



The Study on Integrated Development Strategy for Da Nang City
and Its Neighboring Area in the Socialist Republic of Vietnam
(DaCRISS)

Tourism Development Strategy for CFEZ (Thua Thien Hue, Danang, Quang Nam)

30 July 2010
Danang City
JICA Study Team

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1. Overview of Vietnam's Tourism

■ Vietnam's Tourism in the Asian Region (1)



Country	Arrivals (Inbound)		
	2008 (000)	Growth Rate (%/year)	
		'00 - '05	'05 - '08
Cambodia	2,001	n.a.	14.5
Indonesia	6,234	-0.2	7.6
Lao PDR	1,295	28.6	24.4
Philippines	3,139	5.7	6.2
Singapore	7,778	3.2	3.2
Thailand	14,536	3.8	7.9
Vietnam	4,254	10.1	7.0

Source: World Development Indicators, World Bank.

◀Outbound (2008) ▶

China: 45.8 million
Japan: 16.0 million
Korea: 12.0 million

Vietnam's Tourism in the Asian Region (2)

Country	Tourism Receipt (USD million)			Expenditure/ Tourist (USD)		
	2008	Growth (%/year)		2005	2008	'08/ '05
		'00 - '05	'05 - '08			
Cambodia	1,300	21.9	11.9	697	650	0.9
Indonesia	8,150	0.5	17.0	1,018	1,307	1.3
Lao PDR	276	5.2	23.4	219	213	1.0
Philippines	4,990	3.4	21.9	1,050	1,590	1.5
Singapore	10,583	3.8	19.5	877	1,361	1.6
Thailand	21,980	4.0	22.0	1,046	1,512	1.4
Vietnam	3,926	n.a.	27.8	542	923	1.7

Source: World Development Indicators, World Bank.

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International Tourism Market of Vietnam

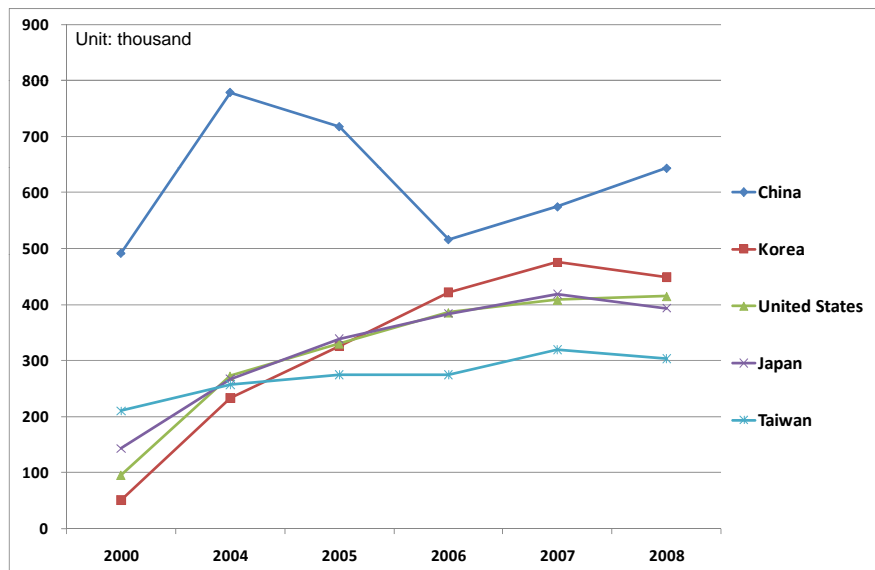
Origin	No. of Tourists (000)			Growth Rate (% / year)	
	2000	2005	2008	'00 - '05	'05 - '08
Americas	126	394	502	25.7	8.4
Asia	1,065	2,202	2,535	15.6	4.8
Australasia	62	149	235	19.3	16.4
Europe	236	418	591	12.1	12.3
Others	652	315	373	-13.5	5.8
Total	2,140	3,478	4,236	10.2	6.8

Source: General Statistics Office of Vietnam

- Major markets are Asia, followed by Europe and Americas
- Tourists from Asia account for 60% of total tourists in 2008

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Main Markets (Top 5)



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Asian Market of Vietnam Tourism



Asian Market

Origin	2008 Tourists (000)	Expenditure (USD)	
		Total (million)	per Tourist (thousand)
China	643	307	477
Korea	449	274	610
Japan	393	242	616
Taiwan	303	257	848
Thailand	182	83	456
Malaysia	175	96	549
Singapore	159	89	560
Cambodia	130	n.a.	n.a.
Philippines	46	29	630
Lao PDR	31	n.a.	n.a.
Indonesia	25	n.a.	n.a.

Source: General Statistics Office of Vietnam, VNAT.

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Tourism Sector Development for Vietnam (2020)

		2005	2010	2020	'05 - '20 Growth (%/year)
Tourists (million)	International	3.0–3.5 ¹⁾	6.0–6.5	12.0	9.1
	Domestic	15.5	20.0	30.0	4.5
Tourism Receipt	billion USD value	15,730	33,880	81,730	11.6
	% to national GDP	4.2	6.4	7.0	3.5
Number of Hotel Rooms		89,500	n.a.	n.a.	n.a.
Number of Jobs Created		460,000	760,000	1,400,000	7.7

Source: 7th Draft for National Tourism Development Strategy up to 2010 and Orientation to 2020.

¹⁾ 2002 figures for the number of international tourists

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Summary of Vietnam's Tourism

- Tourist arrivals and receipts have been increasing steadily in Vietnam.
- Tourism sector is expected to grow farther and its share in national economy will increase from 4.2% in 2005 to 7% by 2020.
- While main markets include East Asia countries (China, Japan, Korea, Taiwan) and USA, those including Europe and Australia show faster growth rates.
- Domestic tourism has been and is expected to grow rapidly as income increases and mobility and accessibility improve.

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2. Tourism of HDQ

Profile of HDQ Region

Major Cities

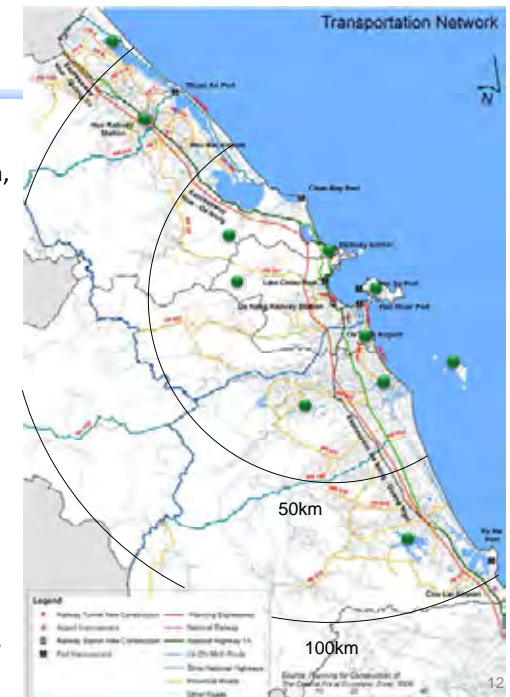
Hue City, Danang City, Hoi An Town, Tam Ky City

World Heritages

- Old Imperial City of Hue
- Hue royal court music (registered intangible world heritage)
- Hoi An Ancient Town
- My Son Sanctuary

Beach Resorts

Canh Duong, Thuan An, Lang Co, Thanh Binh, My Khe, Bac My An, Non Nuoc, Nam O, Ha My, Cua Dai, Tam Thanh, Tan Dinh, etc.



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■ Main Tourism Resources in HDQ Region

Categories	TT Hue	Danang	Quang Nam
Major Cities	•Hue City	•Danang City	•Hoi An Town, Tam Ky City
World Heritages	•Old Imperial City of Hue •Hue royal court music	•n.a.	•Hoi An Ancient Town •My Son Sanctuary
Beach Resorts	•Canh Duong, Thuan An, Lang Co	•Thanh Binh, My Khe, Bac My An, Non Nuoc, Nam O	•Ha My, Cua Dai, Tam Thanh, Tan Dinh
Craft Villages	•Many craft villages around Old Imperial City of Hue •Craft villages near Quang Tri border as well	•Handicraft centered in Marble Mountains	•Accessible craft villages near Hoi An Ancient Town mostly located along Vu Gia River •Craft village cluster near Tam Ky City and Phu Ninh Lake
Festivals, Customs and Relics	•Royal court music •Tombs from Hue Dynasty	•Cham culture preserved in Cham Museum	•Nui Thanh Historic Relic •Various small – scale cham relics
Mountains/ Fauna and Flora	•Bach Ma National Park •Hai Van Pass	•Ba Na Nui Chua Natural Reserve •Hai Van Pass •Marble Mountains •Son Tra Natural Reserve	•Cham Islands
Water Resources	•Tam Giang Lagoon •Various waterfalls	•Phuoc Nhon Hotspring	•Phu Ninh Lake
Others	•Ho Chi Minh Museum	•29 / 3 Park •Cham Museum	•Bong Mieu Gold Mine

- Wide spectrum of rich resources spread over the HDQ region. ¹³

■ Tourism Demand of HDQ in Vietnam

			2005	2007	'07/ '05
International	No. (000)	Vietnam	3,478	4,229	1.2
		HDQ	1,310	1,937	1.5
	Share of HDQ to Vietnam		37.7%	45.8%	-
Domestic	No. (000)	Vietnam	15,000	19,000	1.3
		HDQ	1,763	2,928	1.7
	Share of HDQ to Vietnam		11.8%	15.4%	-
Total	No. (000)	Vietnam	18,478	23,229	1.3
		HDQ	3,073	4,865	1.6
	Share of HDQ to Vietnam		16.6%	20.9%	-

- Faster increase in tourist arrivals to HDQ than those of Vietnam for both international and domestic.

■ Tourism Market of HDQ

		Number of tourists (000)			Growth Rate (%/year)	
		2000	2005	2007	'00 – '05	'05 – '07
		(000 (%))	(000 (%))	(000 (%))		
International	TT Hue	195	369 (28%)	601 (31%)	13.6	27.6
	Danang	185	228 (17%)	350 (18%)	4.3	23.9
	Quang Nam	n.a.	713 (55%)	1,006 (51%)	n.a.	18.8
	Total	n.a.	1,310 (100%)	1,957 (100%)	n.a.	21.6
Domestic	TT Hue	275	681 (39%)	829(28%)	19.9	10.3
	Danang	209	432 (24%)	1,000(34%)	15.6	52.1
	Quang Nam	n.a.	650 (37%)	1,099 (38%)	n.a.	30
	Total	n.a.	1,763(100%)	2,928(100%)	n.a.	28.9
Total	TT Hue	470	1,050(34%)	1,430 (29%)	17.4	16.7
	Danang	394	660 (22%)	1,350 (28%)	10.9	43.0
	Quang Nam	n.a.	1,363 (44%)	2,105 (43%)	n.a.	24.3
	Total	n.a.	3,073(100%)	4,885(100%)	n.a.	26.1

Source: Department of Culture, Sports and Tourism of each Province.

- Sharp increase in number of tourists in HDQ (both international and domestic)

■ Tourism Market of HDQ by Nationality

<u>T.T Hue (2009)</u>	<u>Quang Nam (2007)</u>
(1) French: 105,000	(1) French: 64,000
(2) Thailand: 89,000	(2) Thailand: 41,000
(3) Australian: 56,000	(3) German: 37,000
(4) German: 52,000	(4) American: 36,000
(5) American: 51,000	(5) British: 34,000
(6) Japanese: 29,000	(6) Spanish: 21,000
	(7) Australian: 15,000
	(8) Japanese: 15,000

- HDQ attracts different segments of tourism market than those of Vietnam.

