PERIOD OF 1986-2014

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ABSTRACT

Climate change due to increase of greenhouse gas concentrations has led to changes in extreme climate events. According to the 4th Intergovernmental Panel on Climate Change (IPCC 2007) report, it is known that there is an increase in average global temperatures which is predicted to reach 0.74° C in the last 100 years (1906-2005). In this study, a study on the temperature index trends and extreme precipitation in the period of 1986-2014 in Jakarta is represented by 5 weather stations. Daily of maximum temperature data, minimum temperature data, and precipitation data are calculated using

RClimDex Software, so that temperature and rainfall index data are obtained. The indexes are extreme climate indexes defined by ETCCDMI (Expert Team for Climate Change Detection Monitoring and Indices). In this study, the indexes consist of TN10p, TN90p, TX10p, TX90p, TNn, TNx, TXn, TXx, DTR, RX1day, RX5day, RCPTOT, CDD, CWD and R95p. The purpose of this research is to know the change of temperature and precipitation characteristics from observation result in Jakarta by using index calculation. Extreme climate analysis needs to be done especially in susceptible areas of disasters due to extreme events. The results show that Jakarta has more number of days of high temperature or hot days according to the trends which are generally increasing. It can cause the temperature in Jakarta to get hotter. However, for the rainfall, the upward or downward trend is not significant, so it can be said there is no change in precipitation in Jakarta during 1986-2014.

ICDM-098 / ID-402

ROLE OF UNIVERSITIES IN INDONESIA MULTI-HAZARD EARLY WARNING SYSTEM

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ABSTRACT

Indonesia is a disaster-prone region facing multiple hazards.The impact has cost human casualties, injuries and damages to assets, environment and regional development. In order to the protect the people and assets, the government have increased the capacity to face and anticipate disaster which is through a multi-hazard early warning system. The academic sector in Indonesia, especially the prominent universities such as ITB and UGM have to contribute positively the development of MHEWS and also the Land Slide Early warning system. This research aims to examine the role of universities in Indonesia related to the establishment of a multi-hazard early warning system in Indonesia by answering what are the roles and the challenges. The research methodology is through a desk study and document review of government and organizations using qualitative and descriptive analysis. The findings of the research indicate the role of universities in the MHEWS is in line with the concept of tri dharma of universities which research, higher

education and outreach are. This means the role of universities to conduct research related to early warning systems, higher education through having program studies related to disaster management and outreach the role to train the community, organizations and government through professional networks such as IABI and FPT PRB. Unfortunately, the involvement of the eastern part of Indonesian universities still needs to be increasing capacity, awareness and access in utilizing the MHEWS at the local level.

ICDM-099 / ID-405

THE IDENTIFICATION OF PARAMETER FOR ARRANGEMENT OF HIPOTHETICAL MODEL OF CAMPUS WITH EARTHQUAKE DISASTER MITIGATION INSIGHT

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ABSTRACT

Universitas Pendidikan Indonesia is one of the leading university that should be responsive to environmental phenomena, especially about the earthquake disaster, then the campus disaster mitigation model is a very important thing to do. The purpose of this research is (1) identification of disaster risk factors (2) classifying parameters and disaster risk indicator based on the availability of data, difficulty obtaining data, and the accuracy of the data (3) Develop alternative parameters to be used as a campus disaster mitigation model based classification of disaster risk indicator. The method used in this research is litelature study, analysis, and synthesis of theory and approach based on consideration of the expertise of the several specialists mitigation. The result of this study is arrangement of parameter for campus with disaster mitigation hypothetical model insight which is divided into 3 parts, namely: ideal parameter consisting of 30 parameter indicators, medium parameter consisting of 27 parameter indicators, and simple parameter consisting of 22 parameter indicators.

ICDM-101 / ID-407

THE USE OF RAPID ASSESSMENT FOR FLOOD HAZARD MAP DEVELOPMENT IN UPPER CITARUM RIVER BASIN

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ABSTRACT

Flood is a natural disaster that can occur at anytime and anywhere. Indonesia as a developing country is often flooded every year. The flood disaster causes material and non-material loss so that in order to increase the resilience to disaster, early warning system is needed. Preparation of an early warning system requires a historical data of flood. The data is indispensable as a reference to make an early warning system. Unfortunately, flood assessment in purpose to record the data is often conducted much later after the event occurs. Thus, validation of flood simulation in order to make a preventive strategy is very difficult regarding the observation data. The rapid assessment is necessary to minimize loss of flood mark/trace. By doing rapid assessment in purpose to record an observation data, the quality of data for model validation will increase and the model will be more accurate. The location of this study is in Upper Citarum River Basin, particularly around Bandung basin. This study uses daily rainfall data with time interval between February 24th - 25th, 2018 along with the flood event which occurs in 10 (ten) villages. The model was developed integrated modelling package MIKE 11, MIKE 21, and MIKE FLOOD. The result shows fair agreement with observed data where some points of inundated areas are captured and the location of inundated areas result looks similar with the inundated area from observation data.

ICDM-102 / ID-408

MICROZONATION OF SEISMIC VULNERABILITY INDICES IN SEWON DISTRICT, BANTUL REGENCY

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ABSTRACT
Sewon District has a high earthquake hazard and overlaps with high population as well. Sewon District is the worst damaged area in Yogyakarta earthquake 2006. There have been many studies conducted in Sewon District, but still have limitations such as using a map scale macro of landform and not using validated spatial interpolation methods. This research aims to make spatial modelling of seismic vulnerability indices based on micro-scale landform and predict the region with accurate spatial interpolation method. This research uses a combination of geophysical approach, geomorphology, and geostatical analyst. The results showed that seismic vulnerability indices affected by landform. Getting further south, Seismic vulnerability indices is getting higher. The southern part of the land is dominated by alluvial plains and flood plains. The highest seismic vulnerability indices is in flood plains (44.821-61.120). The result of comparison between inverse distance weighting (IDW) and ordinary kriging method shows that accurate interpolation method in Sewon District is ordinary kriging with semi-variogram model of spherical.

ICDM-103 / ID-411

POLLUTION CONTROL IN COASTAL AREA THROUGH INDONESIAN COASTAL EDUCATION CONCEPT

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ABSTRACT
Litter become one serious threat for coastal area in Indonesia. Those litters are derived from various anthropogenic activities and various land usage. Even in 2015, Indonesia is declared as the biggest second country after China in contributing marine debris. But marine debris in Indonesia not all derived from domestic product. In coastal area of Aceh province there are found

marine debris which derived from foreign. One right way to overcome the pollution in coastal area is by incorporating Marine education in educational curriculum. In anticipating the effect of destruction in marine environment occur today, Indonesian Ministry of Marine Affairs and Fishery has launched acoastal education model namely Indonesian Coastal Education. The aim of this study is to (1) identify the types of pollution in coastal area, (2) arrange the steps of observation, and (3) arrange the action plan of Indonesian Coastal Education (ICE) in overcoming pollution in coastal area. This study use literature study type by searching the reference of theories which are relevant with the case or problem of litter/waste pollution in coastal area. By applying 4A learning method in ICE, students can directly understand the problem occur in their area, particularly related to litter pollution in the beach. In this study concept, students of ICE are expected to be able to arrange action plan based on result of observation and analysis.

ICDM-104 / ID-412

FAULT LINEAMENT CONTROL ON DISASTER POTENTIALS IN KULON PROGO MOUNTAIN AREA-CENTRAL JAVA-INDONESIA

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ABSTRACT

Many inactive fault lineament developed in the Kulon Progo Mountains, which are mainly composed of Oligo-Miocene age of volcanic rocks. The direction and distribution of the lineament differs from one part to another. This research was conducted to reveal the fault lineament on controlling disaster variation of the area. Fault lineaments delineation is done on the area of all Kulon Progo Mountains. Fault lineament density variation map is made from the fault lineaments. Fault lineament density variation map that are overlaid by slope map will shows result in a relationship between the fault lineaments density and the potential disaster of the area. The result of fault lineament density analysis shows that high density values area tend to be landslide, rock slide at the volcanic rocks. High fault lineament density with relatively low slope percentage has subsidence potential at limestone area in the central part of Kulon Progo mountains. The disaster tends to be

happen especially in the area of old rock formation with high fault lineament density.

ICDM-105 / ID-413

REVIEW OF TYPES AND STAGES OF RECOVERY LITERATURE IN THE TSUNAMI AND EARTHQUAKE DISASTER IN INDONESIA

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ABSTRACT
Recovery after a disaster determines the survival of the population in the affected area. However, there are still few studies to discuss about recovery compared to other processes. This literature review aims to develop findings from previous literature reviews with a focus on the area of Indonesia and the earthquake and tsunami disaster. The conclusions that can be drawn are the majority of journals discussing earthquakes and researching on physical recovery. Economy recovery being the least discussed them, and the most widely researched recovery phase is a long term recovery. In 2016-2017 there is now a majority of themed journals of recovery management, and 2010-2012 the most widely publicized long term reconstruction journal. This article also presents 5 gaps in the recovery themed literature.

ICDM-106 / ID-415

VIBRATION SUPRESSION OF A TWO STOREYS BUILDING UNDER SEISMIC LOAD USING U-SHAPE WATER STORAGE TANK

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ABSTRACT
This research presents a novel technique for vibration attenuation of a two storeys building under seismic load using two u-shape water storage tanks. The u-shaped water tank is filled with water. The tank dimension and water

level is designed that the natural frequency of the water is tuned to the first bending mode frequency of the building structure. The mathematical model of building with u-shaped water storage tank is derived and the simulation study is conducted to evaluate the effectiveness of the absorber. The simulations results show that the absorbers consist of two u-shape water storage tanks are effective in reducing the vibration amplitude of the building under seismic load.

ICDM-107 / ID-416

FLOOD SIMULATION USING EPA SWMM 5.1 ON SMALL CATCHMENT URBAN DRAINAGE SYSTEM

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ABSTRACT

The area around Sungai Sapih District Hospital of Padang is often flooded. The exixting drainage system inadequate to accomodate the increasing of drainage loads due to the changing land use in the area. In order to evaluate the drainage system in the study area, EPA SWMM version 5.1 was used to develop the simulation model. This model was able to calculate the quantity and quality of surface runoff from each catchment area, flow discharge, flow depth, and water quality in each pipeline and drainage channel during the simulation period. The data used in this research are maps of land use, rain data and drainage channel dimensions. Hourly time series rain data was used and as this was not directly unavailable at the rain station at the study site, it was calculated by constructing a rain estimation hyetograph from the 5-year Intensity-Duration-Frequency (IDF) curve using the Alternating Block Method (ABM). After all EPA SWMM 5.1 parameters were specified and inputted, simulation with four simulation scenarios was performed based on present and the future possible land use and the change of dimension and shape of the drainage channel. The first scenario produced 18 flooding occurrences, the second; 20, the third and fourth; 14. Of note were the 14 flooding points in the third and fourth scenario despite the shape and dimension of the drain used being in accordance with the detail of drainage planning of Sungai Sapih area according to the city master plan for 2010-2030. This shows that the drainage planning design (DED) for Sungai Sapih

District Public Hospital is insufficient to contain the drainage load of the area, either now or in the future.

