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Pemberdayaan Peran Serta Profesi Arsitek Lanskap
dalam Mengatasi Masalah Kerusakan Lingkungan dan
Bencana Alam Melalui Pendekatan Konservasi dan
Penataan Ruang

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SAMBUTAN KETUA UMUM PN IALI

SIMPOSIUM ILMIAH NASIONAL IKATAN ARSITEK LANSEKAP INDONESIA TAHUN 2010

Bismillahirrahmanirahim
Assalamu'alaikum warahmatullah wabarakatuh
Salam sejahtera untuk kita semua dan selamat pagi

Yang terhormat

Direktur DP2M, Direktorat Penelitian dan Pengabdian kepada Masyarakat, Direktorat Jenderal Pendidikan Tinggi - Kementerian Pendidikan Nasional RI

Rektor Institut Pertanian Bogor

Para Dekan dan perwakilan dari 23 Universitas di Indonesia, baik Negeri maupun Swasta yang mempunyai program Pendidikan Arsitektur Lanskap

Ketua Forum Pendidikan Arsitektur Lanskap Indonesia (FPALI)

Para pembicara, Prof Tong Mahn Ahn dari Seoul National University dan dari Kementerian Lingkungan Hidup RI

Para Undangan dan Peserta Simposium Nasional yang berbahagia

Pertama tama marilah kita bersama sama memanjatkan puji dan syukur kehadiran Allah SWT, Tuhan Yang Maha Esa, atas segala karunia yang dilimpahkan Nya kepada kita semua sehingga dapat hadir di tempat yang sejuk ini, di IPB International Convention Center dalam keadaan sehat walafiat.

Pada kesempatan yang terhormat ini perkenankanlah saya menyampaikan apresiasi yang tinggi serta ucapan terimakasih kepada Pemerintah Indonesia, dalam hal ini Direktorat Penelitian dan Pengabdian kepada Masyarakat, Kementerian Pendidikan Nasional RI, yang telah memberikan untuk pertamakalinya Bantuan Pengembangan Himpunan Profesi kepada Ikatan Arsitek Lansekap Indonesia (IALI)

Bantuan Pengembangan Himpunan Profesi ini kami peroleh dalam bentuk Hibah dengan mengajukan proposal untuk menyelenggarakan Simposium Ilmiah Nasional, Ikatan Arsitek Lansekap Indonesia (IALI) tahun 2010, dengan tema "**Pemberdayaan Peran Serta Profesi Arsitektur Lansekap dalam mengatasi Masalah Kerusakan Lingkungan dan Bencana Alam Melalui Pendekatan Konservasi dan Penataan Ruang**". Dituangkan dalam SURAT PERJANJIAN PENUGASAN, Dalam Rangka Program Hibah Bantuan Pengembangan Himpunan Profesi, nomor 018/SP.SIP/DP2M/VI/2010, pada tanggal 28 Juni 2010 dan berakhir pada tanggal 1 Desember 2010.

Simposium Ilmiah Nasional ini, dipandang penting untuk diselenggarakan guna menampung, menggalang Naskah Ilmiah, Konsep, Pemikiran-pemikiran dan Hasil Rekayasa serta Perencanaan dari para profesional dalam bidang Arsitektur Lanskap di seluruh Indonesia, yang bertujuan untuk meningkatkan kepedulian dan peran serta para peneliti, akademisi dan para profesional di bidang Arsitektur Lanskap dalam upaya mengatasi permasalahan kerusakan lingkungan dan bencana alam melalui pendekatan konservasi dan penataan ruang.

Dalam Penyelenggaraan Simposium Ilmiah Nasional Ikatan Arsitek Lanskap Indonesia tahun 2010 ini, kami bermitra dengan Departemen Arsitektur Lanskap dan Lingkungan Fakultas Pertanian, Institut Pertanian Bogor. Untuk itu kami Pengurus Nasional Ikatan Arsitek Lanskap Indonesia, sangat menghargai dan menyampaikan penghargaan yang tinggi atas kerjasama yang baik ini.

Bapak, Ibu dan peserta Simposium Nasional yang saya hormati,

Tema dari Simposium Ilmiah Nasional ini sangat tepat, yaitu penekanannya kepada pemberdayaan peran serta dari profesi Arsitektur Lanskap, maka kami sebagai insan Arsitek Lanskap Indonesia, sebagai profesi yang turut bertanggung jawab terhadap pengelolaan sistem ruang luar, merasa perlu untuk memberikan kontribusi pemikiran yang sampai saat ini belum sepenuhnya diikuti sertakan dalam tahap kebijakan-kebijakan dan selama ini pula lebih banyak mempunyai kesempatan pada tahap pelaksanaannya saja.

Keberadaan Arsitek Lanskap masih dianggap sebagai pelengkap, hanya menjadi kebutuhan yang bersifat tersier dengan paradigma beautyfikasi sebagai konsep pengembangan bentang alamnya.

Untuk itu melalui berbagai seminar, workshop dan simposium, kami berusaha merebut posisi profesi ini guna lebih dapat memberikan sumbangan pemikiran secara universal, makna dari pentingnya keberadaan suatu lanskap di Indonesia, pentingnya penataan ruang luar yang mewujudkan ruang-ruang di nusantara yang nyaman, produktif dan berkelanjutan sesuai yang diamanatkan oleh International Federation of Landscape Architecture (IFLA) dalam World Congress di Suzhou - China pada bulan Juli 2010, dimana intinya adalah Arsitek Lanskap didorong untuk terlibat langsung dalam upaya pengurangan pemanasan global.

Melalui delegasi IALI, serta beberapa anggota IALI yang turut serta dalam kongres dunia ini, juga telah menyampaikan isu-isu strategis termasuk menyangkut keberadaan profesi lanskap di Indonesia.

Bapak Ibu dan peserta Simposium Nasional yang saya hormati,

Didalam penyelenggaraan Simposium Nasional ini, kami membentuk gugus tugas termasuk didalamnya membentuk tim reviewer dan editor serta mengundang pembicara dari dalam dan luar negeri. Makalah yang telah diterima adalah merupakan pemikiran alternatif untuk penyelesaian masalah kerusakan lingkungan dan budaya. Para kontributor makalah terdiri dari para profesional dan akademisi, termasuk juga yang sedang menyelesaikan program magister dan program doktor, yang berasal dari komunitas dalam organisasi institusi pendidikan tinggi bidang Arsitektur Lanskap yang tergabung dalam Forum Pendidikan Arsitektur Lanskap Indonesia (FPALI), maka pada kesempatan ini kami sangat menghargai upaya dan karya dari seluruh kontributor yang telah menyampaikan makalahnya. Atas kerjasama yang baik ini dan sesuai dengan waktu yang telah ditentukan, maka tim Simposium Nasional ini telah berhasil menjangkau serta selanjutnya dapat menyeleksi 58 Naskah Ilmiah yang layak diterbitkan pada berkala ilmiah pada tingkat nasional, internasional, atau beraspirasi internasional..

Dengan adanya kerjasama berupa Penugasan dari DP2M Direktorat Pendidikan Tinggi Kementerian Pendidikan Nasional RI kepada Ikatan Arsitek Lanskap Indonesia, maka kami dari Asosiasi Profesi menyatakan bahwa ini adalah momentum awal dari kiprah profesi Arsitek Lanskap untuk lebih memberikan kontribusi kepada bangsa dan negara guna menjaga alam Nusantara "agar tidak salah urus" yang dapat mengakibatkan kerusakan alam yang akhirnya menjadi masalah bersama yang sulit dikendalikan, karena evaluasi lanskap harus dimulai dari aspek manusianya, sehingga definisi apapun tentang lanskap harus sudah mencakup dimensi sosial didalamnya.