Tourism Demand of HDQ (2020)

		Number of Tourists (000)		Growth (%/year)
		2010	2020	'10 – '20
International	Thua Thien Hue	650	1,950	11.6
	Danang	350	1,120	12.3
	Quang Nam	1,006*	n.a.	n.a.
	Total	2,006	n.a.	n.a.
Domestic	Thua Thien Hue	895	2,370	10.2
	Danang	1,100	3,880	13.4
	Quang Nam	1,099*	n.a.	n.a.
	Total	3094	n.a.	n.a.
Total	Thua Thien Hue	1,545	4,320	10.8
	Danang	1,450	5,000	13.2
	Quang Nam	2,105*	n.a.	n.a.
	Total	5,100	n.a.	n.a.

Source: Department of Culture, Sports and Tourism of each Province

* 2007 figures

- It is expected that tourism demand will continuously increase in the future.

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Economic Indicators of Tourists in HDQ

		Hue		Danang		Quang Nam	
		2010	2020	2010	2020	2010	2020
International	Ave. length of stay (days)	2.1	3.0	2.1	2.3	2.6	3.8
	Ave. expenditure/ tourist/ day	76 (73)*	84	65 (62)*	71	76 (73)*	84
Domestic	Ave. length of stay (days)	2.1	2.3	2.0	2.5	1.8	2.3
	Ave. expenditure/ tourist/ day	31 (27)*	40	25 (22)*	32	31 (27)*	40

*VNAT survey 2007

- Need to make tourists stay longer and spend more by providing more diversified quality attractions and products.

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Impact of Tourism Sector on Local Economy

		GRDP (2007)	Employment (2010)*
Hue	To tertiary sector	14.0%	9%
	To whole sector	6.0%	7%
Danang	To tertiary sector	6.5%	7%
	To whole sector	3.4%	3%
Quang Nam	To tertiary sector	9.7%	15%
	To whole sector	3.5%	5%

Source: Statistics of three provinces

*estimated

- Contribution of tourism sector is 3.5% - 6% to local economy and 3% - 7% to total employment.
- In the future (2020 beyond), it is expected that tourism sector will contribute to 10 – 20% of the GRDP and employment

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Satisfaction of Tourists (Results from Tourism Survey)

		Danang	T. T. Hue	Quang Nam	Average
High	Price	0.21	1.82	1.69	1.24
	Hospitality of the local communities	1.40	1.25	0.91	1.19
	Natural attractions	1.07	1.17	0.82	1.02
Medium	Cultural attractions	-0.07	1.48	1.00	0.80
	Local public services	0.00	0.83	0.27	0.37
	Quality / organization of the local facilities and services	0.38	0.39	0.18	0.32
	Typical atmosphere	-0.20	0.83	0.27	0.30
	Quality / variety of restaurants	0.36	0.41	0.09	0.29
	Quality / comfort of accommodations	0.40	0.14	0.09	0.21
Low	Diversification by tourism product supply	-0.36	0.83	-0.27	0.07
	Information on activities for holidays	0.29	-0.52	0.36	0.04
	Parking	-0.20	-0.41	0.50	-0.04
	Local transport in the area	0.07	-0.59	0.09	-0.14
	International transport to reach the destination	-1.00	0.04	0.45	-0.17
	Tourism organizations of the area	0.07	-0.20	-0.45	-0.19
	Traditional attractions	-0.73	-0.29	-0.18	-0.40
Tradition of the local cuisine	-0.13	-1.17	-0.45	-0.59	
Marketing policies and programs of the area	-0.43	0.00	-1.33	-0.59	
Entertainment, night life	-1.14	-0.40	-0.64	-0.73	
Average		0.00	0.29	0.18	0.16

Source: DaCRISS Tourism Survey, 2010.

1) Rated from -3 (not satisfied) to 3 (very satisfied)

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■ Gaps (importance score – satisfaction score): Areas for Attention

		Danang	T. T. Hue	Quang Nam	Average
Large	Marketing policies and programs of the area	2.96	n.a.	4.33	3.35
	Entertainment, night life	3.41	2.40	3.64	3.15
	Traditional attractions	2.52	2.55	3.18	2.75
Medium	International transport to reach the destination	3.29	1.82	2.55	2.55
	Tradition of the local cuisine	2.07	2.86	2.45	2.46
	Diversification by tourism product supply	2.49	1.60	3.09	2.39
	Local transport in the area	2.13	2.42	2.55	2.37
Large	Tourism organizations of the area	1.66	1.98	3.27	2.30
	Parking	1.63	2.71	2.30	2.21
Medium	Information on activities for holidays	2.02	2.57	1.64	2.07
	Quality / organization of the local facilities and services	2.08	1.39	2.64	2.04
	Quality / comfort of accommodations	2.17	1.45	2.00	1.87
	Quality / variety of restaurants	1.64	1.59	2.36	1.87
	Local public services	2.00	1.22	2.36	1.86
	Typical atmosphere	1.93	0.55	1.82	1.44
	Cultural attractions	1.76	0.70	1.82	1.43
Small	Natural attractions	0.70	0.61	1.82	1.04
	Hospitality of the local communities	0.31	1.11	1.36	0.93
	Price	2.12	-0.01	0.31	0.81
Average		2.05	1.66	2.39	2.03

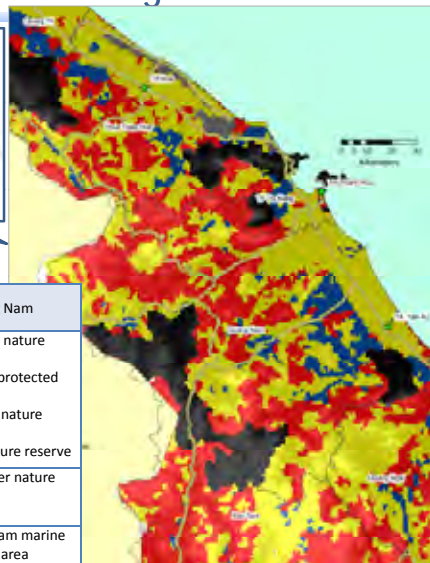
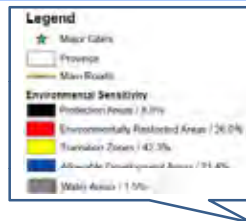
Source: DaCRISS Tourism Survey, 2010.
1) Importance score minus satisfaction score

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3. Rapid Assessment of Current Transportation Infrastructure and Environmental Conditions related to Tourism in HDQ Region

■ HDQ in Overall Environmental Zoning

- Environment zoning was performed in the study area



Protected Areas	Thua Thien Hue	Danang	Quang Nam
Corridor 1 (mountainous)	<ul style="list-style-type: none"> Bach Ma National Park Phong Dien nature reserve Sao La nature reserve 	<ul style="list-style-type: none"> Ba Na – Nui Chua nature reserve 	<ul style="list-style-type: none"> Song Tinh nature reserve Phu Ninh protected area Ngoc Linh nature reserve Sao La nature reserve
Corridor 2 (hilly and flat areas)			<ul style="list-style-type: none"> Thanh River nature reserve
Corridor 3 (coastal and marine)	<ul style="list-style-type: none"> Hai Van pass protected area Tam Giang – Cau Hai marine protected area 	<ul style="list-style-type: none"> Hai Van pass protected area Ban Dao Son Tra nature reserve 	<ul style="list-style-type: none"> Cu Lao Cham marine protected area

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■ Environmental Impact of Tourism

- Excessive use of water resources where it is scarce
- Water runoffs and pollutions (boat traffic, motors oils, reparation workshops, craft villages)
- Use of pesticides and fertilizers
- Air / water pollution in craft villages
- Production of solid wastes including toxic ones
- Access facilities construction and traffic pollution related to all types of transport modes.
- Land occupation and related impacts
- Demographic pressure and human presence in sensitive areas
- Illegal trading of protected plants and woods including for alimentary and construction purpose (restaurant, furniture)

◀ Impact of Climate Change ▶

	Impacts from Climate Change
Direct Effects	<ul style="list-style-type: none"> Stronger storms and typhoons Increase of sea level Increasing floods Droughts Increasing temperatures
Indirect Effects	<ul style="list-style-type: none"> Redistribution of land occupation Landslides Deforestation Coastal erosion Salt water intrusion Changes in land and marine biodiversities Increasing contagious diseases

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■ Rapid Assessment of Infrastructure Services

◀Coverage of basic services (%)▶

	T. T. Hue	Danang	Quang Nam
Primary Health Care	94	97	96
Piped Drinking Water	62	72	65
Electricity	85	100	89
Telephone	48	73	32
Drainage	51	75	46

Source: Results from Communes Survey (2008), DaCRISS Study Team.

- Provision of electricity connection and primary health care services is high in all provinces except for some inland areas in Thua Thien Hue and Quang Nam
- Access to telephone and drainage is still limited except Danang
- Coverage of piped drinking water is yet insufficient

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Summary of Main Issues

■ Rapid Assessment of Transportation Services

- Roads
 - North-South axis :NH1A, HCM Highway, NS Expressway (Danang - Quang Ngai)
 - basically in good condition, upgrading ongoing
 - East-West axis :EW Highway, NH49A, NH49B, NH14B, NH14D, NH14E
 - various access to the west, however road quality is poor in some sections
 - bus services exist but need improvement
- Airport: direct link to 8 cities in Vietnam and 3 cities overseas from Danang and Phu Bai
- Railway: needs upgrading, Hue - Lang Co - Danang section is popular among tourists, NS High Speed Railway in the future
- Port: passenger station in Tien Sa and Chan May



■ Summary of Issues

- **Creating clear image of the region:** the tourism cluster has not been fully recognized and there is a need for coordinated integrated tourism management and promotion
- **Strengthening environmental management:** coordinated environmental planning and management including protection of natural resources is essential
- **Strengthening transportation connectivity at all levels:** improvement of transportation can also contribute to expand opportunities for tourists to visit isolated tourism destinations scattered in the region
- **Need for enhanced inter – provincial coordination:** there are unique and distinct tourism resources in the three provinces of the Central Region Vietnam, but these resources can be fully utilized only if all three provinces employ the same strategy

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4. Vision, Goals and Strategies

■ What is Sustainable Tourism?

- **Make optimal use of environmental resources** that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- **Respect the socio-cultural authenticity** of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- **Ensure viable, long-term economic operations**, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.