ICDM-108 / ID-417

EARTHQUAKE VULNERABILITY ZONATION IN BANDAR LAMPUNG CITY BASED ON SEISMIC MULTICHANNEL ANALYSIS OF SURFACE WAVE (MASW) METHOD

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ABSTRACT

The research of shear wave velocity (Vs30) analysis has been conducted to obtaining indicator of ground motion value as an effort to earthquake disaster mitigation at several locations in Bandar Lampung area. This research using seismic Multichannel Analysis of Surface Wave (MASW) active method. The basic principle of the MASW method is to determine the shear wave velocity of near surface rock layer. Research area involves; the University of Lampung Campus, Tanjung Karang, West Teluk Betung, South Teluk Betung, Way Halim, and Panjang. Site selection is based on the urgency level of earthquake vulnerability based on the classification of subsurface rocks. Stages of this research include; (i). Measurement of data at the four sites, (ii). Data processing involves geometry edit, FFT, picking frequency curve vs phase-velocity, (iii). Inversion calculation of Vs30 vs depth, (iv). Analysis and Conclusions. Based on the data analysis, site class S1 spread evenly in almost all of Bandar Lampung City with high variation of thickness. Site class A that appears on the surface as a layer of rigid soil or rock outcrops spread in the Northeast of Bandar Lampung City which is a safe area of earthquake shocks. Site Class C spread in the West and Southeast of Bandar Lampung City as medium dense soil requires special handling because it has medium vulnerability when earthquake shock occurs. Site classes S1 and D as layers that have high vulnerability during earthquake shocks spread spots in the southeastern, southern, central and northern parts of Bandar Lampung.

ICDM-109 / ID-419

CONCRETING WORKMANSHIP IN INDONESIA STUDY CASE: PADANG CITY, WEST SUMATRA

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ABSTRACT

This research gives information about the practice of concreting work in Reinforced Concrete (RC) building project in Indonesia. The study area is Padang City, which has suffered severe damages due to September 2009 Earthquake. The target interviewee is the builders who are constructing RC buildings. This interview together with observation was conducted by directly visiting the construction sites. While extract information about main factors which contribute to RC building quality, e.g., concrete mixing, compaction, concrete placing and curing, the information about the profile of the builders have been collected. The results show that construction practice that is conducted by the builders is needed to be improved.

ICDM-110 / ID-421

UNDERSTANDING FOREST FIRE DISASTER MANAGEMENT IN INDONESIA WITH GLOBAL PERSPECTIVE

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ABSTRACT

Forest fire becomes one of the attentions of countries in the world. Some countries with the largest forest cover in the world such as Russia, Brazil, Canada, United Stated, and Indonesia have massive forest fire record. Thus, it is important to have forest fire management in order to decrease the level of forest fire. Current conditions indicate that Indonesia can significantly reduce forest fires within the past 3 years compared to those 4 countries. Therefore, it is necessary to study the characteristics of forest fire disaster management based on global perspective. The method used in this research is scoring for each parameter of disaster management with descriptive analysis. The results obtained show that Indonesia has an advantage in the field of legal regulation change in a short time so that the incidence of forest fire fell significantly compared with Russia, Brazil, Canada, United States. However, Indonesia still has weaknesses in emergency response, forest fire monitoring technology, and inter-institutional integrity in forest fire disaster management.

ICDM-111 / ID-424

GOVERNMENTAL INTERVENTION AND FARMERS ADAPTATION IN THE FACE OF SALINE INTRUSION: A CASE STUDY IN THE VIETNAMESE MEKONG DELTA

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ABSTRACT

The Vietnamese Mekong Delta (VMD) is a last part of the country where the Mekong River reaches out into the East Sea. Saline intrusion (SI) is a current problem causing serious risks for agriculture and livelihoods of coastal people in the Delta. Worldwide, scientists debate that collective adaptation

(CA) plays important roles to improve adaptive capacity of vulnerable people, especially when having an interaction between governmental intervention and farmers™ adaptation. This research was conducted in Tra Vinh and Kien Giang provinces representing both sides of coastal ecological zone in the Delta to explore SI trend, vulnerability and CA in the face to SI. Basic statistic approach including descriptive statistic and trend analysis were applied. The result shows that SI increases over twenty years on both side of the Delta. Adaptation has been made by farmers and the Government in private and by the interaction between the Governmental intervention and farmers actions. Farmers have changed from rice culture to shrimp culture either in intensive or extensive systems depending on local conditions. The Government has enforced land use policies and techniques provision. The interaction is illustrated by building an institutional system where CA can act well. Current institutional system exists both in formal and informal forms assisting adaptive process. Formal organisations present in almost areas due to the Vietnamese communist political system. Informal organisations are different from areas. Those organisations related to SIs adaptation only occur in the regions near the sea. It raises an interesting issue for future research to explore institution structure and social network of the communities where CA are established and work efficiently.

ICDM-112 / ID-425

COVERAGE AREA STUDY OF INTERSECTION PEDESTRIAN OVERPASSES FOR VERTICAL EVACUATION FROM TSUNAMI IN PADANG, WEST SUMATRA

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ABSTRACT
Pedestrian overpasses as a public facility, in Padang City, West Sumatra, are not well function and maintenance rely on increasing pedestrian and passengers on public transportation. Padang City, as one of the highest vulnerable from earthquake and tsunami, has been transformed their urban planning, building, and transportation routes to reconstruct Padang City as disaster smart city. The inadequacy of horizontal evacuation routes is caused

by numerous tremors in 2007, 2009, 2010, and 2016 are indicating it is lack of occupancy for evacuee. Then, these condition is decreasing by traditional behavior evacuee are still using the vehicle and unwell planned evacuation as personally or in the community. The small number of vertical evacuation building and lack of awareness of community, and unmanaged the evacuation facilities make emergency response from earthquake and tsunami is uncontrolled in 0" 20 minute for 30 minutes remaining time evacuate to inland in personally or community. Padang city is the most density in the coastal area with 914.968 peoples and density is more than 1,317 people/km2 have a large potential for earthquake and tsunami risk. Pedestrian overpasses as primary facilities in many main roads in Padang City should be utilized for people to cross the road but it does not work properly. But in fact, type of material, steel construction, was not durable with the climate in Padang that have coastal climate and a high number of behavior for crossing road in uncertain places. Regarding of the vulnerability in earthquake and tsunami risk, unmanaged construction and bad culture in crossing the road, pedestrian overpasses, especially in the intersection, will be redesigned to be a vertical evacuation. These cases will be delivered into parametric study regarding area availability, access, density, the ratio of vertical infrastructure, public facilities during emergency response and management. Road intersection will be a good site for redesigning vertical evacuation Intersection of the road and have large space will be a good candidate for redesigning pedestrian overpasses as vertical evacuation structure. It will have a multifunction structure that is not simply for passing the pedestrian but also comprises remarkable facilities as a meeting point, commercial place and public facilities. Pedestrian overpasses for vertical evacuation from the tsunami will solve lack of area for construct vertical evacuation in the community. It can duplicate easily for any coastal cities that require vertical evacuation structures.

ICDM-113 / ID-427

ANALYSIS OF FLOOD DISASTER RESPONSE PREPAREDNESS IN GAMPONG SEULALAH LANGSA LAMA SUB-DISTRICT LANGSA CITY

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ABSTRACT

Flood is one of the natural disaster or often called one of the hydro-meteorological disaster caused by rainfall and environmental factors such as garbage pile, poor drainage, and etc. Langsa City is one of the City in Aceh Province that happen flood disaster almost in every year. This research aims to analyze the extent of preparedness of community disaster response of Gampong Seulalah Langsa Lama in Langsa City in the face of the flood disaster. The type of this research is experimental research with survey method. Data collection was done through observation, interview, and questionnaire. The data obtained is processed by using descriptive statistic. The results of this study indicate the level of preparedness of community disaster response of Gampong Seulalah Langsa Lama Sub-district in Langsa City is still low at 45%. This is due to the level of public awareness of the importance of disaster risk reduction through the response to the disaster is still very minimal. Advice from researchers, the need for a serious training effort to increase public awareness of the importance of community disaster response attitude to minimize disaster a risk of the flood disaster.

ICDM-115 / ID-429

REINFORCEMENT DESIGN ANALYSIS AND GREEN INFRASTRUCTURE FOR LANDSLIDE MITIGATION IN CILIWUNG RIVER

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ABSTRACT

In the middle of 2002, landslide disaster occurred in the Ciliwung Rivers floodplain, exactly in the South Jakarta area. The landslide attacked large area and highly impacted with acutely injured sufferers. Several circumstances which could trigger the landslide occurrences are the building loading from settlement area around the river, the increasing of rainfall intensity, slope, and soil characteristics in Ciliwung River area. This research aims to propose a combination of proposed non-structural and structural mitigation for water-related landslide disaster by investigating safety factor of river banks slope on one site: bridge in Grand Depok City regency. The authors simulate analytical and numerical modelling to estimate safety factor of the slopes. This research concludes that the minimum safety factor in the analyzed location is recognized as safe criteria for a living. The condition develops to be less safe when an earthquake happens. Furthermore, high rainfall intensity might convert to be the worst scenario which generates huge damage. The proposed structural mitigation for river bank with anchor or snail doubles the safety factor. However, this reinforcement program is not recommended due to expensive cost and ineffective solution. Hence, green infrastructure is highly suggested for natural-based mitigation to prevent rainfall-triggered landslide in Ciliwung River area.