Kenyamanan suatu lingkungan selain dapat terjadi karena karakteristik ruang yang sudah ada "given", tetapi juga harus tetap mengutamakan azas manfaat seperti berguna, ekonomis, sehat, aman, serta bersinergi dengan aspek produktif dan pembangunan berkelanjutan.

Bapak Ibu dan peserta Simposium yang saya hormati,

Demikianlah sambutan Simposium Ilmiah Nasional Ikatan Arsitek Lanskap Indonesia tahun 2010. Semoga Simposium ini menjadi pemacu semangat bagi IALI -organisasi profesi kita- untuk dapat menyelenggarakan secara rutin kegiatan semacam ini pada tahun-tahun mendatang.

Sedikit catatan dari profesi:

Para arsitek lanskap hendaknya dapat menjadi pionir dalam upaya konservasi, preservasi dan perencanaan sistematis dari pemanfaatan sumber daya alam, sehingga manusia dan karyanya dapat dibawa pada keharmonisan dengan sistem alami. Rasa bahagia akan timbul dari kesederhanaan, ambil secukupnya dari alam, maka kita akan hidup damai, nyaman dan ceria.

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DAFTAR ISI

SUB-TOPIK 1 : PERENCANAAN DAN PERANCANGAN

	Halaman
1. Agung Yansusan Sudarwin, Nia Kurniasih Pontoh, Bagas Dwipantara Putra Prinsip Perancangan Ekologis Pada Ruang Terbuka Hijau Publik di Taman Kota Tegalega Bandung	1
2. Akhmad Arifin Hadi, Einar Kretzler, Dr. Barty Warren-Kretzschmar Communicating And Evaluating Landscape Design Concepts Online With A Virtual Reality Landscape Model	13
3. Azrar Hadi Public Participation In Open Space Inspection	20
4. Bambang Sulistyantara, Fitriyana Budiwati Interfunction Of Green Open Space Plan As Eartquake Evacuation Camp at Padang City, West Sumatera	24
5. Bambang Sulistyantara, Muhammad Rizki Penyusunan Aplikasi Penyimpan Basis Data Pohon Berbasis Koneksi Internet Dengan Studi Kasus Kota Jakarta Barat (Trees Database Aplication Construction Based on Internet Connection With Case Study Of West Jakarta, Indonesia)	33✓
6. Bambang Sulistyantara, Prita Indah Pratiwi Landscape Planning of Tourism Destination and The Formulation of Tourism Program Alternative at Graha Tirta, Jatiluhur, Purwakarta District, West Java	43
7. Edy Saputra Yu Tata Hijau Hunian Multi Massa dan Dampaknya Terhadap Perilaku Gated Community (Green Design of Multi Mass Housing and Impact On The Behavior Of Its Gated Community)	52
8. Firmansyah Pengembangan Metode Assessment Kualitas Visual Lanskap Kampus Di Indonesia, Kasus: Kampus UI Depok dan ITB Bandung (A Development Of Landscape Visual Quality Assessment Method of Campus In Indonesia, Case Study: Campus Of Indonesia University (UI) at Depok, and Campus Of Bandung Institut Of Technology (ITB) at Bandung)	5
9. Fitri Rahmafitria Analisis Bahaya Lanskap Berbasis Konservasi Dalam Perencanaan Wana Wisata Kawah Putih – Jawa Barat (Conservation Based Landscape Hazard Analysis In Kawah Putih Forest Recreation – West Java)	8
10. Iqbal Muhammad, Afra DN Makalew, Vera D Damayanti Perencanaan Lanskap Jalur Interpretasi Wisata Sejarah Budaya Jalan Slamet Riyadi Kota Surakarta (Landscape Planning of Historical-Cultural Tourism Interpretation Trail at Slamet Riyadi Street , Surakarta)	
11. Lis Noer Aini / Agus Nugroho Setiawan / Arif Muda Rambe Perencanaan Tata Hijau Sungai Berdasarkan Konsep Ekologi, Studi Kasus Sungai Code Kota Yogyakarta (Ecological Planning Concept of Code River Case in Yogyakarta)	88
12. Ludfie Hamdri Prasyarat (Keharusan) Minimal Ruang Terbuka Terhadap Pengembang Perumahan Sebagai Bagian Manajemen Pertumbuhan Perkotaan Yang Cepat Berkembang	5

13.	Moch Saepulloh, Siti Nurisyah Perencanaan Lanskap Kawasan Pasar Terapung Sungai Barito Banjarmasin Kalimantan Selatan Sebagai Kawasan Wisata Budaya (Landscape Planning of Floating Market Area at Barito River, Banjarmasin, South Kalimantan as Cultural Torusim area)	101
14.	Mohammad Isrok Nugroho , Yong Hoon Son Study of Usage of City Park As An Useable, Enjoyable And Manageable Place (Case Study: 21th Century Park - Matsudo, Japan, And City Park -Malang, Indonesia)	108
15.	Nanang Sudrajat, Indung Sitti Fatimah Perencanaan Lanskap Jalan Tol Kanci – Pejagan Pada Oemardi ain Landscape Consultant, Bogor (Landscape Planning of Kanci – Pejagan Tollroad In Oemardi_Zain Landscape Consultant, Bogor)	11
16.	Rahman Andra Wijaya Menuju Kualitas Lanskap Yang Lebih Baik	12
17.	Rahman Andra Wijaya Landscape of a Settlement: A Tale of Newfound Farm and Cringleford	12
18.	Resa Maharani, Tati Budiarti Studi Potensi Lanskap Perdesaan Untuk Pengembangan Agrowisata Berbasis Masyarakat Di Kecamatan Cigombong Kabupaten Bogor (Potencies Study of Rural Landscape For Agrotourism Based on Community Development In Cigombong Resident, Bogor)	135
19.	Rezky Khrisrachmansyah Penataan Kawasan Pemukiman Bantaran Sungai Perkotaan Berbasis Ecological Design Studi Kasus: Bantaran Sungai Ciliwung (Pulau Geulis) Kelurahan Babakan Pasar, Kota Bogor (Settlement Plan Of Urban River Bank Based On Ecological Design Case Study: Geulis Island In Ciliwung River, Babakan Pasar Village, Bogor)	1
20.	Siti Nurisyah, Lisa Anisa Perencanaan Lanskap Riparian Sungai Martapura Untuk Meningkatkan Kualitas Lingkungan Alami Kota Banjarmasin (Riparian Landscape Planning of <i>Martapura River to Increase the Banjarmasin City's Natural Environment Quality</i>)	155
21.	Siti Nurul Rofiqo Irwan, Mukhlison, Nahda Kanara Kajian Permasalahan Ruang Hijau Kota Yogyakarta Untuk Pengembangan Lanskap Hutan Kota Dan Urban Greenway (Analysis On Yogyakarta Green Space For Development Of Urban Forestry Landscape And Urban Green Way)	1 3
22.	Siti Zulfa Yuzni Lake Toba Tourism Area Management Based On Ecological Approaches	1 1
23.	Ugit Mulgiati, Nizar Nasrullah, Bambang Sulistyantara Pengaruh Penutupan Vegetasi Terhadap Kenyamanan Kota (The Impact of Vegetation Convergence to the City Amenity)	180
24.	Wasissa Titi Ilhami, Siti Nurisyah Perencanaan Lanskap Kawasan Wisata Pesisir Yang Berkelanjutan Studi Kasus : Pesisir Teluk Pacitan, Jawa Timur (Sustainable Landscape Planning For Coastal Tourism Region, Case Study In Pacitan Bay, East Java)	18