Source: Marrakech Task Force for Sustainable Tourism Development

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■ Vision and Goals (proposed)

- **HDQ to become an internationally competitive tourism destination by leveraging rich cultural and ecological resources and opportunities for MICE.**
- (i) Tourism sector to ensure sustainable growth of HDQ wherein the sector functions as a catalyst to integrate economy, social and cultural resources, and environment in synergy.
- (ii) Tourism sector to benefit local economy and social equity by strengthening urban-rural linkages
- (iii) Tourism sector to enhance human resource quality of service sector and environmental management not only for HDQ but also for the entire country
- (iv) Tourism sector to contribute to develop HDQ as an internationally competitive MICE centre in Asia
- (v) Tourism sector in HDQ establish an enhanced model for sustainable tourism development through intensive inter-provincial coordination

Note: MICE= meetings, incentives, conference, exhibition

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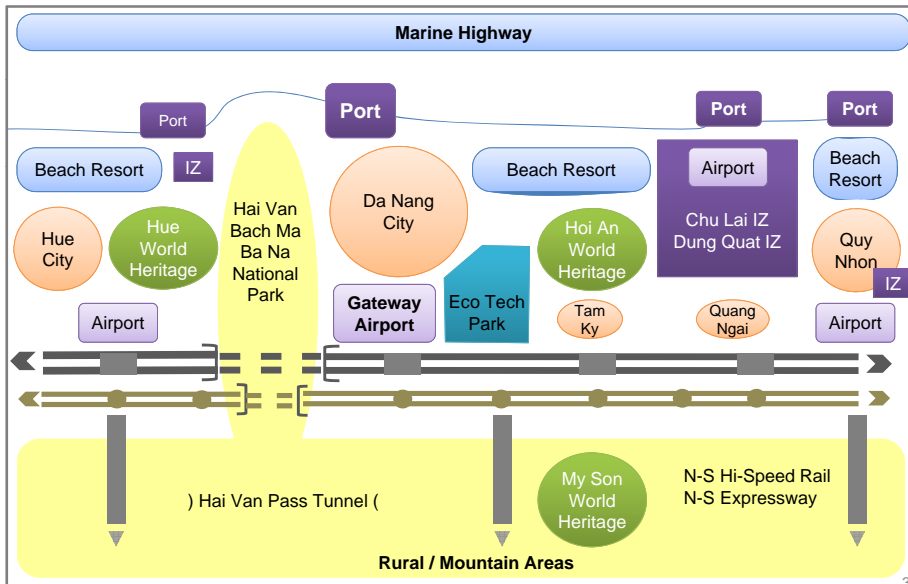
■ Strategies

- **Connect HDQ with the world directly** through competitive gateway (much improved international airport in Danang) and much improved land transportation (expressway, high-speed railway) with Hue and Quang Nam
- **Improve main tourism destinations** (preservation, environment, infrastructure) and strengthen connectivity among them via improved land and water transportation
- **Establish a coordinated mechanism for conservation and development in HDQ** by providing adequate institutional mechanisms including PPP scheme
- **Establish human resource development system** for management and services in general, and tourism sector in particular to meet large demand of HDQ as well as Vietnam
- **Strengthen inter-provincial coordination mechanism**

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■ Conceptual Spatial Structure of CFEZ (Central Focal Economic Zone)



■ Main Gateways

- **Danang Airport** will be upgraded with a new terminal building and extension of runway, to be completed in 2011 (additional capacity of 4,000 thousand passengers annually).
- **Phu Bai Airport** will be upgraded by a joint-venture project with Middle Airports Corporation (study by Changi Airport International) targeting 2020.
- International connectivity must be much strengthened.

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■ Strategic Location of HDQ in the World Heritage World

■ Strategies to expand international connectivity

- world heritage partnership (ex. Yogyakarta, Shiem Reap, Luan Praban, Lijian, Okinawa, Bali,...)
- gateways of main market countries (ex. Tokyo/ Kansai, Seoul, Beijing/ Shanghai/ Hong Kong, Bangkok, Singapore, Kuala Lumpur, Manila, ...)
- connectivity via transport (air, land, water) and communication



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5. Candidate and Priority Projects (Preliminary)

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■ Identification of the Projects

- A long list with projects has been prepared, based on the following:

- JICA 2002 Tourism Study
- Discussions with Main Stakeholders
- DACRISS Master Plan
- Master Plans of the Provinces

- Priority projects have been selected based on a set of criteria

◀Criteria to Select Priority Projects▶

1. The project should comply with sustainable tourism development concept.
2. The project should be built on unique selling point of each province and complement each other.
3. The project should encourage regional cooperation and benefit more than one province.
4. The project cost should be a moderate amount and implemented with initiatives of public sector.

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■ Candidate Projects Identified and Included in the Long List

- Projects were divided in the following groups

Project Groups	Number of Projects
A. Institutional Development	7
B. Human Resource Development	5
C. Tourism Destination Development	37
D. Facility Development (Transportation)	10
E. Facility Development (Accommodation)	1
F. Facility Development (Service Facilities)	16
G. Resources Management	16
H. Environment Preservation	3
I. Marketing and Promotion	2

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■ Priority Projects selected for Farther Study

1. Strengthening tourist organizations and information
2. Development of the Tourism Institute of Vietnam – Branch of Central Vietnam (pilot)
3. Hue – Danang tourism train operation (future extension to Tam Ky)
4. Improvement of waterways linking Danang and Hoi An
5. Improvement of tourism safety and disaster preparedness
6. Village tourism supporting program
7. Integrated lake and marine protection program
8. Rural water supply and sanitation improvement
9. Infrastructure upgrading along HCM trail
10. Sustainable development program for Hoi An
11. Expansion of international partnership between HDQ and qualified cities/ economies

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■ Priority Project 1:

Strengthening Tourist Organizations and Information

Category	Description
Implementing Agency	VNAT
Cooperating Agencies	<ul style="list-style-type: none"> • DOCST of three provinces • Private sector (tour operators and hotels)
Objectives	<ul style="list-style-type: none"> • To support the organizational side of existing tourism bodies and improve information about tourism and develop new products
Activities	<ol style="list-style-type: none"> 1. Development of tourist maps and signboards 2. Strengthening of Tourism Associations 3. Development of Professional Certifications 4. Development of new tourism routes 5. Promotion of Cham Culture and Culture Museum Network 6. Development of a heritage inventory 7. Developing and testing of green label for tourism 8. Coordinate and integrate biodiversity into tourism
Benefits	<ul style="list-style-type: none"> • Tourists: free supply of information • Tourism operators: economic benefit from advertisement • Provinces: promotion of tourism destinations
Cost Estimate	To be worked out

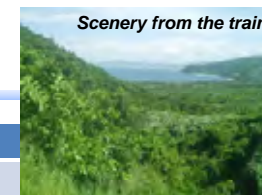
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■ Priority Project 2: Development of the Tourism Institute of Vietnam

Category	Description
Implementing Agency	VNAT
Cooperating Agencies	<ul style="list-style-type: none"> • DOCST of three provinces • Private sector (tour operators and hotels)
Objectives	<ul style="list-style-type: none"> • To strengthen and support the overall human resource development
Activities	<ol style="list-style-type: none"> 1. Construction of facilities (Center of Institute, Training Hotel, Training Restaurant, Training Banquet Hall, Student Dormitory) 2. Establishment of training courses 3. Development and improvement of teaching staff, methods, curriculum and system 4. Development of a tourism research center
Benefits	<ul style="list-style-type: none"> • Students: professional training • Tourism operators: customer service skill requirements fulfilled • Provinces: higher level in tourism service in the region • Country: new model for tourism training system in Vietnam
Cost Estimate	To be worked out

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■ Priority Project 3: Hue – Danang Tourism Train Operation



Category	Description
Implementing Agency	Vietnam Railways
Cooperating Agencies	<ul style="list-style-type: none"> • Private sector • DOT of three provinces
Objectives	<ul style="list-style-type: none"> • Diversification of travel between Hue and Danang, possibly Tam Ky (future extension)
Activities	<ol style="list-style-type: none"> 1. Operation of experimental tourism trains 2. Marketing and business model establishment 3. Training for service and promotion 4. Minibus procurement for pick-up service 5. Ticketing system improvement 6. Procurement of passenger cars
Benefits	<ul style="list-style-type: none"> • Tourists: value-added transport • Tourism operators: various tour programs / products • Vietnam Railways: contribution to increase in passengers • Global: less emission of green house gases
Cost Estimate	3.5 million USD (excluding operation cost)

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■ Priority Project 4: Improvement of Waterways Linking Danang and Hoi An

Category	Description
Implementing Agency	Danang City and Quang Nam Province
Cooperating Agencies	<ul style="list-style-type: none"> • DARD of three provinces • Private sector
Objectives	<ul style="list-style-type: none"> • Diversification of travel between Danang and Hoi An • Alleviation of floods
Activities	<ol style="list-style-type: none"> 1. Dredging Co Co River bed 2. Procurement of eco-friendly ships 3. Development of river ports 4. Water quality and landscape improvement 5. Capacity building for operators
Benefits	<ul style="list-style-type: none"> • Tourists: value-added transport • Tourism operators: various tour programs / products • Provinces: better environment • Global: less emission of green house gases
Cost Estimate	6 million USD (excluding operation cost)



■ Priority Project 5: Improvement of Tourism Safety and Disaster Preparedness

Category	Description
Implementing Agency	HDQ or MONRE
Cooperating Agencies	<ul style="list-style-type: none"> • Flood and Storm Prevention and Control Committee • DOT, DONRE, DARD of 3 provinces
Objectives	<ul style="list-style-type: none"> • Strengthen and support overall safety of tourism development
Activities	<ol style="list-style-type: none"> 1. Vulnerability diagnosis through digitalized mapping 2. Evacuation / rescue scenario training for tourism destinations 3. Tourism roads safety (structural works for landslide protection)
Benefits	<ul style="list-style-type: none"> • Tourists: safety • Local residents: safety and upgrading of local infrastructure
Cost Estimate	5 million USD

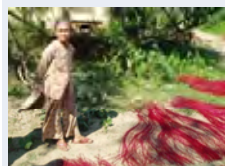
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■ Priority Project 6: Village Tourism Supporting Program



Category	Description
Implementing Agency	MARD or HDQ
Cooperating Agencies	<ul style="list-style-type: none"> • People's Committee of Communes (selected for pilot project)
Objectives	<ul style="list-style-type: none"> • Diversification of tourism products and support of people's daily life through tourism related business activities
Activities	<ol style="list-style-type: none"> 1. Construction of access roads to the village, water supply system, waste water treatment system, solid waste management 2. Traditional handicraft improvement (development of center) 3. Development of road networks for trekking and cycling routes between and around villages 4. Definition of tourism products with environmental objectives 5. Alternative tourism activities generating revenues for poor
Benefits	<ul style="list-style-type: none"> • Tourists: village tours enjoyed with sanitary environment • Local residents: improvement of living conditions and increased revenue • Tourism operators: diversification of tours
Cost Estimate	To be worked out



Craft Village in Quang Nam

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■ Priority Project 7: Integrated Lake and Marine Protection Program



Category	Description
Implementing Agency	HDQ
Cooperating Agencies	<ul style="list-style-type: none"> • VEPA (Vietnam Environmental Protection Agency) • DOCST, DONRE of 3 provinces • Private sector
Objectives	<ul style="list-style-type: none"> • Strengthen and support the overall sustainable tourism development in the perspective of biodiversity protection
Activities	<ol style="list-style-type: none"> 1. Development of marine biodiversity and marine activities development 2. Construction of tourism facilities in lake / marine areas 3. Establishment of a tourism information center 4. Development of environment management planning capacities
Benefits	<ul style="list-style-type: none"> • Tourists: improved lake / marine environment • Local residents: improved lake / marine environment
Cost Estimate	4.5 million USD

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■ Priority Project 8: Rural Water Supply and Sanitation Improvement Program

Category	Description
Implementing Agency	HDQ
Cooperating Agencies	<ul style="list-style-type: none"> • DARD of three provinces • Water supply companies
Objectives	<ul style="list-style-type: none"> • Establishment of safe water supply, waste water treatment system, and solid waste management system in rural areas
Activities	<ol style="list-style-type: none"> 1. Survey and selection of target area and type of treatment 2. Construction of facilities 3. Installation of equipments 4. Capacity development for operators
Benefits	<ul style="list-style-type: none"> • Tourists: tourism in rural areas enjoyed with sanitary environment • Local residents: improvement of living conditions • Provinces: establishment of infrastructure in rural areas
Cost Estimate	To be worked out