ICDM-116 / ID-432

STATISTICAL DOWNSCALING FOR PROJECTING KEETCH BYRAM DROUGHT INDEX IN BARITO BASIN

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ABSTRACT

Indonesia is an archipelago in tropical region which is very susceptible to climate change that leads to catastrophic drought. One of the basin that located in the area with middle to high drought level is Barito Basin. Regarding drought negative impacts which affect multiple sectors, citizen and government need the information about future projection of the drought hazard. Statistical downscaling (SD) method is used to estimate the value of a climate variable in the small scaled grid with utilizing the data in bigger scale grid from General Circulation Models (GCM) output. In this study, the corrected rainfall data from Climate Forecast System Reanalysis (CFSR) is used to cover the area with limited rainfall observation station data, especially in the North part of Barito Basin. SD of rainfall data is conducted by applying bias correction function of the rainfall probability curve, while SD of temperature data is conducted by assuming linear function between temperature and ground elevation. The result of the above SD analysis are used as input for Keetch-Byram Drought Index (KBDI). Future projection of drought in Barito Basin until 2050 shows that the high intensity of drought tend to increase to about 1,400 km2 (2% of the basin area), while the middle intensity drought index tend to increase to about 35,000 km2 (50% of the basin area). This analysis shows that adaptation and mitigation effort needs conducted to prevent drought disaster in the future

ICDM-118 / ID-437

MAPPING BURNED AREAS FROM LANDSAT-8 IMAGERIES ON MOUNTAINOUS REGION USING REFLECTANCE CHANGES

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ABSTRACT

This research tried to detect burned area that occured in mountainous region in Java Island. During this time, forest and land fires mostly occur in lowland areas in Sumatra and Kalimantan. However, it is possible that this phenomenon also occurs in mountainous regions, especially the mountainous regions of Java Island. The data used were Landsat-8, the latest

generation of the Landsat series. The research location was on the northeast slope of Mt. Ijen in East Java. The research methods include radiometric correction, data fusion, sample training retrieval, reflectance pattern analysis, Normalized Difference Vegetation Index (NDVI) and Normalized Burn Ratio (NBR) extraction, separability analysis, parameter selection for burned area detection, parameter test and evaluation. The results show that 5 and NBRL parameter show the highest values of D-values (most sensitive), to detect the burned area. Then, compared to 5, NDVI and NBRS, Normalized Burn Ratio long (NBRL) provides better results in detecting burned areas.

ICDM-119 / ID-439

RISK REDUCTION ANALYSIS OF FLOOD CONTROL DEVELOPMENT IN SRAGEN REGENCY ALONG BENGAWAN SOLO RIVER

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ABSTRACT

Bengawan Solo River is the longest river in Java Island, Indonesia with a length of approximately ± 600 km. It has basin with an area of ± 16,100 km^2. Floods often occurs in Bengawan Solo River. One of the areas in Central Java with the greatest loss due to the flood is Sragen Regency. Risk analysis is important to solve this flood problem. Basically, the purpose of flood control is similar to other disaster management, i.e. to reduce the losses caused by the disaster. Based on the regulation from the Head of National Disaster

Management Agency No. 2 year 2012 on the General Guidelines for the Assessment of Disaster Risk, risk is defined as the potential loss caused by disasters in an area and in a certain period of time. In other words, the purpose of disaster management is to reduce risk, both with structural and non-structural. The assessment is based on the level flood risk hazard and vulnerability to a catastrophic flood in Sragen. From the analysis, risk level can be obtained. Mitigation effort is conducted by placing dyke with embankment height variation of 2 m, 4 m, and 6 m.

ICDM-120 / ID-445

USING THE C-BAND DOPPLER WEATHER RADAR DATA TO RECONSTRUCT FLOOD EVENT ON 11TH MARCH 2017 IN BANGKA ISLAND

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ABSTRACT

Extreme weather in the form of heavy rain hit Bangka Island on 10 - 11 March 2018 caused flooding in some areas such as in Pangkal Pinang and Muntok in Bangka Barat District, Air Asam Belinyu in Bangka Induk District, and Koba in Bangka Tengah District. Observation of weather conditions at Pangkal Pinang Meteorological Station on 10 March 2018 recorded temperature ranged from 23 to 25°C; relative humidity (RH) ranged from 91 to 100% and measured rainfall reached 84.4 mm/day. In Muntok, the measured rainfall reached 257.5 mm/day which exceeds the March average rainfall 250 mm/month. This study aims to reconstruct this extreme rainfall using C-Band Doppler weather radar centered in Palembang, South Sumatera Province with Python-wradlib library. Weather radar images were displayed in Constant Altitude Plan Position Indicator (CAPPI) and Quantitative Precipitation Estimation (QPE) temporal analysis was performed in areas of extreme rainfall by applying the Marshall-Palmer reflectivity-rain rate (Z-R) relationship. The analysis was conducted by observing the movement and growth of convective clouds through the Palembang radar over Bangka Island and identifying the regional extreme rainfall using

Indonesia In-House Radar Integration System (IIRIS) over Sumatra Island. The results suggest that the reconstructed rainfall reached 236.7 mm/day for Muntok, 92.1 mm/day for Pangkal Pinang, 106.0 mm/day for Koba and 80.8 mm/day for Air Asam Belinyu. Although most of the location sites are more than 200 km from radar center, both of the reconstructed and measured rainfall is well comparable.

ICDM-121 / ID-448

VULNERABILITY BY PEOPLE: LESSON LEARNED FROM VULNERABLE GROUP IN KAMPONG AUR MEDAN IN FACING FLOODS

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ABSTRACT

The flooding in Medan due to heavy rainfall area has become daily problem to the community who lives on the banks of the river. It has been happened since many decades ago, but their places are still inhabited. Information on the vulnerability to natural hazards on a local level may help decision makers, stakeholders, and others to make better decisions regarding an effective disaster management. This study uses a qualitative approach to measure the level of vulnerability of communities in the face of floods by identified how the communities perceive their exposure to the hazard, their sensitivity and their adaptive capacity. This study find that people already accept floods as a part of their life although also aware that floods causes many losses. The experience in facing floods, strong social ties and strong local leaders are capital for communities to cope with floods. So vulnerability assessment at the community level should be constructed based on the perception and meaning by the community.

ICDM-122 / ID-456

ASSESSMENT OF PADANG LOGISTICS SYSTEM READINESS LEVEL FOR EARTHQUAKE AND TSUNAMI EMERGENCY RESPONSE

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ABSTRACT

Padang is one of Indonesia's most vulnerable cities due to high potential for earthquakes and tsunamis. A structured and scalable disaster risk reduction (DRR) strategies is important to improve community resilience against impact of earthquake and tsunami. An insufficient response for logistical assistance will lead to increase in number of victims. In order for logistics needs of refugees to be properly managed in DRR strategy, it should be understand in advance the readiness level of the logistics system for emergency response. This paper is aimed to present the result of Padang city readiness assessment. Data collection was performed by using in-depth interviews and focus group discussions (FGD) methods with local government, communities, Non-Governmental Organization (NGO), academicians, private sectors and mass media representatives. After data processing, it was figured that the readiness of Padangs logistics system was still at the level of 2, with average component weights was 38 points. From the research conducted, we concluded that Padangs logistics system must better prepared technically than managerially for earthquake and tsunami emergency response.

ICDM-123 / ID-458

STRENGTHENING MULTIHAZARDS EARLY WARNING SYSTEM IN THE PACIFIC THROUGH BMKG-UNESCAP COLLABORATION PILOT PROJECTS

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ABSTRACT

On the period of September to December 2017, three pilot projects were implemented in Tonga, Papua New Guinea, and Solomon Islands aiming to

strengthen the multihazards early warning system in the respective countries through BMKG-UNESCAP close collaboration. The main activities during the implementation phase were installation of high resolution numerical weather, ocean wave, and climate prediction and forecasting tools, capacity building activities, and high-level meetings with related stakeholders in disaster risk management. The three pilot projects have successfully filled the gaps within the three pilot countries by using the concept of Fast-Leveraging-Easy-Economical-Sustain (FLEES).

ICDM-124 / ID-465

KEY PERFORMANCE INDICATORS OF DISASTER PREPAREDNESS: A CASE STUDY OF A TSUNAMI DISASTER

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ABSTRACT

Disasters impact human life not only in economic sector but also social, culture, and environment. In order to minimize the disaster risk, it is expected all elements who exposed to the forthcoming disaster make a good disaster preparedness then they will be resilience toward the disaster. Since individual as one of disaster stakeholder who will face a disaster directly, it is expected that they will participate actively in disaster reduction efforts. This study is aimed to design key performance indicators for measuring the disaster preparedness level of individual. Using Delphi method, it is obtained 14 indicators of three critical factors identified. The preparedness level of individual against a disaster is plotted in 2-dimension matrix (awareness & attitude versus actions taken). The indicators are designed for assessing disaster preparedness of people who live in a tsunami disaster prone area. The indicators can be used by the government to assess the preparedness level of their citizens. Moreover, the indicators will be helpful for government in developing disaster preparedness program to improve people resilience against disaster.

ICDM-126 / ID-470

EHEALTH AND TECHNOLOGIES FOR A RESILIENT COMMUNITY AGAINST DISASTERS - A COMMUNITY EDUCATION PROJECT

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ABSTRACT

This paper describes the design of a community education project aims to educate and engage the public on the application of eHealth and technologies in disaster risk reduction, focusing on applications in developing countries and resource limited settings. The initial setting for the project would be Indonesia, although it is open for translation to other nations. The main educational material component would be centered on a MOOC (Massive Open Online Course) and online knowledge platform on eHealth and Disaster Risk Reduction (DRR), with a program of related events that serve both to gather materials for the educational materials and to promote dissemination and community engagement. The MOOC & knowledge platform is being developed by IEEE SIGHT Indonesian volunteers, consisting of a group of scholars with multidisciplinary scholars, with the support of IEEE Foundation grant, and cooperation with various stakeholders in the field of Disaster Risk Reduction in Indonesia. The MOOC will include both audiovisual and interactive materials, with contribution from experts and other sources, such as people with experience with disasters. This will add local relevance and relatability to our Indonesian setting. The MOOC and knowledge platform will be supported by a series of community engagement activities, each centered on different segments of the community. First, there will be a mini conference where academics, technology creators, researchers, and practitioners will be invited to share their knowledge, issues, and solutions. This is aimed to help grow a community of practice on the field, and is used to gather materials for the educational program. Second, to launch the MOOC and knowledge platform, there will be a community event that includes workshops from experts, exhibition on eHealth applications for disaster reduction, and the launch of a design and video competition for students. Similar mini events in several municipalities in Indonesia will be

conducted after the initial MOOC launch to promote the educational program and create local community engagement.