SUB-TOPIK 2 : KONSERVASI LANSKAP, LINGKUNGAN & BUDAYA

	Halaman
25. Agnes Kristandi, Nurhayati Hadi Susilo Arifin Perencanaan Lanskap Kawasan Wisata Sejarah Perkampungan Portugis di Kampung Tugu, Jakarta Utara (Landscape Planning On Historical Tourism of Portugis Residence at Kampung Tugu, North Jakarta)	1
26. Ai Dariah Tindakan Konservasi Secara Vegetatif pada Lansekap Pertanian (Vegetative Conservation Measures At Agricultural Landscape)	11
27. I G.A.A. Rai Asmiwyati, .N. L.P.Darwini, Ida Ayu Mayun, A.A. Sri Pradnya Paramita Pola Pekarangan Rumah Tradisional Bali Di Kota Denpasar (Study Of Balinese Traditional Homegarden In Denpasar)	18
28. Annisaa Elok Permatasari dan Aris Munandar Identifikasi Hubungan Perilaku Vandalisme Dengan Setting Pada Kebun Raya Cibodas, Kabupaten Cianjur (Identification Of Relationship Between Vandalism Behavior And Setting In The Botanical Garden At Cibodas, Cianjur)	28
29. Aris Munandar, Kaswanto, HS Arifin, Andrianto Kusumoarto Pengembangan Metode Penilaian Elemen Keindahan Lanskap Berbasis Landform dan Landcover Untuk Pengelolaan Lanskap Berkelanjutan (Developing Assessment Method of Landform and Landcover Based Landscape Aesthetic Quality for Sustainable Landscape Management)	38
30. Bambang Sulistyantara, Aris Munandar, Noril Milantara Residential Landscape Analysis Based On Energy Conservation	5
31. Dhani B Ishak Rencana Program Investasi jangka Menengah dan Pelestarian Warisan Aiam Kota Sabang	50
32. Eka Kurniawati, Siti Nurisyah, Fredian Tonny Nasdian Strategi Pengembangan Ruang Terbuka berbasis Komunitas di Kecamatan Pontianak Kota, Kalimantan Barat (Development Strategy for Community-Based Park in Pontianak Kota District, West Kalimantan)	1
33. Gunawan Budiyanto Teknologi Konservasi Lanskap Gumuk Pasir Pantai Parangtritis Bantul Diy (Conservation Technology Of Sand Dunes Landscape In Parangtritis Beach Bantul DIY)	1
34. Moh. Sanjiva Refi Hsb, Nurhayati Hadi Susilo Arifin Karakteristik Dan Faktor-Faktor Yang Mempengaruhi Lanskap Budaya Rumah Larik Limo Luhah Di Kota Sungai Penuh, Kerinci, Jambi (Characteristics And Factors That Affecting Cultural Landscape Of Rumah Larik Limo Luhah In Sungai Penuh, Kerinci, Jambi)	8
35. Mohammad Zaini Dahlan, Nurhayati Susilo H Arifin Perencanaan Lanskap Kawasan Wisata Budaya Di Kampung Budaya Sindang Barang, Bogor (Pendekatan Community Based Planning) (Landscape Planning On Cultural Tourism Of Kampung Budaya Sindang Barang, Bogor - Community Based Planning Approach)	8
36. Muhammad Iftironi, Fathmy Azizah Revitalisasi Kawasan Alun-Alun Kota Magelang Slogan Magelang Kota "Harapan" Sebagai Konsep Perancangan (Magelang Town Square Revitalization Magelang City Slogan "Harapan" As A Design Concept)	103

37.	Naniek Kohdrata, Putu Edhi Sutrisna Konservasi Subak Anggabaya: Suatu Model Konservasi Lanskap Bali (The Conservation of Subak Anggabaya: A Conservation Model of Balinese Landscape)	110
38.	Neneng L Nurida Alley Cropping: Teknik Konservasi Vegetatif Untuk Lahan Kering Terdegradasi Mendukung Konservasi Lanskap Lahan Pertanian (Alley Cropping: Vegetative Conservation Technique For Degraded Upland To Support Landscape Conservation Of Agricultural Land)	11
39.	Rustam Hakim Manan, Quintarina Uniaty Pendekatan Konsep Eco-Development Pada Pengembangan Kawasan Pasca Pertambangan Timah	12
40.	Sidik Haddy Tala'ohu, Deddy Erfandi, dan Ishak Juarsah Penataan Lahan Pasca Penambangan Batubara (Land Management Post Coal Mining)	135
41.	Stephanus Hanny Rekyanto, Yanto Santosa, Syartinilia Model Kesesuaian Habitat Potensial Banteng (Bos Javanicus) Di Taman Nasional Ujung Kulon dengan Menggunakan Regresi Logistik (Potential Habitat Suitability Model For Banteng (Bos Javanicus) In Ujung Kulon National Park Using Logistic Regression)	1
42.	Sumantris Indri, Aris Munandar Evaluasi Perseptual Kualitas Estetika Dan Ekologi Kebun Raya Cibodas	155
43.	T. Vadari, A. Rachman Aplikasi Geo-Splash Versi 1.0 Untuk Merancang Disain Teknik Konservasi Tanah Di Lanskap DAS Kali Babon	1
44.	Taufan Madiasworo Revitalisasi Kawasan Bersejarah Perkotaan dalam Perspektif Penataan Ruang, Studi Kasus : Kampung Melayu Semarang (Revitalization Of Urban Heritage Area In Spatial Planning Perspective , Case Study: Kampung Melayu Semarang)	1 3
45.	Umi Haryati, Tati Budiarti dan Afra D Makalew Rekomendasi Teknik Konservasi Tanah Dan Air Untuk Pelestarian Lanskap Pertanian Lahan Kering Di Das Bagian Hulu (Kasus Dataran Tinggi Gunung Salak, Das Cisadane) (Recomendations Of Soil And Water Conservation Techniques For Sustainability Of Upland Farming Landscape In Upper Watershed (Case Of Gunung Salak Highlands, Cisadane Watershed))	183

SUB-TOPIK 3 : GREEN INFRASTRUCTURE

	Halaman	
46.	Alinda F.M. Zain, Azhari Syarief, Soedodo Hardjoamidjodjo Deteksi Penurunan Ruang Terbuka Hijau dan Dampaknya Terhadap Peningkatan Kawasan Rawan Banjir di Kota Padang (Urban Green Space Detection and Flooding Prediction in Padang)	1
47.	Bambang Sulistyantara, Esti Budiarti Evaluasi Kondisi Pohon Pada Beberapa Jalur Jalan Arteri Di Kota Jakarta Pusat, Provinsi DKI Jakarta (Tree Condition Evaluation Of Some Arterial Roads At Central Jakarta City, Province of DKI Jakarta)	8
49.	Djajeng Poedjowibowo Infrastruktur Limbah Terpadu Dalam Taman Lingkungan Permukiman (Integrated Waste Infrastructure in Environmental Settelement Park)	1