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■ Priority Project 9: Infrastructure Upgrading Along HCM trail

Category	Description
Implementing Agency	MOT or HDQ
Cooperating Agencies	<ul style="list-style-type: none"> • MOCST, MONRE, MARD, Defense Ministry, National Father Front • DONRE, DARD, DOT from concerned provinces • Museums and universities
Objectives	<ul style="list-style-type: none"> • Increase tourism attractiveness along Ho Chi Minh trail
Activities	<ol style="list-style-type: none"> 1. Identification of potentials along Ho Chi Minh trail 2. Development of tourist maps, guide booklets, websites 3. Construction of tourism facilities along Ho Chi Minh trail 4. Conception and creation of Ho Chi Minh trail houses 5. Capacity development of tour guides (knowledge on history, environment protection, handicraft products, etc.)
Benefits	<ul style="list-style-type: none"> • Tourists: more selection in tourism destinations • Tourism operators: diversification of tours
Cost Estimate	4 - 6.5 million USD

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■ Priority Project 10: Sustainable Development Program for Hoi An



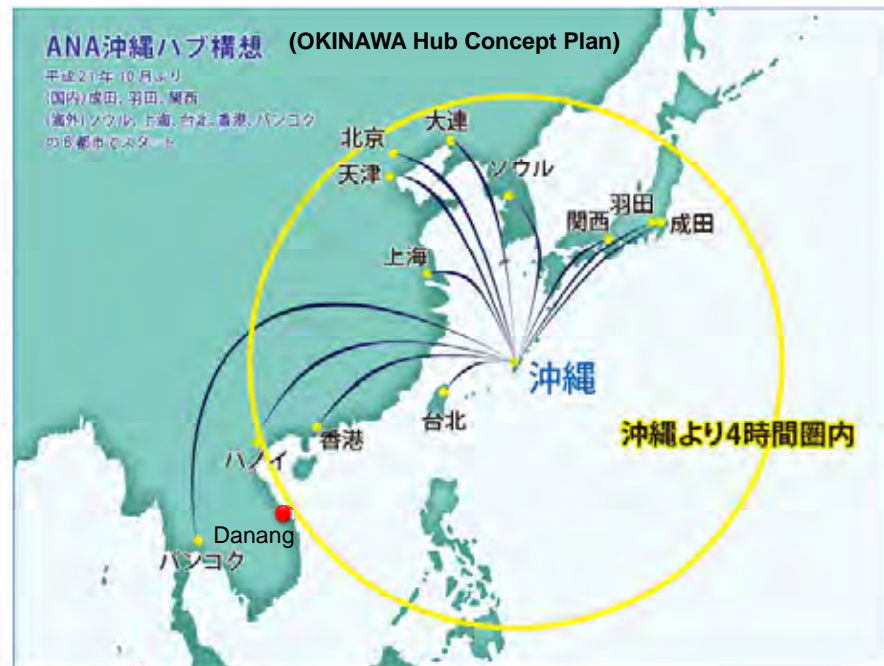
Category	Description
Implementing Agency	Quang Nam Province
Cooperating Agencies	<ul style="list-style-type: none"> • People's Committee in Hoi An Town • Private sector
Objectives	<ul style="list-style-type: none"> • To develop Hoi An in a sustainable manner reflecting on recent impacts due to increased tourists
Activities	<ol style="list-style-type: none"> 1. Renewing and upgrading of facilities for safe water supply, waste water treatment system, and solid waste management 2. Application of entrance fees to the town itself and introduction of tourism tax 3. Financial support for maintaining ancient houses 4. Cooperation with neighboring resorts on environmental protection
Benefits	<ul style="list-style-type: none"> • Tourists: improved environment in Hoi An • Tourism operators: increase of capacity to attract more tourists • Local residents: less negative environmental impacts to the area
Cost Estimate	To be worked out

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■ Priority Project 11: International Partnership Development Pilot Program (HDQ and Okinawa)

Category	Description
Implementing Agency	HDQ
Cooperating Agencies	<ul style="list-style-type: none"> • Ministry of Culture, Sports and Tourism • Ministry of Planning and Investment
Objectives	<ul style="list-style-type: none"> • To establish an effective partnership to promote sustainable tourism development of HDQ
Activities	<ol style="list-style-type: none"> 1. Establishment of dialogue mechanism between HDQ and Okinawa 2. Development of partnership program on sustainable tourism development including research, training, investment promotion, exchange of human resources, tourism sector management, etc. 3. Holding a launching seminar to promote the program
Benefits	<ul style="list-style-type: none"> • Tourism sector in general • HDQ authorities
Cost Estimate	To be worked out

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6. Conclusions and Recommendations

■ Preliminary Conclusions and Recommendations

- Tourism potential in the region is high but underdeveloped.
- There is a need for establishing coordinated strategy for sustainable tourism development and the growth of HDQ.
- Inter-provincial tourism linkages with neighboring provinces must be strengthened with focus on accessibility, hospitality, and environmental protection.
- Defining a leading institution for increased coordination and consistency of information among the provinces is crucial.
- Investment not only in infrastructure but also human resources and management is needed.
- More active involvement of the private sector should be encouraged.

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■ Next Steps

- Update of the Interim Report based on the discussions held in this seminar.
- Further development of selected projects for implementation

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END

Thank you for your attention!!

COUNTERPART TEAM MEETINGS

The Study on Integrated Development Strategy for
Danang City and its Neighboring Area in
the Socialist Republic of Vietnam
(DaCRISS)

Natural Conditions Assessment,
Environmental Zoning, Suitability Analysis
by DaCRISS GIS

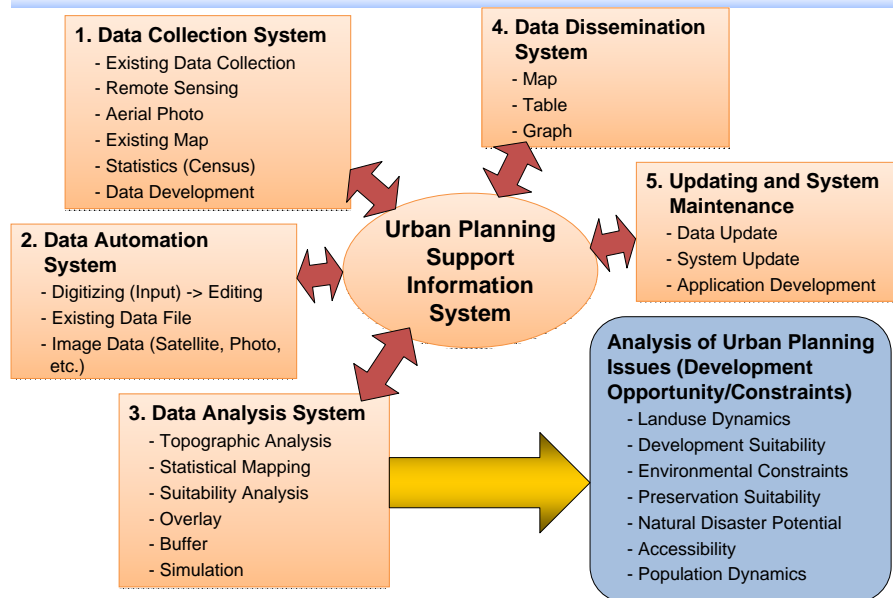
12 June 2009

JICA Study Team

TOPICS

- ★ System Components of GIS Database
- ★ Objective and Procedure for DaCRISS GIS Database Development
- ★ Analysis of Urban Planning Issues
- ★ Development Suitability Analysis

System Components of GIS Database

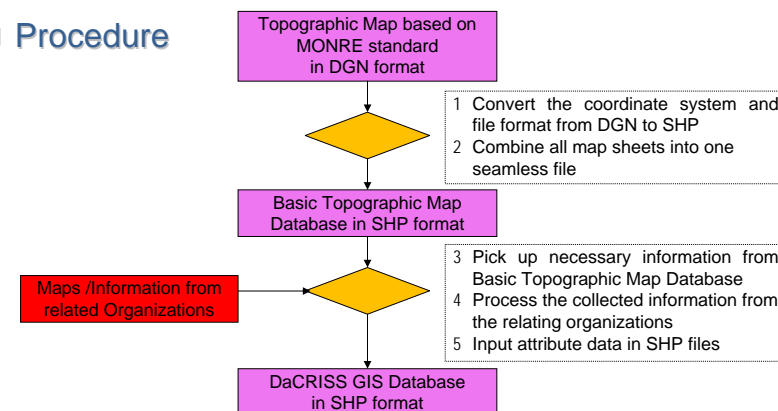


Objective and Procedure for DaCRISS GIS Database Development

Objective

- A comprehensive GIS database is being developed to understand the existing conditions of the Study Area, and to know spatial distribution of development constraints and opportunity to support the development of a comprehensive master plan of Danang City.

Procedure



Basic Data Items for DaCRISS GIS Database (1/5)

Category	Title	Item	Shp Type	Scale	Data Source	Source Year
Administrative Boundary	1 Administrative Boundary	City	Polygon	1:5,000 / 1:10,000	Topo map	2006
		District	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Commune	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Socio-economic Condition from GSO	Population	Table	Non Scale	GSO
Natural Conditions	1 Topography	Contour	Polyline	1:5,000 / 1:10,000	Topo map	2006
		Height Spot	Point	1:5,000 / 1:10,000	Topo map	2006
	2 Geology	Geology	Polygon	1:200,000	Geological Survey of Vietnam	1996
			Groundwater Condition	Polygon	1:75,000	DONRE
	4 Water System	River	Polyline/Polygon	1:5,000 / 1:10,000	Topo map	2006
		Lake/Reservoir	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Sea (Coastal Line)	Polyline	1:5,000 / 1:10,000	Topo map	2006
	5 Existing Natural Land Use	Wetland Area	Polygon	1:10,000	Topo map	2006
		Agriculture Area	Polygon	1:10,000	Topo map	2006
		Vegetation	Polygon	1:10,000	Topo map	2006
	6 Forest Area	Protected Forest	Polygon		DARD	2008
		Endangered Species	Polygon		DARD	2008

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Basic Data Items for DaCRISS GIS Database (2/5)

Category	Title	Item	Shp Type	Scale	Data Source	Source Year
Natural Conditions (Cont'd)	7 Eco-system (Sea)	Coral Reef	Polygon	1:10,000	DOST	2008
	8 Eco-system (Land)	Protected Animal Habitat	Point	No Scale	DARD	2008
Environmental Management	1 Environment Monitoring Station	Water Quality	Point	1:5,000	DONRE	2008
		Air Quality	Point	1:5,000	DONRE	2008
		Soil Sampling	Point	1:5,000	DONRE	2008
		Meteorology	Point	1:5,000	Topo map	2006
	2 Environment Monitoring Data	Environment Monitoring Data	Table		DONRE	
	3 Disaster Mitigation Method	Dyke	Polyline	1:5,000	PIIP	2006
Hazard/Risk Records	1 Historical Trend	Historical Flood Affected Area	Point	1:10,000	PIIP	2007
		Regularly Flooding Area	Polygon			
Landuse	1 Urban Land Use	Industrial Area (existing)	Polygon	1:5,000	Study Team	2008
		Residential Area				
		Commercial Area				
		Public Use Area				

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Basic Data Items for DaCRISS GIS Database (3/5)