ICDM-127 / ID-473

DISCUSSIONS ON DISASTER RISK REDUCTION FOR PADANG CITY AGAINST TSUNAMI BY SEAWALL

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ABSTRACT
The 30 September 2009 Padang Pariaman (or West Sumatera Earthquake) (M = 7.6 USGS) has caused severe damages of buildings and infrastructures and fatalities. Many of the buildings failed mainly due to low quality of the structures and many of them failed because of the occurance of liquefaction causing foundation failures. Many witnesses reported the sand blows at or near their houses and at several sites showed fine sands spurt out of the ground. However future earthquake could have been even more severe and causes tsunami, a reality which we shall consider, especially because Padang City is located facing directly to the ocean. Based on the occurence and experience in Banda Aceh, Padang City has similar risk and yet very limited barrier and lack of evacuation system. For evaluation of this disaster, a team of Universitas Katolik Parahyangan, conducted a preliminary study on the condition of Padang City and discuss some alternatives to be considered by the government or authority. This paper discusses the importance lessons from Banda Aceh failures related to the tsunami, and method to reduce the disaster risk for Padang City by Tsunami Seawall. There has been pro and cons for Seawall, but the study concluded that due to the fact that tsunami would result in 15-30 minutes after the earthquake and condition of low lying elevation of the Padang city, the use of Seawall for city safety is worth considered

ICDM-128 / ID-479

UAV AND SITE INVESTIGATION FOR EVALUATION OF LANDSLIDE HAZARD : A CASE STUDY IN CIPULARANG KM.92 TOLL ROAD

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ABSTRACT
Application of Unmanned Aerial Vehicles (UAV) or drones to detect landslide Hazard and risk assessment becomes uncommon methodology in Indonesia. Drones are still popular used for commercial, news interest and advertisement purpose only. Furthermore, landslide in Indonesia are a common worldwide phenomenon that often occur and can have a great impact on the infrastructures and sometimes tragically result in fatalities. UAV provide a quick, safe, effective, and potentially superior means of inspecting large scale, remote and difficult to access landforms with significant cost benefits compared to traditional inspection method by manual tracking. UAV can derive the aerial photography which represent actual condition and landslide hazard instantly. By using aerial photograph, it can simplify the engineer to obtain viewpoint and presumption related with mechanism of landslide, some factors triggering the landslide (terrain and topography, drainage, riverstream, logged area, slope height, structure and community, etc). The result suggest that UAC can be one of most effective value in surveying and large scale inspection to determine landslide hazard as well as general site condition.

ICDM-129 / ID-480

FAULT LINEAMENT CONTROL ON DISASTER POTENTIALS IN KULON PROGO MOUNTAIN AREA-CENTRAL JAVA-INDONESIA

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ABSTRACT
Many inactive fault lineament developed in the Kulon Progo Mountains, which are mainly composed of Oligo-Miocene age of volcanic rocks. The direction and distribution of the lineament differs from one part to another. This research was conducted to reveal the fault lineament on controlling

disaster variation of the area. Fault lineaments delineation is done on the area of all Kulon Progo Mountains. Fault lineament density variation map is made from the fault lineaments. Fault lineament density variation map that are overlaid by slope map will shows result in a relationship between the fault lineaments density and the potential disaster of the area. The result of fault lineament density analysis shows that high density values area tend to be landslide, rock slide at the volcanic rocks. High fault lineament density with relatively low slope percentage has subsidence potential at limestone area in the central part of Kulon Progo mountains. The disaster tends to be happen especially in the area of old rock formation with high fault lineament density.

ICDM-130 / ID-481

VULNERABILITY FACTOR IN EARTHQUAKE RISK ASSESSMENT MODEL FOR ROADS IN INDONESIA

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ABSTRACT

Indonesia is one of the countries prone to natural disasters. Road is one of the infrastructure affected by the disaster. Natural disasters that contribute to road damages are8 earthquakes, landslides and floods. one of the factors affecting disaster risk is vulnerability. the higher the vulnerability, the possibility of damage and loss will be higher. Vulnerability indicators for roads will be assessed in this study. The Earthquake Disaster Risk Index is adopted in this study. The physical and economy vulnerability are the factor component that identified in this study. Indicators are selected by valid, reliable, data availability, objective, quantified, and directly influence the risk. The indicators are analysed using Analysis Hierarchy Process in order to get the weight. There are 9 (nine) indicators selected as part of physical vulnerability.

ICDM-131 / ID-482

MANAGEMENT OF SOIL EROSION HAZARD WITH THE AGROTECHNOLOGY IN SUB-AIE LIMAU KAMBIANG ON THE UPPER WATERSHED TARUSAN

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ABSTRACT

Soil erosion hazards to look out for to avoid the incidence of disasters due to impact erosion. One of the hazards of the erosion is soil infiltration capacity is decreased in the place of occurrence of erosion and increasing the volume of surface flow. Also, it will also lead to the occurrence of the superficiality of the river due to the deposition of materials of soil erosion. Management of these hazards needs alternative agrotechnology which could reduce the rate of soil erosion hazard. Purpose of this research is to know the hazard of soil erosion in the upper watershed of the Aie Limau Kambing and find out of the alternative agrotechnology for reducing the soil erosion. This research was conducted with survey methods. Soil samples collected was taken in purposive random sampling based on a unit of land. Soil samples were analyzed in the laboratory of the Department of soil science at Faculty of Agriculture Andalas University. The rainfall data are taken from Department of water resource management. The data were analyzed using the universal soil loss equation (USLE). The research results of the highest erosion threat come from the land use of traditional gardens, and plant density is low. The highest soil erosion 151,012.0 t/ha/year is present on the garden blends that have a steep slope over 35% LS value of 9.5.The better of agrotechnology with increasing plant density that could reduce soil erosion to 503.4 t/h/year. This means that the hazard of soil erosion couldÂ be controlled with land management and selected of the better agrotechnology on the Upper Watershed Tarusan

ICDM-132 / ID-483

ASSESMENT OF CIKANGKARENG ROCK FALL DUE TO SEPTEMBER 2, 2009 TASIKMALAYA EARTHQUAKE

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ABSTRACT

The earthquake that shock Tasikmalaya - West Java on Wednesday, September 2, 2009, with 7.3 on Richter scale at 02.55 pm was one of geological natural disaster that affecting Cikangkareng village - Cibinong District, Cianjur, West Java - Indonesia. According to Bureau of Meteorology and Geophysics (BMG), Among 30 districts in Cianjur, 15 of them have great potential for land movement. The topographic condition is a fairly steep slope of hills with slope almost upright Â± 80 -90o. In addition, residential location was located at the foot of the hill. Thus, the geological conditions are fragile. Based on the map of land movement vulnerability (DVMBG, 2004), Cianjur area is categorized as a zone of high movement potential of soil which means that movement of soil is easily triggered by rainfall and earthquake. Tasikmalaya earthquake event triggered a landslide on a large scale and caused rock fall. The material of the site collapse consists mainly of sedimentary rocks, sandstone rocks, sandstone, breccias, sandy tuffs and yellow spots. From the mineral testing results revealed that the existing minerals are Feldspar and Cristobalite. From the result of the slake-durability, the material has a medium durability. The main cause is not only the acceleration in the horizontal or vertical direction of the rocks but the seismic force can cause an increase in the water pressure in the pores and the rock fracture can give a change of pressure in the contact field of rock joint. As a result of this earthquake event triggered an avalanche on a large scale and caused rockfall. Due to the contact stress decreases drastically, practically, the friction resistance of the joint plane could be significantly reduced.

ICDM-133 / ID-484

LANDSLIDES INDUCED BY SLAKING OF GEOMATERIAL

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ABSTRACT

Geological event that happen because of an unbalance between shear strength and shear stress on rock mass. Usually occurs due to improper handling of the exposed material. Landslide occurs because of the reaction to reduce the burden it bears. so that the mass of the rock will move rock mass from higher elevation to lower elevation. Landslide that happen in west java, Indonesia happen on exposed clay shale that are protected by soldier pile with 3m in distance between pile. On top of the clay shale, theres a building which give the clay shale more mass. To determine the effect of water and temperature on clay shale, static slaking index test was done. With a submerge variation it was found that the slaking index value ranged from 2,17% to 12,0% with the slaking classification from very low to medium. Size distribution that was produce from 1/4 and 1/2 sample submerge show bigger rock breakage than rock with 3/4 sample submerge and sample fully submerge. Observations of the sample in room temperature without the contact of water and no additional mass were also done. The sample still intact untill this day.

ICDM-134 / ID-487

REVIEWING GLOBAL DEVELOPMENT OF MULTI-HAZARD EARLY WARNING SYSTEM WITHIN THE PERSPECTIVE OF EWS DEVELOPMENT IN INDONESIA

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ABSTRACT

Never before a catastrophe brought an impact of worldwide attention for most of the time (from 2004 to the present) like the Indian Ocean Tsunami. Prior to 2004's tsunami disaster, the development of Early Warning system technology (EWS) was not as advanced and progressive as it is today. It was not only in relation to the tsunami, but also the hydro-meteorological disasters acquire their impetus in the perspective of EWS development.United Nations agencies together with increasing attention to the inevitability of climate change and its negative impact that it brings, make disaster as one of the mainstreaming in various program of development.This paper briefly

reviews the global development of EWS in the perspective of EWS progress status in Indonesia. In the first part, the state of EWS before 2004's tsunami. In the second part, development of the first 10 years since the Tsunami of the EWS was reviewed. And then the direction of EWS development post-SFDRR vision is covered. Three factors become the driver of EWS progress development, among others, the growing awareness of people that alter in the form of needs of early information, information technology and observation. Before the conclusion remarks, the state of progress of EWS in Indonesia is summarized within the perspective of challenge to materialize the SDG 2030.

ICDM-135 / ID-488

ROLE OF INTEGRATED RESILIENCE IN INDONESIA TO REDUCE DISASTER RISK

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ABSTRACT

Disaster resilience is everyone business and is a shared responsibility among family, neighbourhood, citizens, the private sector, and government. Increasing resilience to disasters requires bold decisions and actions that may pit short-term interests against longer-term goals. Despite the recent popularity and frequent use of this concept in the academic, research, and policy programs, there is a limited theoretical understanding of this concept. For instance, it is not clear how this concept should be operationalized and what its determinant factors are or how they can be measured. Resilience is widely seen as a desirable system property in disaster management. Integrated disaster community resilience (ICDR) and its quantitative evaluation which are presented here and a unified terminology for a common reference framework is proposed and implemented for evaluation of safety care facilities subjected to the complexity of community resilience in

Indonesia. This is by encompassing various internal dimensions such as social-economical vulnerability and capacity and external variables such as disaster risk governance and spatial planing disaster based. This concept is aimed to develop community resilience in Indonesia which is not only enhanced by reducing vulnerability and increasing its capacity but also at the same time through the improvement of risk governance systems as well as spatial planning disaster based. It may be used by the disaster management board at national and local level in Indonesia to set up a community strengthen policy. This paper substantially perform a number of variables and concepts based on internal and external factors, which is then packed into a strategy to improve community resilience. If applied nationally, can be used as a benchmark level of community resilience of different cities in Indonesia.