48.	Dini Rosmalia Pengembangan Kawasan Berbasis Kondisi Fisik Lokal Studi Kasus Kawasan Paninggahan, Solok, Sumatera Barat (Development Area Based on Local Physical Condition, Case Study Area Paninggahan, Solok, West Sumatera)	25
50.	Iwan Ismaun Kajian Hidrologis Kawasan Parkir Timur Senayan – Jakarta	30
51.	Nirwono Joga Kota Lestari: Infrastruktur Hijau Kota	3
52.	Pangesti Nugrahani dan Endang Triwahyu Prasetyawati Tanaman Semak Hias Lanskap Jalan Sebagai Fitoindikator Pencemaran Udara SO ₂ di Perkotaan	0
53.	Siti Nurisyah, Jafar Shodiq Perencanaan Kampung Berbasis Lingkungan (Ecovillage) di Kawasan Penyangga Taman Nasional Ujung Kulon Banten, Kasus Kampung Cimenteng, Desa Taman Jaya, Kecamatan Sumur, Kabupaten Pandeglang, Propinsi Banten (Ecovillage Landscape Planning at Buffer Area of Ujung Kulon National Park, Case study at Kampong Cimenteng, Taman Jaya Village, Banten Province)	5

SUB-TOPIK 4 : GREEN BUILDING

		Halaman
54.	Bambang Deliyanto, Aris Munandar Performansi Eco-Spatial Behavior Pada Penghunian Rumah Susun Kota Baru Bandar Kemayoran, Jakarta (Eco Spatial Behavior Performance Of Occupancy Settlement In Kemayoran New Town Flats, Jakarta)	1
55.	Lestari Suryandari, Yodi Danusastro Peranan Riset Dan Peningkatan Keterampilan Arsitek Lanskap Dalam Menghadapi Penerapan Konsep Green Building (The Role of Research and Competency of Professional Landscape Architect Facing Application of Green Building Concept)	8
56.	Ning Purnomohadi Creating Herbal Medicine & Kitchen Garden In and Around Settlement, In A 'Green Building' Development Approach	12
57.	Siti Sujatini, Euis Puspita D Peran Serta Arsitek Dalam Rangka Mengendalikan Kerusakan Lingkungan (<i>Architect's Commitment In Order To Control Environmental Damages</i>)	2

ABSTRAK KARYA POSTER

	Halaman
1. Dewi Rezalini Anwar, Sugiarto, Ray Agung Sucika Taman Pisang Wajah Baru Ruang Terbuka Kota Yang Ekologis	1
2. Dina Safarinanugraha, Dwi Setyanti, Hartono Wijaya, Juniar Adi, Medria Shekar Rani, Moch. Rizki, Mohammad Tarmizi bin Mohd. Ismail Tropical Plant Conservation Parks The Buffer one Of Bogor Botanical Garden	1
3. Fitri Rahmafitria Perencanaan Tahura Ir H Juanda Melalui Pendekatan Bahaya Lanskap dan Preferensi Visual	2
4. Padmana Grady Prabasmara Connectibility Green Infrastructure As Greenways	2
5. Putri Wulandarl dan Aris Munandar Desain Penanaman Menuju Konsep Eco-City Di Klaster Pine Forest, Sentul, City, Bogor (Planting Design towards Eco-city Concepts in Clutser Pine Forest Sentul City, Bogor)	3
6. Rustam Hakim Manan Lansekap Desain Proposal Sekolah Taman Kanak-Kanak dan Sekolah Dasar	3
7. Rustam Hakim Manan Perancangan Kawasan Penerima Pusat Pemerintahan Kabupaten Tangerang-Propinsi Banten	3
8. Rustam Hakim Manan Penghijauan Perkantoran Geostech BPPT Serpong	
9. Siti Nurul Rofiqo Irwan dan Kaharuddin Studi Kenyamanan Aktivitas di Hutan Kota Kampus Universitas Gadjah Mada Studi Kasus: Klaster Agri Ugm	
10. Sugeng Triyadi S., Indra Budiman Syamwil, Andi Harapan S., Ismail, Endang Ruhiyat 5 Pemanfaatan Potensi Lokal Dalam Perancangan Kawasan Bekas Tambang Timah di Bangka Belitung	5

INTERFUNCTION PLAN OF OPEN GREEN SPACE AS EARTHQUAKE EVACUATION CAMP IN PADANG, PROVINCE OF WEST SUMATERA

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ABSTRACT

Indonesia appears to be one of all the country that took place within the area of disaster. That's why the government should try to reduce the risk of all the disaster's threat. The plan is being forwarded to discuss the evacuation space. This plan could be realised by using the city's open green space as the evacuation space. The open green space also has a function for recreation, so it will share comfortables to the people around This plan's practice is being done in Padang, Province of West Sumatera. The method that had been used for the research, is using surveying and data collection method within the job desk which mention the resources and activity closure. The steps includes preparation, inventaritation, analysis, synthesis, and planning. The practice is based by the interfunction of the open green space concept by social closure. The open green space is functioned as shelter when the earthquake occurs. The result of the practice consists of landscape planning and the programs that support it.

Keywords: Disaster, Earthquake, Open Green Space, Evacuation

INTRODUCTION

Background

Indonesia is one country which is located in disaster-prone zones. Geologically Indonesia lies between plate tectonics and the path of an active volcano. Based on the data from National Institute for Disaster Management (BNPB), in 2008 Indonesia had 8 cases of earth uakes, cases of floods, 1 case of volcanic eruption, and 22 cases of flooding and landslides. The disaster are commonly cause casualties and material ca-sualties. As a disaster-prone country, the Indo-nesian government should attempt to reduce the risk of disaster. Efforts to reduce the risk of disaster is realized with the planning of eva-cuation sites.

On 30 September 200 , the city of Padang e perienced the earth uake that destroyed buildings and residentials. Currently, the city of Padang is undergoing the post-earth-quake reconstruction and rehabilitation processes. According to Joga (200), the city should be rebuilt by allocating more open green space, to accommodate the needs of protection, evacuation, or survival of the disaster.

Disaster mitigation efforts still need to be prepared to minimize casualties. Society directed towards the places that have been prepared for evacuation, and the use of signs that can help in an emergency.

Therefore, it re uired an urban plan-ning with open green space area as an ele-

ment of development that can be used as an alternative evacuation area to self-rescue in the event of an earth uake disaster.

Objectives

This study aims to:

1. Creating a open green space utilization plan as an eath uake evacuation area in Padang.
2. Creating alternative evacuation area when the earth uake occurred by using a green open space.

Benefits

Result is e pected to provide input for government of Padang and the parties related to the structuring open green space in deve-lopment plans of the city of Padang after the earth uake disaster. Actual studies are e pected to provide benefits to the people of Padang and the environment around the city.

METHODOLOGY

Location and Time

Study for planning the utilization of open green space as an evacuation area of the earth uake in Padang, West Sumatra Province. Study sites located in the west of Indonesia, as shown in Figure 2.

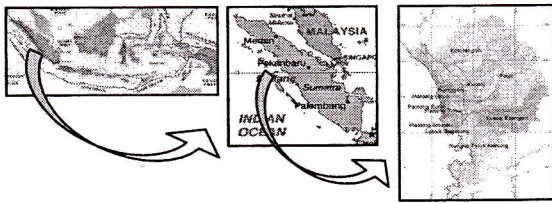


Figure 2 Location of the study (Source: Wikipedia, accessed on December 2 , 200)

The time of study since the implementation of the study until the making of reports on the results of study lasted for months (February 2010 - July 2010).