Category	Title	Item	Shp Type	Scale	Data Source	Source Year
Urban Transportation	1 Transportation Network	Railway	Polyline	1:5,000 / 1:10,000	Topo map	2006
		Road	Polyline	1:5,000 / 1:10,000	Topo map	2006
		Bridge	Point	1:5,000 / 1:10,000	Topo map	2006
		Port	Point/ Polygon	1:5,000 / 1:10,000	Topo map	2006
		Airport	Point/ Polygon	1:5,000 / 1:10,000	Topo map	2006
		Railway Station	Point/ Polygon	1:5,000 / 1:10,000	Topo map	2006
		Bus Terminal	Point/ Polygon	1:5,000 / 1:10,000	Topo map	2006
	2 Public Transport	Bus Route	Polygon	1:50,000	DOT	2008
		Bus Stop				
	3 Traffic Management	Signalized Intersection	Point	1:5,000	DOT	2008
4 Traffic Accident	Frequent Accident Point	Point	1:5,000	DOT	2005	
Urban Utilities	1 Water Supply	Water Supply Network	Polyline	1:5,000	PIIP	2007
		Water Supply Service Area	Polygon			
	2 Sewerage & Drainage	Sewerage Network	Polyline			
		Waste Water Catchments Area	Polygon			

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Basic Data Items for DaCRISS GIS Database (4/5)

Category	Title	Item	Shp Type	Scale	Data Source	Source Year
Urban Utilities (Cont'd)	3 Power Supply	High-tension Line	Polyline	1:5,000	Topo map	2006
	4 Solid Waste Management	Dumping Site	Polygon	1:5,000	URENCO	
	5 Treatment Facility	Water Supply	Point	1:5,000	PIIP	2007
		Drainage	Point	1:5,000	DOT	
Sewerage		Point	1:5,000	PIIP	2007	
Public Facilities	1 Education	Primary School	Point	1:5,000 / 1:10,000	Topo map, DOE	2008
		Secondary and Above School	Point	1:5,000 / 1:10,000	Topo map, DOE	2008
	2 Healthcare	Hospital	Point	1:5,000 / 1:10,000	Topo map, DOH	2008
		Clinic	Point	1:5,000 / 1:10,000	Topo map, DOH	2008
	3 Market	Market	Polygon	1:5,000 / 1:10,000	Topomap, DOIT	2008
		Wholesale Market	Polygon	1:5,000 / 1:10,000	Topomap, DOIT	2008
	Large-scale Retailing	Polygon	1:5,000 / 1:10,000	Topomap, DOIT	2008	

8

Basic Data Items for DaCRISS GIS Database (5/5)

Category	Title	Item	Shp Type	Scale	Data Source	Source Year
Public Facilities (Cont'd)	Administrative Facilities	PC Office	Point	1:5,000 / 1:10,000	Topo map	2006
		Danang City Office	Point	1:5,000 / 1:10,000	Topo map	2006
		Police Station	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Post Office	Polygon	1:5,000 / 1:10,000	Topo map	2006
Cultural Facilities	1 Historical Site	Citadel	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Museum	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Monument	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Historical Cemetery	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Martyr Site	Polygon	1:5,000 / 1:10,000	Topo map	2006
	2 Religious Facility	Pagoda	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Temple	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Church	Polygon	1:5,000 / 1:10,000	Topo map	2006
	3 Recreational Site	Park	Polygon	1:5,000 / 1:10,000	Topomap	2006
		Teatre	Polygon	1:5,000 / 1:10,000	Topomap	2006
		Cinema	Polygon	1:5,000 / 1:10,000	Topomap	2006
		Garden	Polygon	1:5,000 / 1:10,000	Topomap	2006
	4 Sport Site	Stadium	Polygon	1:5,000 / 1:10,000	Topomap	2006
Tennis Court		Polygon	1:5,000 / 1:10,000	Topomap	2006	
Pool		Polygon	1:5,000 / 1:10,000	Topomap	2006	
Sports Center		Polygon	1:5,000 / 1:10,000	Topomap	2006	
Buildings	1 Building	Building with Number of Floors	Polygon	1:5,000 / 1:10,000	Topo map	2006
		Yards	Polygon	1:5,000 / 1:10,000	Topo map	2006

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Setup of GIS Environment for DaCRISS

GIS Software

- ArcView of ESRI, software vendor in USA which is now widely accepted GIS package software in the world.

Projection and Coordinate System

- WGS_1984_UTM_Zone_49N is applied for DaCRISS GIS Database.
- However, it will be converted to VN2000, the official coordinate system in Vietnam, after completion of DaCRISS GIS Database development.

Hardware and Software Prepared

- The following hardware and software were installed to operate the DaCRISS GIS Database in the Study. Those will be transferred to the counterpart agency after completion of the Study.
 - ArcView: 3 licenses
 - Personal computer: 3 units (Acer L3600, CPU E4600, HD320GB)
 - Large format plotter: 1 units (HP Designjet T610 44in)

10

Analysis of Urban Planning Issues

Landuse Dynamics

Development Suitability

Environmental Constraints

Preservation Suitability

Natural Disaster Potential

Accessibility

Population Dynamics

11

Development Suitability Analysis

Objective

- For regional planning of Danang City, environmental consideration is one of the key issues to be analyzed. In order to understand environmental constraints and development opportunities in Danang City, various data analysis is conducted to support urban and regional planning work with the integrated DaCRISS GIS Database developed in the Study.

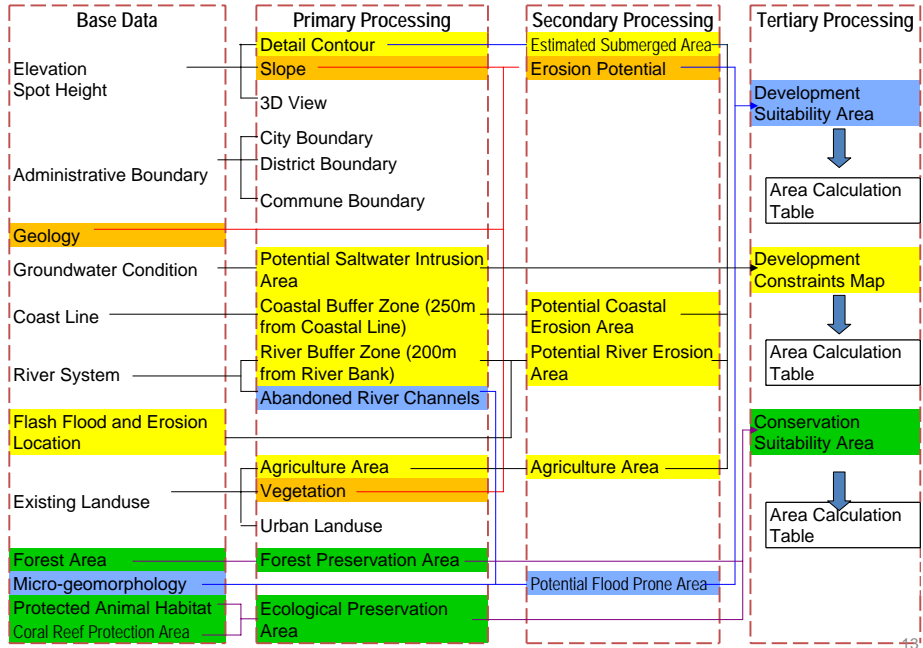
Methodology

- Primary Data Analysis: Based on the developed DaCRISS GIS Database, physical and environmental data are combined to analyze development suitability and conservation suitability.
- Secondary Data Analysis: Environmental constraints and problem area for development of the Danang City are interpreted and mapped based on the collected data.
- Tertiary Analysis: Those processed data will be totally combined and overlay to determine for development suitability of the Study Area.

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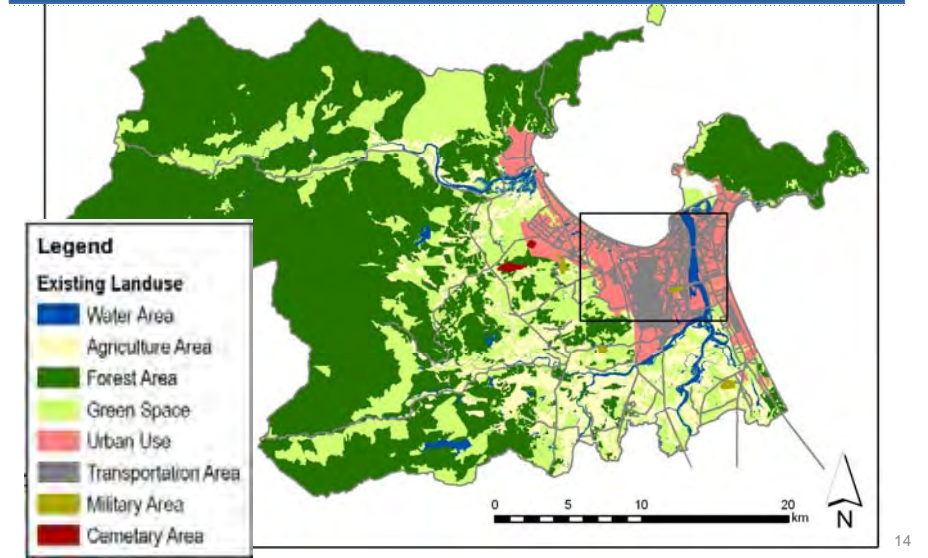
12