ICDM-136 / ID-491

LOCAL WISDOM BASED DISASTER EDUCATION IN MINANGKABAU SOCIETY

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ABSTRACT

This paper focuses how local wisdom as a basis for disaster education in Minangkabau society. Local wisdom forms the stock of knowledge and practices (praxis) which is deemed wise and sensible to various environmental problems they face, including the issue of disaster. In passing, it is interesting to find answers to what is the source of learning of local wisdom and how the implementation of local wisdom on disaster management in Minangkabau society. To get answers to these questions do research with a qualitative approach in which in-depth interviews and observation as data collection techniques.

ICDM-137 / ID-492

THE EFFECTS OF MULTI SUPPORT EXCITATION TO PYLON OF CABLE STAYED BRIDGE (CASE STUDY: SURAMADU BRIDGE, INDONESIA)

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ABSTRACT

Cable stayed bridges now are commonly preferred and chosen by the bridge designers compared to other type of the bridge due to their capability to overcome the length and also because of their beautiful performance. The development of technology, especially in structural design and computer, also yield to the bridges practitioners to elect cable stayed bridges for their designs. As a consequence of the length of the bridges, usually this kind of bridges is designed by using multi support excitation when considering earthquake load. In this research, the behaviour of the bridges, especially in pylon, is figured out by comparing their structural response to single support excitation. A three spans cable stayed bridge, located in East Java, Indonesia, which has 818 m length is analysed. The results show that pylon at the top saddle has a larger displacement and internal forces by using multi support excitation rather than single support excitation.

ICDM-138 / ID-493

NUMERICAL STUDY: EFFECT OF VARIOUS LINK LENGTH TO LATERAL FORCE IN ECCENTRICALLY BRACED FRAMES

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ABSTRACT

Eccentrically braced Frames (EBFs) is an excellent steel portal system for resisting earthquake forces. This portal shows good performance in terms of stiffness and has excellent ductility. However, the performance of EBFs is strongly influenced by the length of links that are a very important part of the EBFs system. Links should be limited not be too short or too long because it relates to the stiffness and ductility of the frame. The study of EBFs on the 80-90s also limit the ratio of e/L to not exceed 0.5 and limit the diagonal brace

angle between 40°-60°. This research will review the influence of the length of the links varied from the e/L ratio of 0.005 to 0.38. This variation will divide the links into three types of yielding i.e shear links, intermediate link with shear dominant and intermediate link with bending dominant. The analysis is done by using finite element analysis. The structure model is a one-story D-Braced EBFs type with displacement control. The results obtained in the form of load-displacement curves which will be analyzed in strength and ductility. In addition, a load-displacement normalization curve will be generated to obtain the load pattern for the various link length.

ICDM-139 / ID-495

CONSTRUCTING A CONCEPTUAL MODEL OF HUMANITARIAN LOGISTICS MANAGEMENT IN DESIGNING A SERIOUS SIMULATION GAME FOR ORGANIZATIONAL COORDINATION LEARNING

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ABSTRACT

This research paper explains the construction of a conceptual model that is the basis of a serious simulation game for organizational coordination in humanitarian logistics management within humanitarian non-governmental organizations. Humanitarian logistics is the majority cost of humanitarian operations; however, its operational performance is still inefficient due to coordination issues within these responsible humanitarian organizations. The underlying problem is the presence of a coordination awareness gap within these organizations is caused by several apparent dysfunctional organizational mentalities, which include the fire-fighting and silo mentality. To raise awareness, an experiential learning platform is proposed using a serious simulation game. Constructing a potent conceptual model, that provides a representation of experiential simulations within the game, is vital in designing a significant serious simulation game.

ICDM-140 / ID-496

EXPERIMENTAL STUDY OF THE USE OF RAP IN FLEXIBLE PAVEMENT

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ABSTRACT

The present study is to assess the suitability of Reclaimed Asphalt Pavement (RAP) as a coarse aggregate substitution for flexible pavement mixture. The RAP in this investigation was taken from roads in Padang, Indonesia. There were three types of flexible pavement chosen to be tested for RAP substitution, i.e. Asphalt Concrete-Wearing Course (AC-WC), Asphalt Concrete-Binder Course (AC-BC), and Hot Rolled Sheet-Wearing Course (HRS-WC). Laboratory studies have been carried out on flexible pavement mixes with RAP material and their performance has been compared with flexible pavement without RAP substitution. Marshall tests were carried out in laboratory as per 2010 specification 6th division from Indonesia Public Work Department standard. The effects of RAP on physical and rheological properties of the final bituminous blend were investigated. By using Marshall Test, the research aims to find out the effect of RAP as coarse aggregate substitution to the flexible pavement characteristics, i.e. Stability, Flow, Marshall Quotient (MQ), Void in Mix (VIM) and Void in Mineral Aggregate (VMA). The percentage of RAP substitution are 35%, 55% and 60%. From the results of the tests in laboratory, it was concluded that the AC-WC pavement was more appropriate due to, it has achieved the highest Marshall stability, with VIM, VMA, and VFB were in the standard.

ICDM-141 / ID-497

TSUNAMI PREPAREDNESS IN WEST SUMATRA THROUGH EARTHQUAKE SAFE HOUSES TRAINING

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ABSTRACT

The tsunami disasters in western parts of Sumatra Island are mainly triggered by big earthquakes. The possible sources of that big earthquakes

are located on the west side seabed of Sumatra island. In West Sumatra Province, those earthquake sources could be located on sea-based faults between the Sumatra and Mentawai Islands, as well as from the subduction area in the western part of Mentawai Islands. Since the distance of the sources is not far, the earthquake may caused devastating impacts on the mainland of Sumatra Island. The seismic vibrations may damage the buildings including houses on the Sumatra and Mentawai Islands, before the tsunami comes. Thus, in order to proceed to tsunami evacuation, people must first survive the earthquake. The worst case may happen if the earthquake that triggered the tsunami strikes in the night where people are staying in their homes. Victims affected by collapsed houses during the earthquake, will be unable to evacuate for tsunami. So surviving from the earthquake is an absolute requirement prior to tsunami. This can be done by making or retrofitting the existing houses to be earthquake safer constructions. Guidance and manual books that contain methods for making or strengthening houses for earthquake safer construction have been widely circulated in the community. But in order to implement it, training of that methods are needed. Since there are plenty houses that must be strengthened to deal with the earthquake, the construction of earthquake safer houses should involve all stake holders including government, experts, ordinary people and house builders. The house builders are the most important element in building an earthquake safer houses. The house builder trainings involving all the stake holders have been conducted in West Sumatra, especially in the city of Pariaman. The experiences conducting this training model are described in this paper. This model may be replicated in other areas particularly along the western side of Sumatra Island.

ICDM-142 / ID-498

STABILITY OF BEACH PROTECTION STRUCTURE DUE TO LIQUEFACTION: NUMERICAL SIMULATIONS

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ABSTRACT
Abrasion is one kind of concerning disasters as it can result in infrastructures and environmental losses. Damage caused by abrasion generally can be minimized by providing abrasion prevention structures. The most popular abrasion prevention structures to protect coastlines in West Sumatra are groins (groynes). Groins were directly placed on the beach sand and the stabilities of the groins are greatly influenced by the mechanical state of the soil. An earthquake may lead to liquefaction to the groins' base so that the stability of the groins is disrupted. This study elaborates the numerical simulation results to observe the stability of groin due to liquefaction. The stability of the groin is not only disrupted by full liquefaction, but the incomplete liquefaction state can also disrupt the stability of the groin. The dimension of the groin also affects its stability against a certain liquefaction level.

ICDM-143 / ID-499

THE EVALUATION OF ROAD MAINTENANCE PROGRAMS, CASE STUDY: THE NATIONAL ROAD MAINTENANCE PROGRAMS IN WEST SUMATRA

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ABSTRACT
Currently, the national road maintenance programs in West Sumatra which are based on the output from IIRMS (Indonesian Integrated Road Management System) cannot be fully implemented. This is due to limitation of funds in the management of national roads. In order the road maintenance can be carried out effectively according to road conditions, the priority must be determined in road maintenance. In this study, analyzes were conducted in the determination of national road maintenance priorities. The parameters used are SDI, IRI, road width, and V / C ratio. The methods used are AHP (Analytical Hierachy Process), IPA (Importance Performance Index) modification, and CSI (Customer Satosfaction Index) modification. In the study also evaluated the effectiveness of road maintenance program made by Satker P2JN, BPJN III compared to the result

of analysis. As the result shows that there is still ineffectiveness of BPJN III road maintenance program compared with the result of analysis.

ICDM-144 / ID-502

IMPROVING THE SEISMIC RESILIENCE OF HOUSING IN DEVELOPING COUNTRIES: TIME TO TRANSFORM LOCAL GOVERNMENT BUILDING DEPARTMENTS

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ABSTRACT

Mitigation should be the key component of DRR in the context of seismic resistant building construction, and more specifically - housing construction, in developing countries. Although this paper is relevant to many countries some emphasis is given to the situation in Indonesia. Mitigation, the outcome of which is safer buildings, is little more than an idea at present. It is often ignored in favour of easier DRR activities which while commendable, ignore the primary problem unsafe buildings. After a review of the current situation regarding mitigation of building earthquake damage which highlights an almost total lack of action, the paper reviews recent suggestions to improve what is a very bleak situation. Then some recent drivers for change are explored. They indicate that now is the time to begin making positive changes in local government building departments and the wider building industry. The paper then discusses several examples of where some real progress is being made before concluding with suggestions for ways forward. It is hoped that future papers addressing this topic will be more about reporting on positive practical actions than offering suggestions.