Tools and Materials

Tools and materials used in this study consisted of:

1. Thematic Map of Padang
2. Software ArcView 3.2, AutoCad 2010, Adobe Photoshop CS3
3. Laptop, GPS, Digital Cameras.

Study Limitations

The location of this study was limited only to the mainland city of Padang and e - cluding small islands which included in the city of Padang, West Sumatra Province. The study method used in this study is a survey method and data collection which consists of resources and activities approaches. Stages of the planning process, including preparation, inventory, analysis, synthesis and planning.

Planning Methods

The planning process at this location consists of four stages, including:

1. Preparatory phase consisting of concepts and data collection stage,
2. Analysis phase,
3. Synthesis phase, and
4. Planning phase (Figure 3).

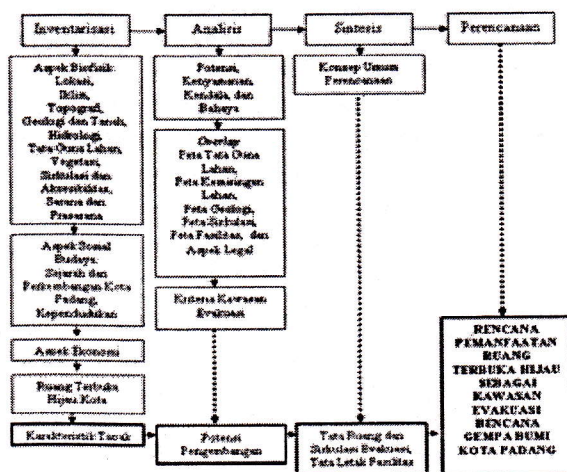


Figure 3. Planning Process (Gold, 1 80)

Data

The data used in planning for urban open green space is an area of physical data (Table 3). These data consists of primary data obtained from field survey and secondary data obtained from literature studies, and other sources. The data is then grouped into common data and socio-economic data (socio-economic identity of the population and the desire of visitors).

Table 1. Types and Sources of Data

Jenis Data	Interpretasi data	Sumber Data
Data Umum <ul style="list-style-type: none"> • Letak Geografis dan Administratif Kota, • Data Topografi dan Kemiringan, • Data Iklim, • Data Geologi dan Tanah, • Data Vegetasi, • Data Hidrologi, • Masterplan Kota 	Letak, Luas, Batas tapak Kontur dan kemiringan lahan, Curah hujan, arah dan kecepatan angin, suhu udara rata-rata, kelembaban relatif udara, Jenis tanah, Jenis dan persebaran biota, Keadaan hidrologi dan drainase	<ul style="list-style-type: none"> • BAPPEDA • BPN • Bakosurtanal • Lapangan • Dinas Tata Ruang dan Tata Bangunan Kota Padang
Data Sosial <ul style="list-style-type: none"> • Data Kependudukan, • Potensi Pengguna (Perilaku, Keinginan) 	Identitas pengguna, pengelola, masyarakat di dalam dan sekitar kawasan, aktivitas yang dilakukan, kebijakan pemerintah mengenai RTH	<ul style="list-style-type: none"> • BPS • Lapangan

GENERAL CONDITIONS

Geographical Location and Administration Area

Study of open green space planning as an evacuation area was conducted in the city of Padang which is the capital of West Sumatra Province. The city of Padang is located on the coast of western Sumatra island, with total area of . km area. From the vast territory of more than 0 , ie 3 . 3 km is a hilly area of protected forests, and the rest is an effective urban areas. Geographically, the city of Padang is located at 100 05 05 east longitude - 100 3 0 east longitude and 00 00 latitude - 01 08 35 latitude. This position is a disaster-prone zone because it is located in between two tectonic plates and an active volcano track.

Administratively, the city of Padang is divided into 11 Districts and 103 Villages. Padang City has the following boundaries.

- The North adjacent to the Padang Pariaman District.
- To the east adjacent to Solok District.
- To the south is bordered by the Pesisir Selatan District.
- To the west is bordered by the Indian Ocean.

Climate

Rainfall annual average of Padang in 200 amounted to 1 mm, with average rainfall 385 mm/month. The highest rainfall

occurs in January with mm rainfall and the lowest in May with 1 mm rainfall.

The average humidity in Padang based on Padang in Figures 200 ranged between 0 - 8 . While the average wind speed was 5.25 knots. The average air temperature of Padang is high at between 23 -32 C in the daytime and at night is between 22 -28 C. The average humidity in Padang Padang in Figures 200 ranged between 0 - 8 . While the average wind speed was 5.25 knots.

Topography

Padang city has a varied topography, which consists of a gently sloping plains and undulating hills that are steep.

Most of the topography of the city of Padang has a high average land slope 0 . West region close to the beach. This area has relatively flat topography. More to the east, the topography of the city of Padang tend increasingly bumpy.

Geology and Soil Types

Geologically, the city of Padang is formed by the sediment surface, volcanic and intrusive rocks and sedimentary and metamorphic rocks. There are areas prone to soil movement. The region is situated on the eastern and southern city of Padang. The region prone to rock movement is Pauh District, Lubuk Kilangan District, Lubuk Begalung District, and Bungus Teluk Kabung District.

Land Use

The entire city of Padang is km wide, or 1. 5 of the equivalent area of West Sumatra Province. From these wide, more than 0 ie 3 . 3 km is an area of protected forest-covered hills, then the rest is the effective urban area. Padang city has a coastline along the 8 km. Land use is very diverse in the city of Padang. In general, the percentage of open green space in the city of Padang is at 83.0 .

DATA AND ANALYSIS

Biophysical Aspects

Climate

Average rainfall of Padang in 200 amounted to 1 mm, with average rainfall 385 mm/month. The rainfall which is high indicates the availability of water in the city of Padang sufficient for plant availability. However, to reduce evaporation in coastal areas, it should

be planted with mangrove vegetation in coastal areas.

The city of Padang in general have a comfortable climate for human activity. It is seen from the data average humidity of Padang based on Padang in Figures 200 ranged between 0 - 8 , and average wind speed was 5.25 knots. Alternative planning may be done on this condition is the provision of supporting facilities that drive human beings to be more productive in their activities.

Brooks (1 88) states that the use of vegetation will produce shade for users who move in open areas. This can help lower the average air temperature which is high enough in Padang. The average humidity in Padang based on Padang in Figures 200 ranged between 0 - 8 . While the average wind speed was 5.25 knots. On a scale of Beauford, the winds are included in the category of weak wind which is very suitable for convenience. The wind also serves to lower the humidity, so the need for planning to use vegetation as a steering wind flow.

Topography

The city of Padang has a varied topography and most of the topography of the city of Padang has a high average land slope 0 . This condition causes the tread vulnerable to the danger of landslides and other soil movement. In the west region which are near the edge of the beach has a relatively flat topography. In terms of security, the seaside resort should make the greening of mangrove forests as a safety from the tsunami threat and ecological functions. More to the east, the topography of the city of Padang tend increasingly bumpy. Diverse topography is a visual potential for the city of Padang, especially the beauty of the hills in this city.

Geology and Soil Types

Geologically, the city of Padang is formed by the sediment surface, volcanic and intrusive rocks and sedimentary and metamorphic rocks. The types found in the city of Padang consists of several species that spread across the region, as in Table .