Structure of Development Suitability Analysis

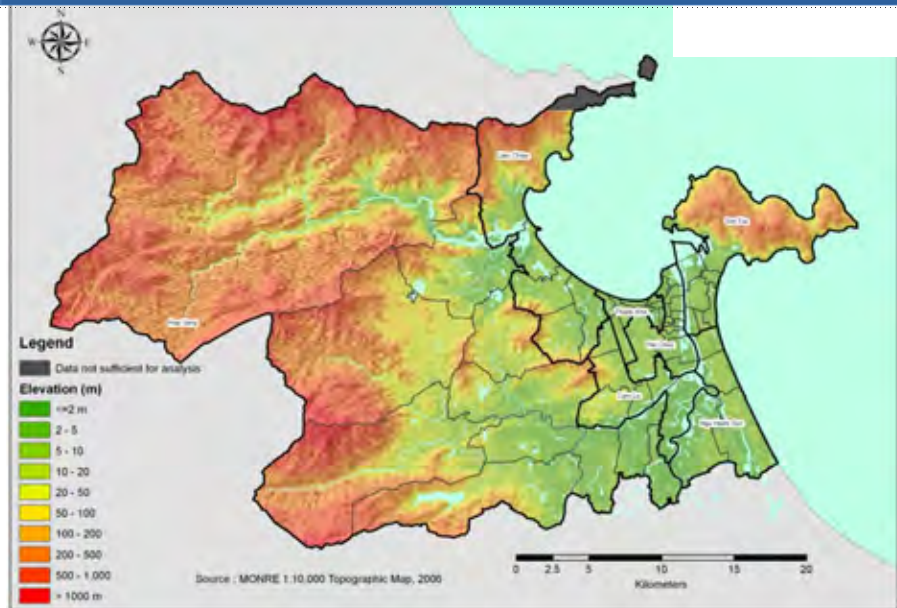


Primary Data Analysis

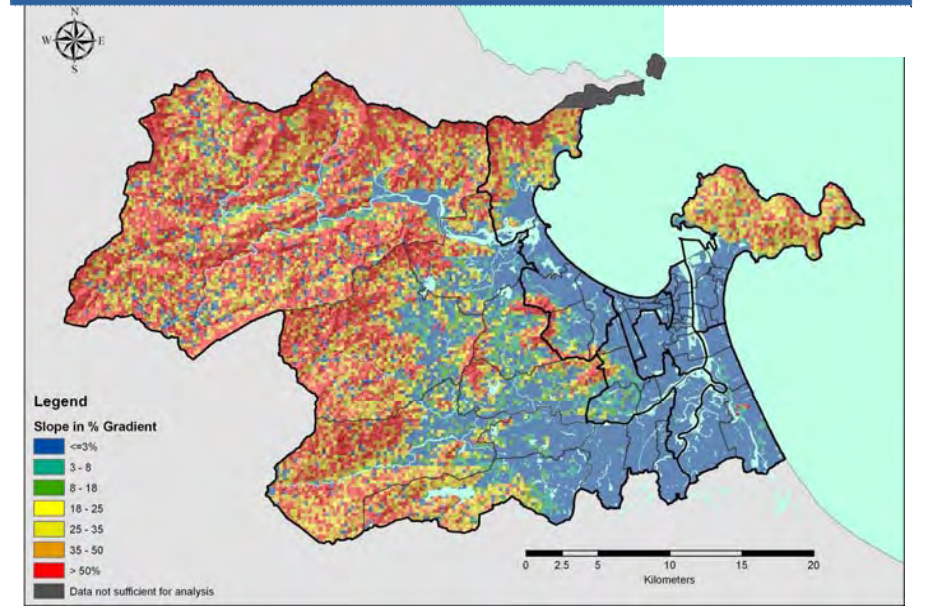
(1) Landuse



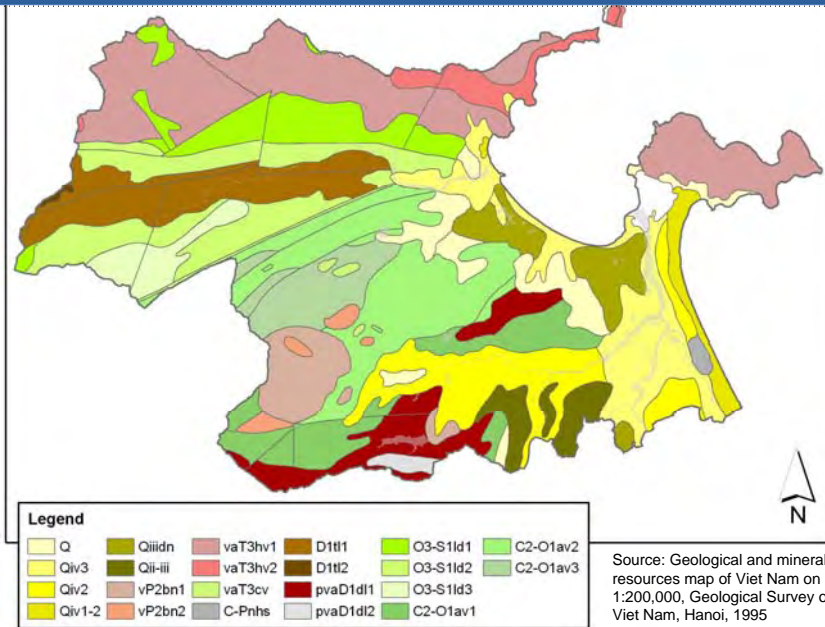
(2) Elevation



(3) Slope



(4) Geology



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■ Secondary Data Analysis

(1) Erosion Potential Analysis

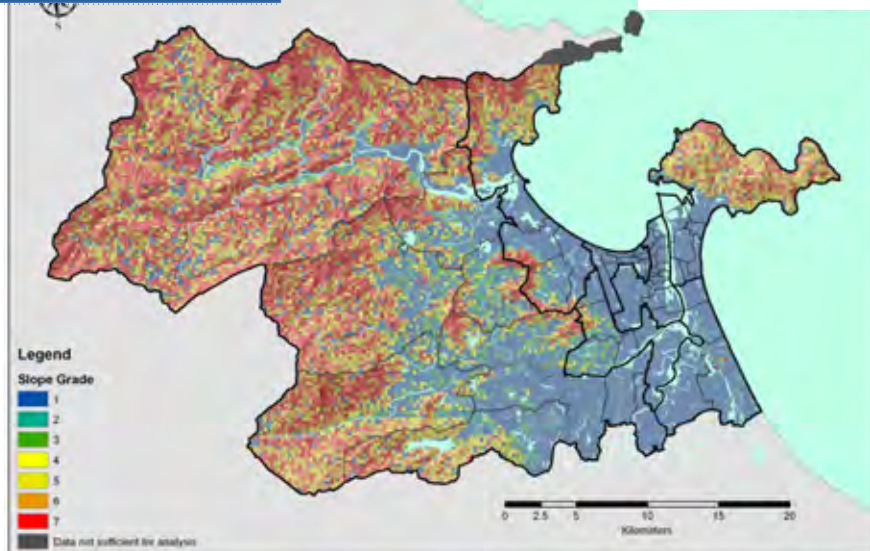
- Those data identified in the primary data analysis will be combined and overlay to determine for potential areas of disasters or problems. A 250m x 250m grid system was developed to cover the study area.
- Indicators selected for analysis will be reclassified into several grades. For Erosion Potential Analysis, (a) Slope, (b) Geology, and (c) Vegetation are selected and set the grades as follows;

		0	1	2	3	4	5	6	7
Slope (%)			0-3	3-8	8-18	18-25	25-35	35-50	>50
Geology	First Step	Alluvium	Diluvium	-	Tertiary Mesozoic	-	Paleozoic		
	Second Step	-	-	-	-	-	Granite Schist		
Vegetation		Rice Field, Agriculture, Wetland	-	-	Planted Trees, Forest	Grasslands	Shrubs		

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(1) Erosion Potential Analysis

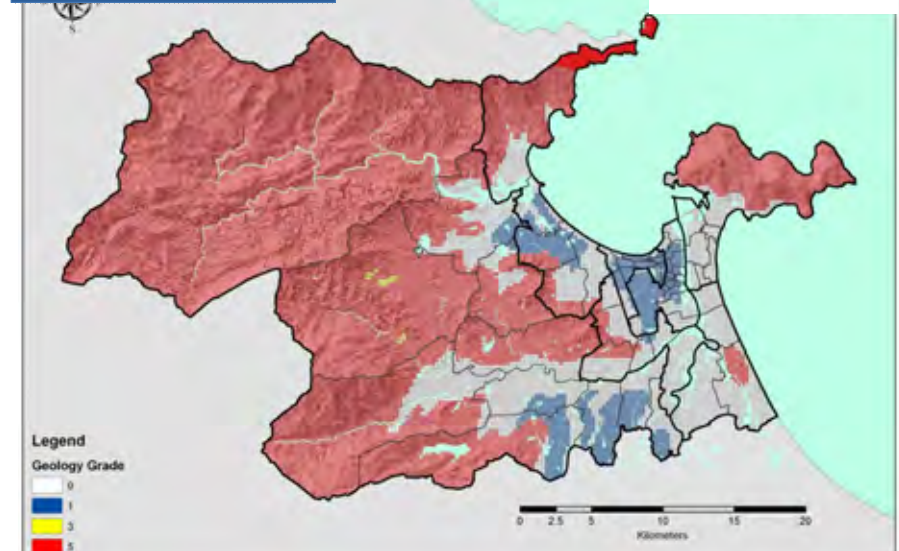
(a) Slope



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(1) Erosion Potential Analysis

(b) Geology

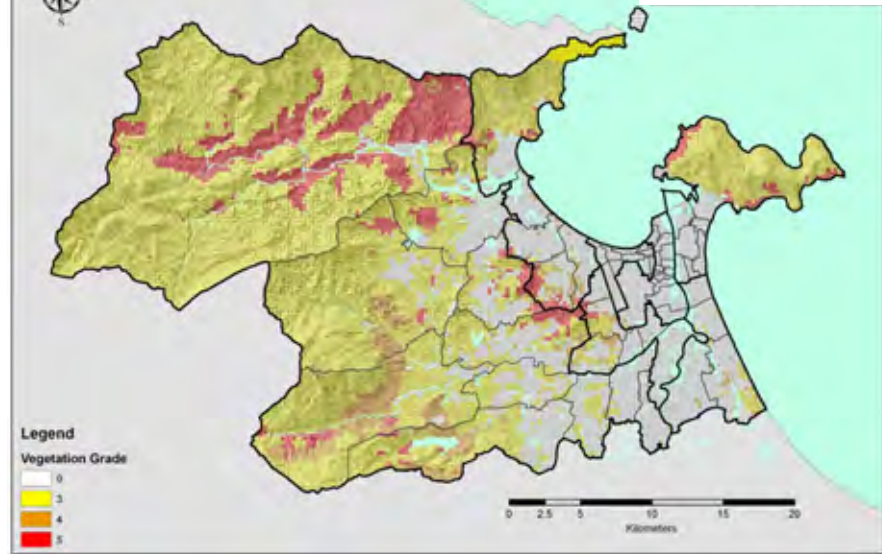


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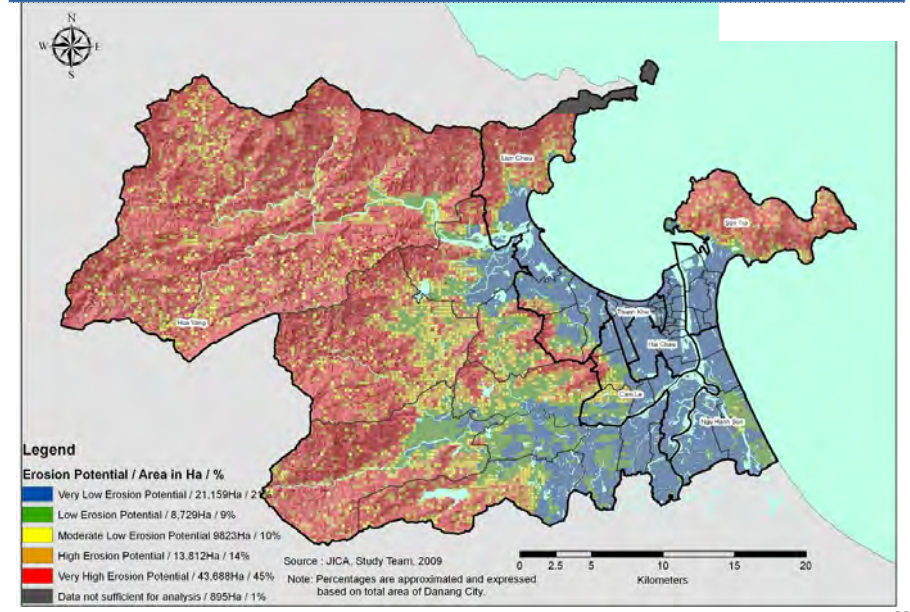
(1) Erosion Potential Analysis