ICDM-146 / ID-504

THE AESTHETIC MAN-MADE HILL: AN ALTERNATIVE TSUNAMI VERTICAL EVACUATION FOR PADANG CITY, WEST SUMATERA, INDONESIA

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ABSTRACT

Geologists have been long time warned that Padang, a city of more than nine hundred thousand peoples, could one day be probability destroyed by an earthquake and tsunami because of its location, i.e. flat terrain and close to offshore thrust-fault seismic hazard. About half of the city population live close to the coast and within a five-meter elevation above the sea level. Padang peoples have been amply demonstrated in previous West Sumatra earthquakes that most of panic' peoples, exodus to higher level area by using cars and motorbikes. As the results, a chaos and traffic jams at several points on the evacuation road and prevented peoples to reach the safe area. This situation suggest that Padang city requires the vertical evacuation facilities to overcome the circumstance mentioned above. Indeed, several multi-story buildings are located on the coastal area of the Padang city, enabled to be used as the tsunami evacuation shelters when tsunami run into the city. Unfortunately, especially on the northern part of the city, due to dense population whom living close to the coast area and limitation of number of the multi-story buildings make them still in high-risk to tsunami hazard. In this paper, a nine-meter high of aesthetic man-made hill is proposed as an alternative vertical evacuation place in it dense population area. A man-made hill is designed to accommodate more than 10,000 evacuees. The site's functional, the detail of engineering construction and the evacuation scenario are briefly discussed in this paper. In between tsunamis, it may be accessed by the community any time as the public facilities such as recreation park and sport facility in around and on the top of the hill.

ICDM-147 / ID-505

THE RESPONSES OF RC FRAMES STRUCTURES UNDER REVERSED CYCLIC LATERAL LOADING : COMPARISON OF WITH/WITHOUT BRICK MASONRY INFILL

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ABSTRACT

This paper present the experimental observation of the Reinforced Concrete (RC) frame specimens to define their seismic responses. Two one-bay scaled-down specimens were prepared. One the bare frame and another one was the frame with brick masonry infill wall. The infilled frame specimen was constructed with the brick masonry wall which was extracted from the survived RC building to the September 2007 Sumatra earthquake. The survived RC building is located in Padang city. Both of these specimens are the representation of the typical RC building in West Sumatera, Indonesia. The specimens were tested in structural laboratory facilities by applying the constant vertical load and lateral static reversed cyclic loading. In the experimental works, the lateral loading was applied incrementally. This lateral load was controlled with the drift angle. The drift angle is the ratio of the lateral displacement to column height of the specimen. The incremental lateral load and displacement of specimens were measured and recorded during the testing. The major crack and its propagation were also observed to identify the failure mechanism of the frame. Comparing the responses of both of the specimens concluded that the masonry brick infill contributed to significantly increase the energy dissipating capacity, lateral strength and stiffness of overall RC frames. Unfortunately, the ductility performance was decreasing. The presence of brick masonry infill in RC frame, however, controls the failure mechanism of the RC frame, reduces the deformation capacity of boundary column, and alters the lateral and axial deformations of boundary columns.

ICDM-148 / ID-506

GRADUAL CHANGES OF HOUSES AFTER THE RECONSTRUCTION PROGRAM: A CASE STUDY IN YOGYAKARTA AFTER THE 2006 YOGYA EARTHQUAKE

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ABSTRACT

Since 2006, a survey about the reconstruction of houses after the May 2006 Yogya earthquake has been conducted related to the quality of construction and additional works. The gradual changes after the reconstruction program

was terminated, were based on owner preferences and capabilities. After the 2009 West Sumatra earthquake, many damaged houses and schools were retrofitted using ferrocement layers. The purpose of this study is to investigate the possibility to disseminate the same retrofitting method for existing houses in Yogya.

ICDM-150 / ID-518

DISASTER AESTHETIC: DISASTER SOCIAL SPACE IN DISASTER-THEMED MURAL

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ABSTRACT

essages in a mural are delivered through the processing of visual elements embedded with symbols, signs, codes and meanings. The messages delivered in the mural comprise both verbal and visual. The existence of murals created the concept of social space, which includes important issues such as the theme of disaster. When the mural is associated with disaster mitigation efforts, then the mural is expected to bring a great influence on the awareness of citizens. Mural is also expected as a monument that can urge citizens to stay alert to potential disasters.

ICDM-151 / ID-519

THE ROLE OF COCONUT PLANTS IN RELATION TO DISASTER MANAGEMENT IN THE TROPICAL COASTAL REGIONS

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ABSTRACT

This paper investigates the role of coconut plants growing in the tropical coastal regions in relation to disaster management. The presence of coconut trees on the beach is not solely as part of soft scape in landscape architecture but it can also be used as an option in emergency rescue when taking place wave disaster or tsunami. In terms of this purpose, the

investigation is carried out through literature studies and documentations in data collection methods. Video documentations on the attacks of tsunami taking place in some parts of the world are important sources in collecting data, whilst literature studies are carried out in order to understanding coconut characteristics. The result of the data collection is then analysed into qualitative descriptive in order to clarify the roles of coconut plants in the emergency rescue. Although their roles may not be effective and save for all people particularly for children, elder and disable people, they are very useful to be installed along the coast as protection. The installation of them must not only be in public areas but also in private areas along the coast. This is because the improvement of disaster management has to cover safety in all possible aspects. Therefore, the result of this paper may be useful in considering coastal planning and design guidelines.

ICDM-152 / ID-520

ON THE USE OF A SIMPLE TUNED MASS DAMPER MODEL FOR REDUCING THE EXCESSIVE VIBRATION OF TSUNAMI EVACUATION SUSPENSION FOOTBRIDGE

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ABSTRACT

The suspension footbridges are commonly constructed in the rural area. The constructions method is relatively simple compare to other bridges, thus as consequence the construction cost is also become relatively cheaper. The footbridge may be constructed in relatively long span. The community based construction may be applied to construct the footbridges. Unfortunately, due to their long span, slender and moderate weight, the construction has excessive vibration caused by the induce moving load such as pedestrian and motorcycle moving. This condition, however, will seriously unsafe when the footbridges are used for tsunami evacuating to safe zone, such in Padang city area. In this study, a simple tuned mass damper is proposed to reduce such kind of excessive vibration of the suspension footbridge mentioned above. The tuned mass damper made from mass concrete and used spring. Preliminary dynamic analysis by using the computer code based on finite element method has shown the promising results. The excessive vibration of

the numerical model of the footbridge reduce up to 40%. The type of suspension footbridge which using the tuned mass damper is recommended to be used in tsunami-prone area such as for Batang Arau in Padang city.

ICDM-153 / ID-526

A STUDY OF THE UPSTREAM-DOWNSTREAM INTERFACE IN END-TO-END TSUNAMI EARLY WARNING AND MITIGATION SYSTEMS

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ABSTRACT

The tsunami early warning and mitigation systems are typically used to detect the tsunami inundation before the impact, so that vulnerable communities can be alerted and the damage can be minimised. These systems typically entail upstream and downstream processes, starting from the detection of tsunami wave and finishing from safe evacuation of people. There is an interface between upstream and downstream mechanisms where the warning is issued and the decision to evacuate people is taken. In individual countries, the system by which the information is disseminated from a national point to individual communities, varies significantly. Due to the complex nature of different administrative systems, it is difficult to understand who takes the decision to evacuate, at which point and how is it taken. This paper is the first part of a larger study undertaken to understand and evaluate the interface between the upstream and downstream mechanisms of the tsunami early warning system. The objective of the paper is to present the findings of a literature review conducted as an initial step to the above study, and to understand the state of the are and practices related to the interface of an end-to-end tsunami warning and mitigation system. Using the conceptual analysis method, the literature is grouped and analysed to understand the concepts related to tsunami early warning system, particularly focusing on the issues pertaining to the interface. though the literature review, a conceptual framework is developed, presenting nine concepts and their relationships within the interface. This conceptual framework will serve as a strong theoretical foundation for the future steps taken under the above study.

ICDM-154 / ID-527

A RASTER-BASED MODEL FOR FLOOD INUNDATION MAPPING ON DELTA LOWLAND

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ABSTRACT

High intensity of rainfall experiences flooding in some areas. Flooding can be caused by several aspects, such as inadequate urban drainage, reduce the porous surface due to rapid development and the topography of the area itself. Flood has always been a scourge for the inhabitants of Padang City. Especially when there are an heavy-rain and long duration, certainly flood will hit some places in Padang city. Therefore a lot of things that must be considered by the local government in overcoming the problem of this flood, including improvements of the drainage system, reforestation and create the polders. In this research, it is described the area of the prone area in Padang City with spatial analysis tools which are approached in the Geographical Information System. Based on the topography of the Padang city, inundated areas and flood direction will be presented in case of the heavy rain occurs. From the analysis, there are several points of vulnerable inundation in Padang City which are generally located in densely populated areas and main roads in Padang City which can be considered for the future planning.

ICDM-155 / ID-528

FUTURE FLOOD MANAGEMENT STRATEGIES IN INDONESIA

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ABSTRACT

apid developments in the catchment, such as deforestation and loss of swamp areas, and in the city, such us sealing off unpaved areas have resulted in higher runoff and deteriorated the river conveyance capacity. Critical flooding conditions occur in the city, particularly during heavy rainfall

and high tidal flow. Inundation can be characterised as river, tidal, flash and urban flood. A number of flood defence measures have been implemented, designed for return periods of 15 to 50 years, and non structural measures within communities who live in the flood prone areas. However, strategies consisting of both structural and non structural measures should be developed, to upgrade current flood defence practices in Indonesia to a higher safety level, complying with a return period of 50 to 100 years. An integrated and holistic approach is necessary to find solutionsfor flood management problems in Indonesia. Besides, a regional Water Resources Management plan should be developed, taking into account both flooding and water scarcity issues. The study at hand describes various flood management strategies, each compiled on the basis of different starting points, such us structural measures, non-structural measures, environmental considerations, etc. The implementation of strategies, or saparate measures, should focus on priorities for areas most frequently affected. On the short term efficient and low cost measures should be implemented, such as flood forecasting and early warming and flood proofing. In addition, planning of mid and long term measures should commence on short notice. On the mid term larger scale and sustainable masures should be implemented in order to reach a safety level with return periods of 50 to 100 years in the future. Finally, however involving stakeholders and the local communities in planning, development and implementation of strategies and measures is of utmost importance.