Geologically, there are areas prone to soil movement. The region is located in Eastern and Southern parts of the city of Padang, which consists of Tengah Koto district, Kuranji District, Pauh District, Lubuk Kilangan District, Lubuk Begalung District, and Bungus Teluk Kabung

District. The region is prone to rock movement are Pauh District, Lubuk Kilangan District, Lubuk Begalung District, and Bungus Teluk Kabung District. Alternative plans that can be created according to Joga (200) is making a particular spatial settlement whose activities away from areas prone to soil movement to avoid any casualties.

Table . Types of Rocks in Padang

No	Litology	Hectare	%
1.	Aluvium	21.5 ,8	1,
2.	Batuan Gunung Api	3 . 2,3	, 2
3.	Batuan Intrusi	1.33 ,81	1,
.	Batuan Metamorf	1.18 ,5	1, 1
5.	Batu Kapur	1.158,5	1,
.	Formasi Palepat	0,01	,
.	Formasi Painan	.2 0,83	1 ,
KOTA PADANG		69.496,00	100,00%

Source: Calculation Results ArcGIS Applications in Regional Development Planning Board (2008).

Land Use

The entire city of Padang is . km wide, or 1. 5 of the e uivalent area of West Sumatra Province. From these are more than 0 ie 3 . 3 km is an area of protected forest-covered hills, then the rest is the effective urban area. The city of Padang has a coastline along the 8 km. The city government has set a green zone in the coastal area between 500-1000 meters. Based on the area, the planning that can be applied to the urban forest and mangrove forest which strongly supports the goals of ecological city.

Land use in Padang is very diverse, of which consists of housing, the area of trade and services, industrial, mi ed farms, rice paddies, fields, forests , and others. Based on data from 200 , the use of land in the city of Padang is dominated by open green space. Green space which dominates land use in Padang consist of the forest nature reserve which has an area 25 85. hectares. In general, the percentage of green space in the city of Padang is at 83.0 . This shows that urban green space re uirements by Law No.2 of 200 has been reached, where the proportion of green space by law is 30 of the entire region.

This green space can be planned as a shelter for the evacuated residents during natural disasters, particularly earth uakes. According to Joga (200), spaces that can be used as evacuation sites are greenways, city parks, neighborhood parks, parking areas,

sports fields and other areas that support for the evacuation processes so as to minimize casualties.

Aspects of Population

Residents of Padang in 200 amounted to 838,1 0 inhabitants, which con-sists of 1 , 2 men and 21,2 8 women. With a total area of . km of Padang, the average population density of 120 Padang inhabitant / km .

Based on the Padang in Figures Year 200 , Bappeda and BPS city of Padang, the distict that has densest population is Padang Timur District with density of 10, inhabitants / km . That district is a central activity of Padang, especially economic activities. While the district has the lowest population density is Bungus Teluk Kabung District with a population density of 23 inhabitants / km . This happens because the location of this district is far from the center city activities and land use of the district is dominated by pro-ected forests.

Population density in disaster evacuation process is very closely related to the effectiveness of community mobility during the evacuation process. According to Triseptyanti (2008), public perception at the time of crowded conditions tend to be poor due to the carrying capacity of land that is increasingly little to do activities. The more dense the population, hence diminishing the effectiveness of mobility in the evacuation process. It also underlines the planning in densely populated areas should make a clear circulation system so there are no disorientation due to the largely number of human who were conducting the evacuation process during the earth uake.

PLANNING THE USE OF OPEN SPACE AS A GREEN SPACE EARTHQUAKE DISASTER EVACUATION

Basic Concepts of Planning

Study of green space utilization plan, is based on the concept of urban green space utilization with a social approach. The green space is functioned as a refuge or escape place in the event of an earth uake disaster. The purpose of the plan by using this social approach is to get an area that can facilitate the community as a user in performing various activities, especially earth uake disaster evacuation. Green space has other functions in controlling and improving the uality of urban environment and directly add to the aesthetic

ualities of the city in order to reach an urban layout that is comfortable for people in their activities. The concept of social approach of the utilization of green space was further developed into concepts related to spatial, circulation, vegetation, activities and facilities that support the evacuation of residents during the earth uake.

Concept Space

Green space used as an evacuation space in the city of Padang is divided based on social approach. In social functions, green space was instrumental in creating a harmonious region physically and psychologically, by the people (users) who will use the planned area. The concept of the use of green space with a social approach divides the space into several parts, the micro-chamber evacuation, evacuation space transition, macro evacuation chamber, and buffer space evacuation. The division of this space is shown in Figure .

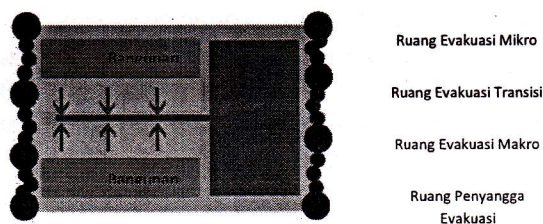


Figure . Diagram of Distribution Space

Micro evacuation space is a green space which were around the building structure. In this space self-safety value is precedence, while the value of human activity in the mass evacuation is more minimized. The use of this space devoted to safety while self-rescue from the catastrophic earth uake that potentially damage the building structure.

Evacuation transition space is space that is used as an escape route during the earth uake. The concept of sharing the other room in the concept of utilization of this green space is the macro evacuation space. In the planning, macro evacuation space has a function as a space for mass community evacuation core. Human activity in macro evacuation space is more ma imized in the use of evacuation facilities that are available in a green space.

In addition to the evacuation chamber, the distribution of space related to disaster mitigation is buffer evacuation space. On the buffer space, evacuation more functioned as a buffer space for the aftershocks of the

earth uake impact on coastal areas. In this buffer space ,conservation activities of the city more dominated to avert another disaster like the tsunami disaster.

Circulation Concept

The concept of circulation within the utilization plan of green space as a space for evacuation by utilizing circulation path that has been there before. The e isting city circulation was developed based on the carrying capacity of the road due to the e istence of the population in the surrounding streets. According to Laurie (1 8), a circulation path should be built with attention to functionality and effi-ciency so it is profitable for its users.

According to the data until the end of 200 , the length of roads in the city of Padang viewed by function, the longest is the Local Secondary Road which is 58 . 3 km long, and Arterial Secondary Road about 1 0.82 Km long, Collector Secondary Road about 120.81 Km, and Arterial Primary Road about . 8 Km which type of construction of the whole surface is asphalt. This circulation path also has a role as a temporary evacuation site for people during the earth uake. The concept of circulation in this planning is divided into three channels, namely primary lines, secondary lines, and the tertiary lines. This pathway is distinguished by a wide body of road that can accommodate its use in the evacuation process during the earth uake.

Primary path is a path with a high intensity use in the event of earth uake, with the road width of appro imately -1 meters. The line was partly an arterial lane road and collector road. Secondary path is a secondary road-street town with a width of appro imately 3- meters. While other lines of tertiary channels. This path is the path that has a fairly narrow road agency is about 1-3 meters which is the use of local trails and neighborhood streets.