(c) Vegetation



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(1) Erosion Potential Area



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■ Secondary Data Analysis

(2) Potential Flood Prone Area

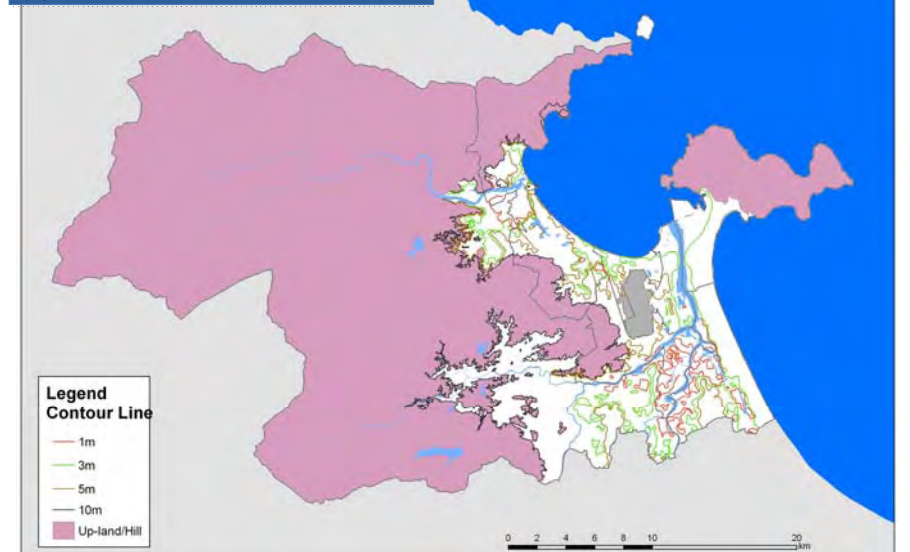
- Applying same methodology with the erosion potential analysis, potential flood prone area is evaluated.
- Indicators selected for analysis are reclassified into several grades. For Potential Flood Prone Area Analysis, (a) Micro-geomorphology is selected and set the grades as follows;

	0	1	2	3	4	5
Micro-geomorphology	Up-land/Hill	Old Sand Bar and Low Sand Dune	-	Flood Plain	New Sand Bar	Deltaic Low-land, Lagoon Low-land, Abandoned River Channel

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(2) Potential Flood Prone Area

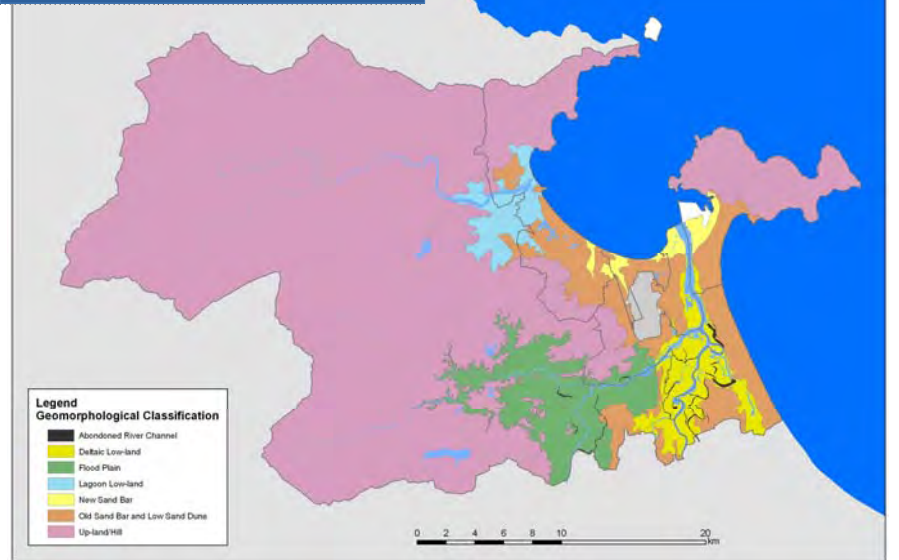
(a) Micro-elevation



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(2) Potential Flood Prone Area

(b) Micro-geomorphology



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(2) Potential Flood Prone Area

(c) Wide-area satellite map



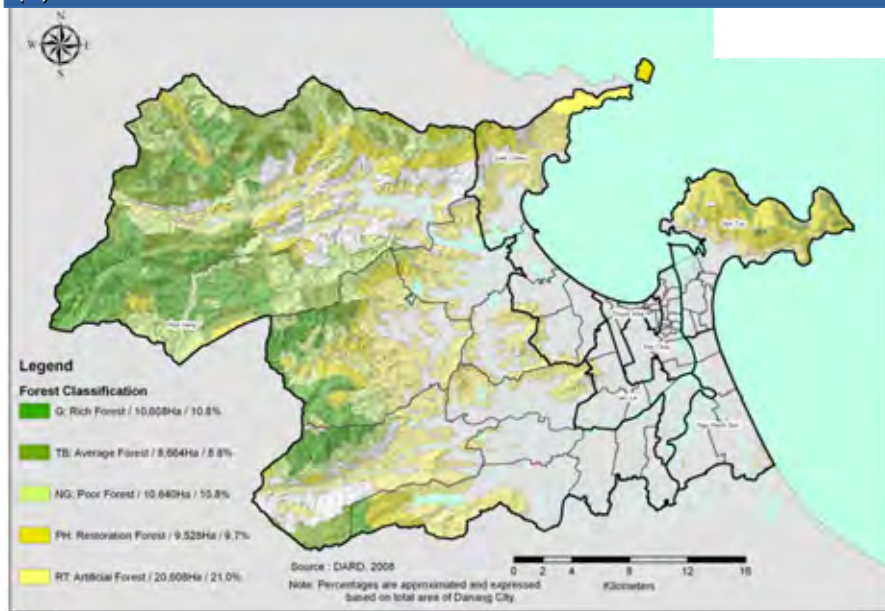
26

(3) Coastal and River Buffer Zone and Flash Flood and Erosion Location



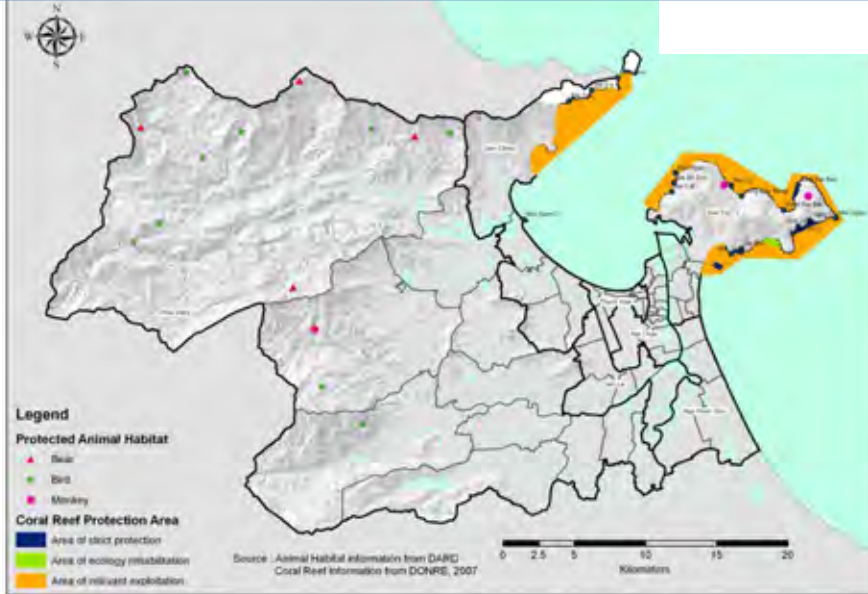
27

(4) Forest Area



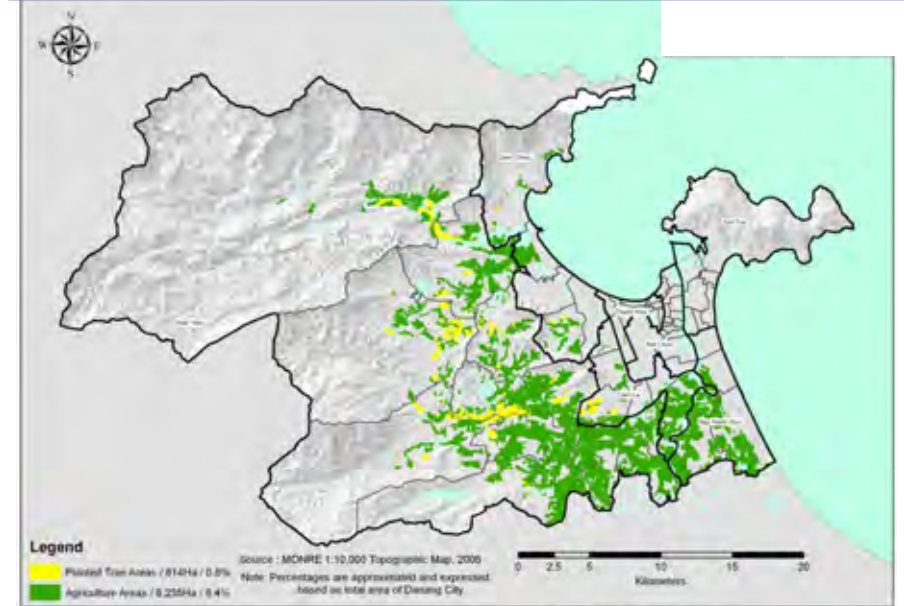
28

(5) Ecological Preservation Areas



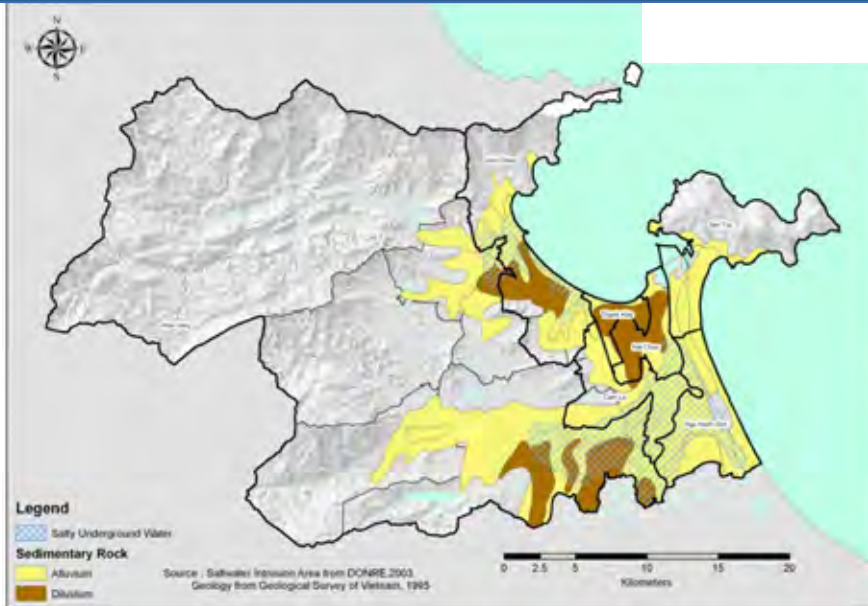
29

(6) Agriculture Areas



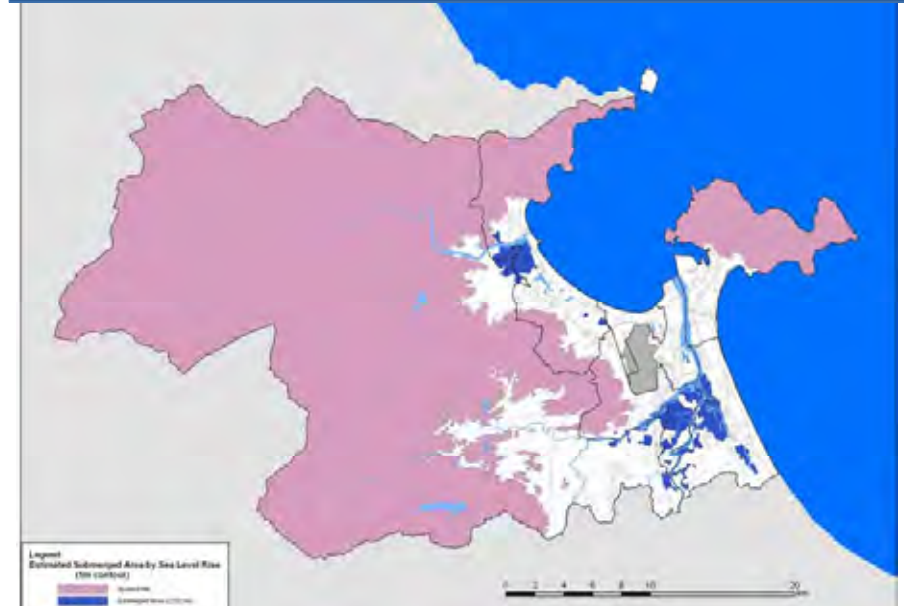
30

(7) Saltwater Intrusion Areas



31

(8) Estimated Submerged Area by Sea Level Rise



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Tertiary Analysis

- Those processed data are classified into the following three (3) categories;