ICDM-156 / ID-529

EFFECT OF SOIL-STRUCTURE INTERACTION ON SEISMIC RESPONSE OF BUILDING STRUCTURE IN PADANG CITY, INDONESIA

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ABSTRACT

Every year more than 100,000 earthquake events can be felt by humans all over the world. The fatalities and economic losses caused by the earthquake are generally caused by damage from buildings that caused the building to become dangerous. Soil movement caused by the earthquake affects the

structure and change response of the buildings. The interaction of soil motions with the building structure determines the overall performance of seismic buildings such as damage to buildings; minor damage, unusable, or collapse. When the reinforced concrete structure sustains a strong ground vibration, it will begin to crack. This may lead to a period of structure approaching the period of the soil and undergoing resonance, which may be fatal to the structure of building. If a resonance occurs (when the period between the soil and the structure same) the building will suffer major damage due to ground motion at a frequency close to or equal to their own natural frequency. In this study, the effect of different soil conditions (soft soil, medium soil and hard soil condition) on a three-story building in the city of Padang with SSI and NSSI are analysed. Technical specifications of the building model used are obtained from preliminary design which is then modeled using SAP 2000. The results of the analysis showed that soil and structural interactions have an influence on the behavior of building structures, The frequency and period of the building structure on SSI modeling and NSSI modeling are very different. While the frequency and period of the structure of the building both on the condition of hard soil, medium soil and soft soil on SSI and NSSI modeling were almost the same value. Internal forces in the SSI models have a different value between hard soil, medium and soft soil. An axial value and maximum moment in soft soil conditions are obtained while the largest shear value is found in hard soil conditions.

ICDM-157 / ID-530

STRUCTURAL EVALUATION AND STRENGTHENING RECOMMANDATIONS FOR LAW FACULTY MULTIPURPOSE BUILDING OF ANDALAS UNIVERSITY

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ABSTRACT

The Multipurpose Building of Law Faculty of Andalas University is a composite steel-concrete structure building which is designed using the old seismic code, SNI 1726-2002. Due to the cost constraint, the building is not

completed at the early construction, and the construction will be continuing in 2016'2017. In 2012, however, the latest seismic code (SNI 1726-2012) had established. Therefore, an evaluation of building structure should be done based on the latest seismic code. The results of structural analysis on existing building by using SNI 1726-2012 found that some structural elements of the building cannot carry the loads so that some methods of strengthening was needed to increase the capacity of the existing structure member. There are three alternatives methods to strengthen the existing building, those are: (a) by adding steel bracing V inversed type to the structural frame using IWF 200.100.5,5.8; (b) by increasing the thickness of steel web in the IWF beams; and (c) by adding 4 D10 bending and 8-150 shear reinforcement bars to the composite steel-concrete beam. The results show that the most effective method to be used (in terms of ease of work and cost) for strengthening the building is by the addition of reinforcement bars to the composite beam.

ICDM-158 / ID-531

THE IMPORTANCE OF EDUCATION AND TRAINING FOR CONSTRUCTION WORKERS ABOUT REQUIREMENTS OF EARTHQUAKE-SAFE HOUSE AND RETROFITTING METHOD USING FERROCEMENT LAYERS

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ABSTRACT

Construction Workers play an important role in attaining a good construction and safe building. However, it has not been getting enough attention to the importance of worker roles since it is assumed that engineer has already enough knowledge to control and supervise the construction workers. Based on the survey conducted Disaster Study Center of Andalas University after September 30th, 2009 earthquake, it was found that generally houses in West Sumatera were constructed without the involvement of engineers. The buildings constructed based on the workers experience and knowledge only. Also, more than 95% workers in West Sumatera have lack of knowledge about the earthquake-safe house requirements and retrofitting of damaged houses. The basic knowledge of construction for workers is needed to reduce

the victims in case of damaged houses during the earthquake. In this Study, the expert team who understand the aspects of the earthquake-safe house and retrofitting did training for local people and construction workers in Padang Sarai, Padang City and Kurai Taji, Padang Pariaman District. The training provides all activities that support the whole construction process of earthquake-safe house, including the retrofitting method for unreinforced masonry houses using ferrocement layers, which is presented by slides presentation and practice on the field. Evaluation of this program was carried out by pre-test (before training) and post-test (after training). The result of training program shows that the knowledge of local people and construction workers on requirements earthquake-safe house and retrofitting method using ferrocement layer improved significantly. The construction workers understood to how to build their own earthquake-safe house and retrofit the damaged houses. This training program is an effective way in disaster risk reduction to prevent the damage to houses due to the earthquake.

ICDM-159 / ID-533

PRELIMINARY STUDY OF TSUNAMI DISASTER IN YOGYAKARTA: IDENTIFICATION OF RISK COMPONENTS

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ABSTRACT

Tsunami is a disaster with an almost impossible estimation. This is certainly a major concern since UN record mentions more than 60% of the world's population live in coastal areas, not least Indonesia. Indonesia is a country with complex and dynamic plates composition. Mastering the concept of disaster mitigation is important as a preventive effort of tsunami that can occur at any time in Indonesia due to occurring plate movement. Understanding the components at risk in its vulnerability rating is important because only the components at risk that can be modified, whereas the magnitude of potential disasters cannot be minimized. The purpose of this research is to analyze the tsunami vulnerability level. Tsunami vulnerability analysis based on description of assessment parameters in the form of land use, physical condition of area, social condition and availability of infrastructure. The ranking results based on supporting data indicate that

social vulnerability is ranked first, whereas the economic vulnerability and physical vulnerability follow after.

ICDM-160 / ID-534

DISASTER RISK ANALYSIS OF MOUNT BROMO ERUPTION AFTER THE 2015 ERUPTION IN SUKAPURA DISTRICT

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ABSTRACT

Mount Bromo is one of the most active volcanoes in East Java with a 4-5 year interval of eruption. Its last eruption was in 2015 and is expected to erupt in 2020. The mountain is characterized as having phreatic type of eruption, which can take months, and made Sukapura district the most seriously affected. Sukapura District is inhabited by Tengger people who strongly uphold their customs. The strong spiritual relationship between Tengger people and Mount Bromo affects the efforts to reduce the disaster risk. In anticipation to the coming eruption in 2020, a disaster risk calculation is required as the basis for disaster risk reduction. This paper examines the risks of Mount Bromo eruption disaster from the aspects of its hazads, vulnerability and community capacity. The results of risk calculation indicate that the vulnerability and capacity are the most influential aspects to the magnitude of the risks suffered by the community. The high risk areas to prioritize are Ngadisari, Sariwani, Sapikerep, Wonokerto, Ngadirejo, and part of Jetak Village. Moderate risks include part of Kedasih village, part of Pakel Village, part of Ngadas Village, part of Jetak Village and part of Wonokerto Village. The low risk areas include part of Ngepung Village, Sukapura Village, part of Ngadas Village and part of Wonotoro Village.

ICDM-162 / ID-536

PRESERVING PAST TSUNAMI INFORMATION FOR FUTURE PREPAREDNESS IN INDONESIA AND THE PHILIPPINES

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ABSTRACT

Recent tsunamis, especially after the 2004 Indian Ocean tsunami, provided a better understanding and knowledge on tsunami science as well as on how to build awareness and preparedness. However, tsunamis that happened before 2004, there is limited and/or scattered data, information, records and reports of the events. In addition, there is either limited or no eyewitness story documented, including pictures and videos. The lack of information makes it difficult for policy makers, researchers, and other institutions to disseminate local and contextualized information to the public in raising awareness and education on disaster preparation and mitigation.If a tsunami has happened in the past, it is most likely to happen again in the future. It is imperative that we learn from the past and prepare for the future. This study aims to improve the knowledge of the impact of tsunami in selected sites in Indonesia and the Philippines prior to 2004, through investigation of historical documents and archives, as well as documentation of eyewitness accounts. The result of this study is expected to be a more effective way to build awareness and to educate the local community. Having evidence based of past tsunami event in the area will motivate stronger preparedness. It will also provide better understanding to the local policy makers, disaster management agencies, as well as the community as it is based on local eyewitness accounts and other local sources, as opposed to using examples from other sites, districts, countries or regions.

ICDM-163 / ID-537

ENHANCING NATIONAL EMERGENCY MANAGEMENT SYSTEM FOR NUCLEAR EMERGENCY PREPAREDNESS AND RESPONSE IN THE LIGHT OF THE ACCIDENT AT THE FUKUSHIMA DAIICHI NUCLEAR POWER PLANT

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ABSTRACT

A study has been carried out to enhance Indonesian emergency management system for nuclear emergency preparedness and response. The study is very important considering that Indonesia is a nuclear embarking country. Descriptive analytic method is used to evaluate the current regulatory infrastructure against international standards and conventions in the field. Then, the results of international peer reviews to the system performed in 2015 and 2016 are also discussed. Finally, lessons learned from Fukushima Daiichi accident are analyzed as well. The study concluded that Indonesia has its commitment to develop the national emergency preparedness and response system. Furthermore, there are some areas for improvements. Among others, Indonesia needs to harmonized its Laws and fully adapt relevant international standards and conventions. The system should be the priority to be established using an integrated all-hazard approach, which requires national leadership and coordination role of national agency responsible for disaster management. In the light of the accident at the Fukushima Daiichi nuclear power plant, it is identified that the system should also reflect severe accident scenario, which then requires: A wide range of documentation that are to be developed, coordinated and harmonized nationally and even internationally; a comprehensive justified well-informed decision making system; competency building scheme; and that all of these have to continually be reviewed and improved.

ICDM-164 / ID-538

GOVERNANCE CHALLENGES TO MAINSTREAM THE INTEGRATION OF DISASTER RISK REDUCTION, CLIMATE CHANGE ADAPTATION INTO DEVELOPMENT PLANNING IN INDONESIA

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ABSTRACT

Despite a number of progresses in disaster risk reduction (DRR) and climate change adaptation (CCA) policies at national level in Indonesia, integration remains fragmented and the tools to facilitate the integration within development planning are still lacking. This study aims to understand to what extent current policies and practices within CCA and DRR policies have been integrated into spatial planning and development planning system and what challenges and opportunities for stakeholders to implement the policies. Therefore, this paper draws on a literature review (law, regulation and guidelines) & discussion with policy & decision makers to assess the disaster risk reduction and climate change adaptation governance in Indonesia. This study found policy gaps and challenges. Four policy gaps are identified, namely: (i). disharmonizing in DRR, CCA and spatial planning policy, (ii). policy gap in planning coordination, (iii). Policy Gap in Budgeting Coordination, (iv). Policy Gap in implementation coordination. There are six challenges found in the policy implementation, such as data availability & compatibility, commitment, differences in objectives & perspectives, differences in knowledge, institutions and policy, low coordination among stakeholders and priority in budgeting. The lessons learned in this study is expected to provide recommendations for the governmental institutions in the related fields and other stakeholders in the humanitarian field. The recommendation is to improve consolidation among the involved stakeholders to formulate and implement policies in order to achieve sustainable development.