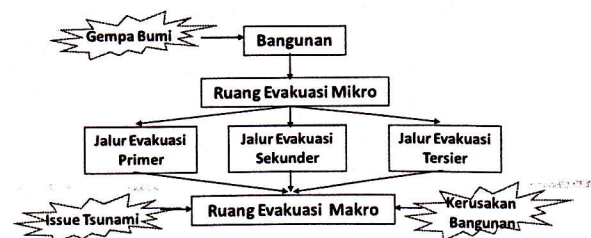


Figure 5. Diagram of Circulation Draft

Vegetation Concept

The concept of vegetation is planned with the social approach has a role to facilitate the public in the process of saving themselves from the impact of earth uake disasters and to improve the comfort of urban communities in carrying out its daily activities. To support the concept of socially green space utilization, it re uires the selection of vegetation that are ecologically and socially/culturally can establish a sustainable ecosystem.

The use of vegetation in urban green space is adapted to the conditions of the region, namely lowlands and hills plants. Structuring the vegetation contribute to the comfort and safety during the earth uake.

Vegetation shade of green space used as an evacuation of the space allocated to the semi-intensive zone / room. In this zone there are active and passive activities. Vegetation serves to create the impression of calm in the evacuation area, so that psychologically in the event of disaster, community's emotions are not easily provoked.

Cultivated vegetation deliberately is a crop grown for its benefits in agricultural production activities. Cultivated crop consists of vegetables and fruits. Structuring the cultivation of vegetation is allocated to the macro evacuation space.

Furthermore, the arrangement of vegetation for urban green space, the presence of buffer is absolutely necessary, especially in coastal areas. These buffer vegetations are native vegetations such as forest and natural forest gardens which directly adjacent to agricultural land owned by the community. Diverse and lush buffer vegetation structure is also useful in water and soil conservation.



Figure . Diagram Concept Vegetation On Space Planning

Activity Concept

The concept of the planned activities on the green space of Padang which is used as an evacuation chamber is self-rescue activity to the green open spaces. Self-rescue activity was developed into activities that are social. Self

rescue activity undertaken by the society of which ran to higher ground, gather and create a temporary shelter, made public kitchens, and perform activities related to other emergencies.

Facility Concept

Supporting facilities are planned to support the functions and activities of self-preservation on urban green space. At the micro evacuation chamber and evacuation chamber of transition, the type of facility that is developed is limited in accordance with the needs of the community that is around the space. At the macro evacuation space, types of supporting facilities is made more diverse to accommodate the needs of citizens in the amount of mass evacuation.

Facility supporting earth uake disaster evacuation green space can be divided into two parts, the basic amenities and supporting facilities. Basic amenities consist of goods at the time of evacuation of grass or field and evacuation routes. While supporting facilities in the process of self-preservation, including temporary shelter, bench, shelter, sign board or board of directions, availability of clean water, medicines, food, toilets, garbage cans, and lights.

Planning

Essentially, geological disaster mitigation is to reduce the risk of geological disasters to property and human life. It takes a collaboration between the engineers and the government as an expert policy makers who produce development regulations in an area prone to geological hazards, (Joga, 200).

ones in the planning of a city is the first step and the most fundamental in reducing the damage caused by the earth uake. Planning a better space in which a seismic risk area, will have an impact on determining the best place is the development zone in the city.

Field observations showed that the majority of people of Padang want multiplication gardens as green space. Parks can be used as a space self-saving during earthquakes and other disasters. Park is also used as a residence after a disaster, and is used as a location for securing themselves from the threat of earth uake aftershocks.

Green Space City Plan

Green space Padang plan is used as an evacuation chamber during the earth uake

is based on the analysis results obtained. The planned space order is divided into four sections, namely (1) micro-chamber evacuation, (2) transition evacuation space, (3) macro evacuation chamber, and () buffer evacuation chamber.

Micro evacuation space. In this space users in the process saving themselves from the threat of collapse of buildings. This space is a parking area and garden.

Transition evacuation space. Is a space which is used as an active space in the circulation during the earth uake. This transitional space consists of trails that lead into areas with higher topography.

Macro evacuation room showed activities in a mass emergency. Range of time in this activity is relatively much longer than the micro evacuation chamber. At the macro evacuation space is also needed a more complete supporting facilities because it involves the interests of more number of users. Macro evacuation space plan includes an open space in the form field with grass that lies on a higher topography. This space is located in certain districts in the eastern city of Padang, the Lubuk Kilangan District, Koto Tangah District, Kuranji District, Pauh District, and Bungus Teluk Kabung District.

In the process of evacuation, is needed space that protects users from the threat of catastrophic aftershocks. Space can be a buffer space city that shaped space conservation. In this planning space is called a buffer evacuation space. This space consists of space conservation of protected forests upon the top of the slope of the high land and mangrove forests along the coast.

Vegetation Plan

Bio-geographical conditions of natural environment has showed habitat for various types of vegetation the most appropriate as a reference plant selection for green space of each room. Selection of vegetation in urban green space plans that were presented in general use in accordance with vegetation ecosystems and habitats to be considered on the basis of appropriateness of form and function of the architectural form of vegetation is used as the basis of the ne t selection.

Circulation Plan for Earthquake Disaster Evacuation

Circulation model in disaster evacuation space in Padang utilizing circulation patterns that have been there before. In the process of evacuation, the local people usually use their vehicles to immediately go to places with higher topography to avoid the impact of the tsunami as the aftershocks from the uake. Therefore re uired some changes in circulation models, especially on trails that lead to the macro evacuation zone / area. These changes include changes in width evacuation route to the location of the macro evacuation and the addition of board of directions that facilitate the communities in accessing macro evacuation space.

Plan of Green Space Evacuation Activities and Facilities

Activities developed in the evacuation chamber consist of emergency activity that re uires some facilities that could support the evacuation process. The facility is planned to be developed in each space. The office of micro evacuation, evacuation activities tend to be temporary. In this space people tend to wait until the earth uake activity is finished and waiting for the aftershocks to avoid the collapse of the building.

When an earth uake occurs in a long time and with great force, then the people who were in the micro evacuation space immediately evacuate to the transition evacuation space with fast walking or running activity and not infre uently who use motor vehicles to the location with the higher topography. Necessary facilities such as trails, signage towards macro evacuation chamber, and is e uipped with vegetation attempted not to interfere with the process.

When an earth uake destroyed the structure of the building, the people who suffer the ruins of the building should evacuate in the open place which is e uipped with supporting facilities such as open fields, clean water, medicines, temporary shelter, emergency toilet, kitchen, tools form of ambulance transportation and other support facilities.

Power Support of Green Open Space Disaster Evacuation

Calculation of bearing capacity of green open space is intended to support the safety and comfort during evacuation in a green open space. Carrying capacity in this space is calculated based on circulation facilities, emergency tent facilities and space available as temporary evacuation chamber. Facilities that allow contained in this space include the circulation path.

According to data from the end of 200 , the length of roads in the city of Padang is viewed by function longest Secondary Local Road and Arterial Road Primary, Secondary and Collector Road Primary Arterial Road. The total overall length of the road in the city of Padang is 1.3 km, with a total area of the road about 135 Ha. Thus, assuming the entire community to do the evacuation process without boarded the vehicle, then get a carrying capacity for roads in the city of Padang is:

$\frac{\text{Roads Area(m}^2\text{)}}{\text{Total Population (inhabitants)}}$	
$\frac{1.350.000 \text{ m}^2}{838.10 \text{ inhabitants}}$	1, 2m ² /inhabitants

Carrying capacity in this space is calculated based on the existing facilities. Standard room tents in evacuation space is divided into macro command tent with the size of meters with a carrying capacity of 80-10 people, team tent with the size of 5 meters with a carrying capacity of 15-25 people, and platoon tent with the size of 1 meters with a capacity of 30- 0 people.

In this planning to use public toilet facilities in the form of an emergency toilet. This toilet is a new kind of toilet units that use only 0. liters per shower could save 25 of water use for households without sacrificing comfort and public health.

Landscape Plan

Green space as a space utilization plan the evacuation of residents of Padang as a whole shown in Figure 5. Measures taken to anticipate earthquake hazard in a city can be one of them by way of prevention of development in low-lying areas that are too close to the beach. This is based to prevent loss of life and other property due to other effects caused by the earthquake, particularly the impact of the tsunami.

This land suitability analysis is based on land suitability standards for the camp by

Widyaatmaka (200) is applied using the software ArcView GIS 3.2 map overlay method. Overlaid thematic maps include a map of slope, elevation maps, geological maps, land use maps, and maps of population density. From the results of the five maps intersect, found that a very suitable area for the evacuation area of 2 1 hectares (0. 3), wide area that has kesesuaian moderate (mode-rate Suitable) of 3523. hectares (. 5), broad areas that have low fitness (marginally Suitable) of 11 3 .112 hectares (15.35), and areas that do not fit (not Suitable) has an area of 53 0 .35 hectares (0. 3).

The results of this planning is a map of landscape planning that consists of a room of evacuation of green open space and trails that take advantage of the evacuation route that has been there before.

Planning Programs Utilization of Green Space as the Earthquake Disaster Evacuation Area

To support the efforts of this disaster, other require good planning, also required the cooperation of various parties concerned. This cooperation requires planning program that is associated with the implementation timeframe. Implementation time frame is divided into three period, namely the short and long term. The program is aimed at planning for the effectiveness of the use of green open space for the community during the earthquake, and as a structuring activity or mechanism of evacuation activities in the city of Padang.

CONCLUSIONS AND SUGGESTIONS

Conclusions

Activities developed in the chamber evacuation of emergency activity that requires some facilities that could support the evacuation process. Bio-geographical conditions of natural environment has habitat for various types of vegetation showed that the most appropriate as a reference plant selection for green space of each room. Calculation of bearing capacity of green open space is intended to support the safety and comfort during evacuation in a green open space. On the utilization of green open space for area evacuation, needed adequate facilities, a clear evacuation mechanism and a system that facilitates evacuation activities masyarakat to prevent casualties when disasters occur.

Suggestions

The existence of continued research on the utilization of green open space for earthquake disaster evacuation area in terms of mechanisms and determination of the living standards of the evacuation.

REFERENCES

- Branch, M.C. 1988. Perencanaan Kota Komprehensif : Pengantar dan Penjelasan (terjemahan). Gadjah Mada University Press. Yogyakarta.
- Gold, S.M. 1980. Recreation Planning and Design. Mc Graw Hill Book. New York.
- Joga, N. 2000. Menyiapkan Kota Waspada Bencana http://www.mail-archive.com/dharmajala_yahoogroups.com/msg0522.html (Diakses pada 30 Desember 2000).
- Simonds, J. O. 1983. Landscape Architecture. McGraw-Hill Book Co. New York.
- Widyatmaka, Hardjowigeno, S. 2000. Evaluasi Kesesuaian Lahan dan Perencanaan Tata Guna Lahan Bogor: Gadjah Mada University Press.

APPENDIX

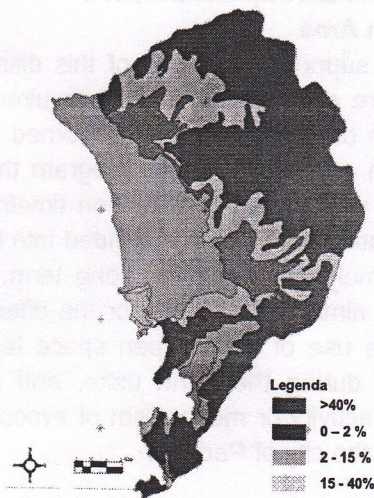


Figure Appendix 1 Topography Analysis

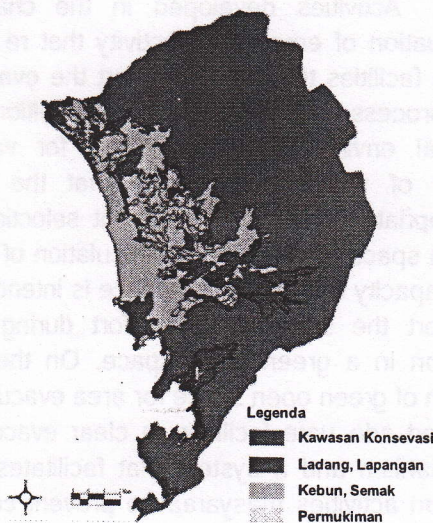


Figure Appendix 2 Land Use

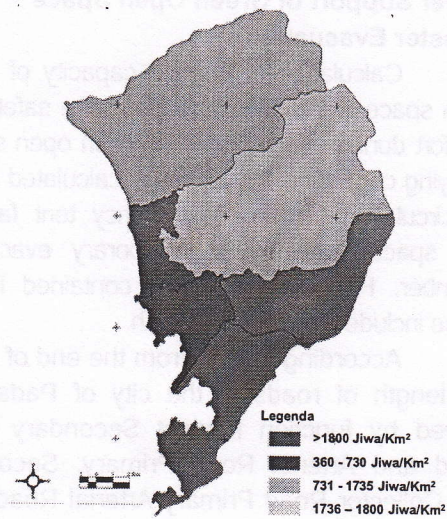


Figure Appendix 3 Analysis of Population Aspects

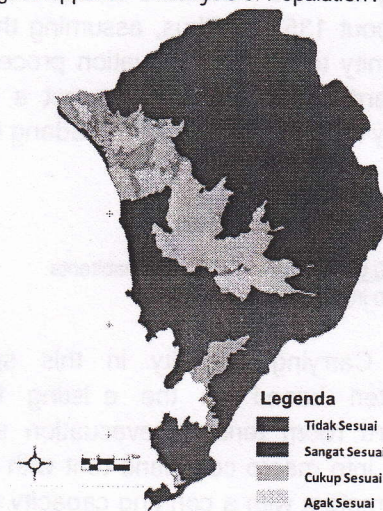


Figure Appendix 4 Land Suitability Analysis

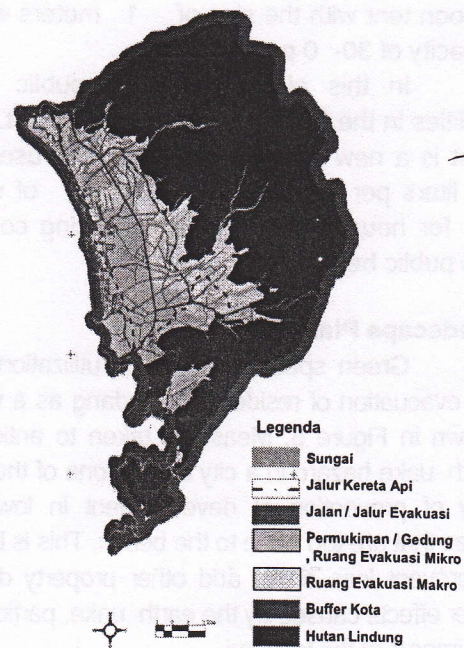


Figure Appendix 5 green space as a space utilization plan for evacuation residents of Padang City as a whole



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