ICDM-165 / ID-539

GEOGRAPHIC INFORMATION SYSTEM-BASED SPATIAL ANALYSIS OF POPULATION DISTRIBUTION IN BANTEN PROVINCE - INDONESIA

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ABSTRACT

Population distribution as one of the parameters of disaster vulnerability is needed in a disaster risk assessment. Analysis of approaches to determine the spatial population distribution can use many methodological alternatives. The general approach used in Indonesia is distribution approach based on results of a survey or census, where the number of population density is distributed evenly within the administrative borders. Another approach used by Worldpop using Random Regression Tree model-based Forest Mapping. Both of these methodologies have their respective advantages and disadvantages. This study was conducted by combining these two methods and adding some data and parameters as driving factors on the scale of analysis of spatial resolution (grid size) 0.000833333 decimal degrees (approximately 100 m in equatorial region) for case study in Banten Province. Data processing is performed by raster analysis approach and using GIS. The results obtained for the better with the cost requirements are also more affordable and can be utilized to calculate the level of disaster risk in an area.

ICDM-167 / ID-541

BEST PRACTICE OF COMMUNITY-BASED RISK MANAGEMENT (CBDRM) : THE EFFECTIVENESS OF COMMUNITY-BASED EARLY WARNING SYSTEM OF KELUD VOLCANO ERUPTION 2014

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ABSTRACT

Kelud Volcano is an active volcano in Indonesia. About 150 million meter cubic was erupted on 13 February 2013 at 22.30. People were successfully responded the biggest eruption in history without any fatalities, by doing less than 2 hours evacuation, from 21.15 to 22.50. Analysis on building community resiliency process showed that four aspects of early warning system have been successfully fulfilled by communities. Those four aspects are: (1) Knowledge of risk; (2) Monitoring and warning service; (3) Dissemination and communication; (4) Ability of the people to response. Systematic data collection and risk assessment, with its pattern and tendency

factors ensured that disaster and vulnerability are well-known. Monitoring parameter to create accurate and timely pre-estimation has been ensured by disaster monitoring and early warning service. Communicating information and early warning ensured that the warning can be received by everyone that affected by disaster, risk, and its warning can be understood and useful. Establishing the people response to ensure the response must be renewed, ability and local knowledge can be utilized, and people are ready to response warning. Simulation and training activities were implemented by the people within disaster-prone area. Finally, the power of community preparedness may manage the huge level of volcano eruption.

ICDM-168 / ID-544

THE ROLE OF POLICIES TOWARDS HIGHER EDUCATION RESEARCH CAPACITY IN DISASTER RESILIENCE

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ABSTRACT

The statistical data suggests that the three most destructive natural disasters - storms, earthquakes and flood, frequently occur in the developing countries. In addition to loss of life, disasters greatly hamper the social-economic capacity of the affected countries. Global issues such as developing resilience to disasters are increasingly the subject of policy-level deliberations. Global funders and policy makers have increasingly considered as key priorities: the potential of networked models to enhance the impact and efficiency of investments in Disaster Resilience (DR) research capacity-building in Asia; the importance of ensuring stronger local ownership of initiatives; and, the importance of building sustainable research institutions. As a powerhouse of knowledge creation, research places universities at the centre of national development. Despite the importance of research capacity building for DR, the evidence base on what works and what doesnt, and on how key policy issues unfold on the ground, is still fragmented. The success of the universities depends upon them having a staff that is motivated and supportive of the institutions mission to conduct internationally-leading

research. Nevertheless, the policy framework within which the research activities are taking place, play a significant role on the performance of research and innovation capacity of an HEI. The purpose of this paper to examine the role of policies towards enhancing research capacity in DR. Based on a project entitled ASCENT (Advancing Skills Creation and Enhancement), the findings are drawn from questionnaire survey performed in eight HEIs from Bangladesh, Sri Lanka, and Thailand. Recommendations are proposed through a policy dialog with key stakeholders, targeting senior senior level government, higher education and industry representatives with the current status and ways to enhance research and innovative capacity in disaster resilience.

ICDM-171 / ID-364

DEVELOPMENT OF OPTIMAL AIR CONDITIONING CONTROL SYSTEM WITH PMV SENSOR UNIT

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ABSTRACT

In a phase of disaster recovery, victims are forced to dwell contemporary house and manage their health under limited energy use. To realize energy conservation and keeping their own health simultaneously, optimal control of Air-Conditioning (AC) based on PMV is effective. However, conventional PMV measuring devices are not feasible for AC controlling because of expensive, sizable and wired devices. In this study, authors developed AC control system with PMV sensor unit using reasonable sensors and microcomputer board and measured PMV and electricity in winter period to discuss feasibility of the developed system. As a result, the efficiency of the developed system had the same performance with the conventional PMV measuring devices and also realized energy saving and ensured thermal comfort.

ICDM-172 / ID-547

IDENTIFICATION OF PROBLEMS IN POST-DISASTER HOUSING RECONSTRUCTION IN MENTAWAI AFTER TSUNAMI 2010

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ABSTRACT

Mentawai islands was hit by tsunami in 2010. The casualties are more than 500 lives and thousands of houses have been destroyed. The policy for housing reconstruction is by providing houses for victims and relocate them to saver areas. Some villages were constructed more than dozens of kilometer away from their original village. This paper seeks to identify the problems emerged during and after relocation. The methodology adopted was by conducting semi-structured interview to 30 beneficiaries in Pagai relocation sites, 2 government officials, and 1 NGO. Some problems existed are: limited funding, limited materials availability and low quality, limited involvement of beneficiaries, land acquisition problems, and delay in housing delivery. There are also some complaints from beneficiaries that the relocation site are very far from their source of income (field), limited access to water resources, and uncertainty about land certificate.

ICDM-173 / ID-548

MOBILE APPLICATIONS FOR DISASTER MITIGATION: USE AND PERCEPTION IN WEST SUMATRA INDONESIA

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ABSTRACT

It is estimated more than 100 million smartphone users in Indonesia. Considering Indonesia as a prone county to disasters, it interesting to find how its use in disaster mitigations. Two main mobile operating systems, IOS and Android, have many applications (apps) that include apps in disaster management. This paper presents findings from a survey that conducted to

participants in West Sumatra. This paper presents most popular apps in disaster management and how its use by participants in West Sumatra. It also presents a case of an app development and its use in disaster management.

ICDM-174 / ID-546

A SIMULATION MODEL OF URBAN PUBLIC TRANSPORT SERVICES RESILIENCY IN FLOOD

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ABSTRACT

Floods disaster in urban area can have an impact on the movement of people, goods and animals. Flood disaster with large and high inundation, will certainly result in the disruption of public transportation activities, because the road infrastructure and utilities are probably can not be passed by people and vehicles. This article attempts to demonstrate a simulated model of urban public transport service that may still be provided to passengers in a service area corridor during flood disaster. The objective of the research is to contribute to the analytical basis related to urban public transport services resilience during the flood disaster. Some relevant publication are reviewed to establish the model simulation. The simulation model is based on the assumption that the primary objective of an urban public transport service during a flood disaster is to continue serving passengers on a predefined service corridor. An example of the application and analysis of the simulation model, conducted on three flood conditions that occurred in the city of Padang, i.e. the first is a high flood prediction that may occur (based on The Padang City Development Planning Document) and two floods that have occurred in year 2016 and 2017. In the simulation of two conditions of high flood prediction and flood disaster in 2017, all routes (two main routes and forty-two branch routes) are affected, and there is an addition of route length due to deviation of service route, additional travel time, and terminal must moved from the existing location. Only in the simulation of the flood events of 2016, 50% of the main routes are not affected, and 16 branch routes, which are not deviated. This simulation

shows that urban public transport service in Padang city is relatively vulnerable to flood disaster. Lesson learned here have implication for urban public transport services. An interesting outcome of this paper is the ability of the simulation model to be applied to obtain route deviation of urban public transport service route and still serve the demand of passengers along the service area corridor during the flood disaster. Flood inundation area, flood height and road surface height, public transport route pattern, road network grid pattern and distance, ground floor level of operated buses, are parameters affecting urban public transportation service resistance in flood disaster.

ICDM-180 / ID-550

MITIGATING NATURAL EVENTS TO AVOID DISASTER IN PUBLIC SCHOOL BUILDINGS: SEISMIC RETROFITTING OF SDN 42 KORONG GADANG

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ABSTRACT
With over 50 million students, Indonesia has the fourth largest education system in the world. The first twelve years of education are compulsory. The students, together with over 3 million of their teachers spend six (or five in some cases) days a week in over 300,000 schools, typically from 6:30 AM to 2 (or 3) PM. Geographically, Indonesia is traversed by the infamous "ring of fire" and prone to natural events resulting from the tectonic plate movements of the Australian Plate from the South, the Eurasian and Sunda Plates from the North and the Philippine Plate from the East. Left unmitigated, these natural events will lead to natural disasters emanating from resulting earthquakes and leading to tsunamis, landslides, collapse of building structures and failure of lifelines (roads, pipelines, electrical grid, etc.). In an effort to provide disaster-safe schools, the National Agency for Disaster Management has required that school facilities be community centers in case of disasters and serve as emergency shelters. Retrofit of existing buildings will be needed to comply with these government guidelines. This paper presents

a case study of determination of structural deficiencies of an existing school building in SDN 42 Korong Gadang, Padang, West Sumatra and implementation of a seismic retrofit (design and construction) of the same building to mitigate potential earthquake disaster.

ICDM-181 / ID-547

ASSESSMENT AND EVALUATION OF POST-DISASTER HOUSING RECONSTRUCTION WHAT EVALUATION MODELS OR TOOLS?

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ABSTRACT

There has been concern regarding the appropriateness of responses and interventions for Post-Disaster Housing Reconstruction (PDHR). Insufficient physical and functional conditions, and performances of PDH may contribute to the scale and extension of damage from natural disasters and have been identified in increasing the risk of disasters. Responses and interventions for Post-Disaster Housing Reconstruction (PDHR) should be more effective than pre-disaster development, and be more resilient to disasters. It urges the need for assessment and evaluation of PDHR interventions and programs. However, in the disaster recovery area in general, even the escalating need to evaluate the outcomes of recovery programs, governments and relief organisations use various approaches and methodologies. This paper highlights the importance of learning from recovery and reconstruction programs by conducting assessment and evaluation. It presents overview of the existing studies on evaluation of PDHR and attempts to identify the evaluation models, and tools used in the studies. Existing housing/building evaluation models, tools and framework that available on the related field of housing and building are also investigated. It is found that there are no standardised criteria or an agreed common approach for monitoring and evaluating recovery progress. Existing housing/building evaluation tools and models were designed to evaluate and assess broader aspects of housing and building, or issues that do not specifically address resilience, sustainability and risk reduction in the disaster context. Therefore, there is a need to develop specific evaluation tools and models for these purposes.