1) **Development Suitability Area:** Area where any development shall be accepted without constraints

- Erosion Potential Area
- Potential Flood Prone Area

2) **Development Constraints Map:** Area where developments shall be needed considerations

- Coastal and River Buffer Zone
- Agricultural Area
- Saltwater Intrusion Area
- Submerged Area by Sea Level Rise

3) **Preservation Area:** Area where no development shall be accepted

- Forest Area
- Ecological Preservation Area

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Criterion of Development Suitability

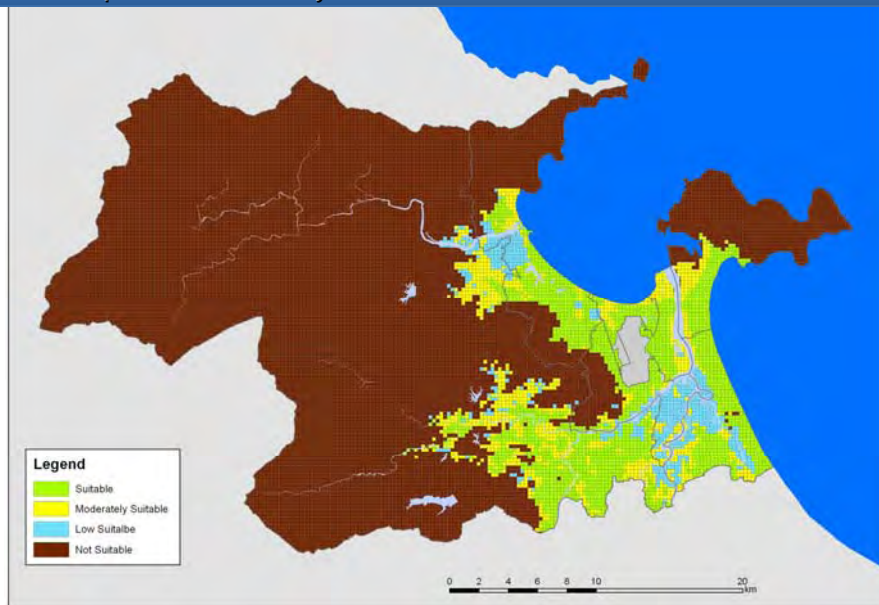
- Indicators used for Development Suitability Analysis are (A) Erosion Potential Area, (B) Potential Flood Prone Area, and (C) Potential Submerged Area. Those are interpreted and reorganized the map legend to formulate development suitability map.

(A) Erosion Potential Area	(B) Potential Flood Prone Area	Development Suitability	Grade (A+B)	Distribution	
				%	km2
1~3 => 1	1	Suitable	2~4	13	120
4~7 => 3	3	Moderately Suitable	5~7	6	60
8~10 => 5	4	Low Suitable	8~10	3	33
	(C) Potential Submerged Area	Low Suitable			
11~17	5	Unsuitable		75	718
		River & Lake		2	20
		Total		100	950

Aggregation
of Erosion +
Flood
↑
↓
Unconditionally
classified to
"Unsuitable" or
"Low Suitable"

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Development Suitability Area



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Development Suitability Area by Commune (1/2)

Commune Name	Area (ha)					Total Area	Distribution to Total Area by Commune (%)					Total Area
	Suitable	Moderately Suitable	Low Suitable	Unsuitable	River / Lake		Suitable	Moderately Suitable	Low Suitable	Unsuitable	River / Lake	
P. Binh Hien	22	13	-	-	14	50	45%	27%	0%	0%	29%	100%
P. Binh Thuan	38	7	-	-	7	52	74%	13%	0%	0%	13%	100%
Hoa Thuan Tay	844	0	-	-	-	844	100%	0%	0%	0%	0%	100%
Hoa Thuan Dong	72	14	-	-	22	108	66%	13%	0%	0%	21%	100%
P. Hai Chau I	70	2	-	-	20	92	76%	2%	0%	0%	22%	100%
P. Hai Chau II	35	-	-	-	-	35	100%	0%	0%	0%	0%	100%
Hoa Cuong Bac	159	114	12	-	64	350	46%	33%	3%	0%	18%	100%
Hoa Cuong Nam	118	58	0	-	37	213	56%	27%	0%	0%	17%	100%
P. Nam Duong	24	-	-	-	-	24	100%	0%	0%	0%	0%	100%
P. Phuoc Ninh	26	11	-	-	17	54	48%	20%	0%	0%	31%	100%
P. Thanh Binh	0	74	-	0	1	75	0%	99%	0%	0%	1%	100%
P. Thuan Phuoc	-	61	-	1	48	111	0%	56%	0%	1%	43%	100%
P. Thach Thang	29	57	-	1	15	102	29%	56%	0%	1%	15%	100%
Hai Chau	1,439	412	12	2	245	2,110	66%	21%	1%	0%	12%	100%
P. Chinh Gian	74	-	-	-	-	74	100%	0%	0%	0%	0%	100%
P. Tam Thuan	14	37	-	-	-	50	27%	73%	0%	0%	0%	100%
P. Thac Gian	66	-	-	-	12	78	85%	0%	0%	0%	15%	100%
P. Tan Chinh	36	1	-	-	-	37	98%	2%	0%	0%	0%	100%
P. Vinh Trung	50	-	-	-	1	52	97%	0%	0%	0%	3%	100%
P. Xuan Ha	55	28	-	-	-	83	66%	34%	0%	0%	0%	100%
P. An Khe	177	34	-	-	-	211	84%	16%	0%	0%	0%	100%
Hoa Khe	132	8	-	-	-	141	94%	6%	0%	0%	0%	100%
Thanh Khe Tay	46	63	9	-	-	119	39%	53%	8%	0%	0%	100%
Thanh Khe Dong	32	50	-	-	-	82	39%	61%	0%	0%	0%	100%
Thanh Khe	684	221	9	-	13	927	73%	24%	1%	0%	1%	100%
P. An Hai Bac	237	89	-	1	22	349	68%	26%	0%	0%	6%	100%
P. An Hai Tay	17	49	-	-	40	106	16%	46%	0%	0%	38%	100%
P. An Hai Dong	81	0	-	-	-	81	100%	0%	0%	0%	0%	100%
P. Man Thai	88	19	-	-	-	107	82%	18%	0%	0%	0%	100%
P. Nai Hien dong	-	172	-	200	48	420	0%	41%	0%	48%	11%	100%
P. Phuoc My	204	-	-	-	-	204	100%	0%	0%	0%	0%	100%
P. Tho Quang	324	117	-	4,309	-	4,750	7%	2%	0%	91%	0%	100%
Son Tra	951	446	-	4,510	110	6,017	15%	8%	0%	75%	2%	100%

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Development Suitability Area by Commune (2/2)

Commune Name	Area (ha)						Distribution to Total Area by Commune (%)					
	Suitable	Moderately Suitable	Low Suitable	Unsuitable	River / Lake	Total Area	Suitable	Moderately Suitable	Low Suitable	Unsuitable	River / Lake	Total Area
My An	323	41	-	-	48	411	78%	10%	0%	0%	12%	100%
Khue My	339	16	82	-	34	471	72%	3%	17%	0%	7%	100%
P. Hoa Hai	842	176	264	26	48	1,356	62%	13%	19%	2%	4%	100%
P. Hoa Quỳ	409	329	547	-	132	1,417	29%	23%	39%	0%	9%	100%
Ngu Hanh Son	1,912	562	892	26	261	3,655	53%	15%	25%	1%	7%	100%
Hoa Phat	190	10	-	411	-	611	31%	2%	0%	67%	0%	100%
Hoa An	247	3	-	59	-	309	80%	1%	0%	19%	0%	100%
Hoa Tho Tay	110	79	29	602	27	847	13%	9%	3%	71%	3%	100%
Hoa Tho Dong	175	29	20	2	28	254	69%	11%	8%	1%	11%	100%
Hoa Xuan	1	230	615	-	145	990	0%	23%	62%	0%	15%	100%
P. Khue Trung	210	39	19	-	43	311	68%	13%	6%	0%	14%	100%
Cam Le	933	390	683	1,074	242	3,322	28%	12%	22%	31%	8%	100%
Hoa Hiep Bac	233	285	153	3,815	90	4,576	5%	6%	3%	83%	2%	100%
Hoa Hiep Nam	328	86	317	-	65	796	41%	11%	40%	0%	8%	100%
Hoa Khanh Bac	659	131	22	266	11	1,090	60%	12%	2%	24%	1%	100%
Hoa Khanh Nam	332	6	-	711	-	1,049	32%	1%	0%	68%	0%	100%
P. Hoa Minh	556	88	74	73	6	797	70%	11%	9%	9%	1%	100%
Lien Chieu	2,108	597	565	4,865	173	8,308	25%	7%	7%	59%	2%	100%
Hoa Bac	-	-	-	33,641	223	33,864	0%	0%	0%	99%	1%	100%
Hoa Chau	578	173	173	0	61	985	59%	18%	18%	0%	6%	100%
Hoa Khuong	714	245	41	3,044	167	4,211	17%	6%	1%	72%	4%	100%
Hoa Lien	64	678	455	2,453	171	3,820	2%	18%	12%	64%	4%	100%
Hoa Nhon	259	697	171	1,731	61	2,920	9%	24%	6%	59%	2%	100%
Hoa Ninh	-	-	-	10,092	13	10,105	0%	0%	0%	100%	0%	100%
Hoa Phong	763	569	19	407	53	1,810	42%	31%	1%	22%	3%	100%
Hoa Phu	161	240	35	8,066	84	8,586	2%	3%	0%	94%	1%	100%
Hoa Phuoc	284	262	127	-	39	712	40%	37%	18%	0%	5%	100%
Hoa Son	42	238	48	1,896	3	2,227	2%	11%	2%	85%	0%	100%
Hoa Tien	1,100	219	30	0	44	1,393	79%	16%	2%	0%	3%	100%
Hoa Vang	3,964	3,322	1,099	61,330	918	70,633	6%	5%	2%	86%	1%	100%
Danang City	11,992	5,951	3,261	71,807	1,962	94,972	13%	6%	3%	75%	2%	100%

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Conclusions

- The area suitable for development is spread in the eastern part of Danang City where has been formed by Old Sand Bar and Low Sand Dune.
- The area of Up-land/Hill which covers 75% of the City is not suitable for development.
- Even the plain land in the eastern part of the City, there has been much potentials of flooding, especially around the interflow point of Vinh Dien River and Cam Le River.
- This area is also overlaid in less than 1m contour area. Such area can be regarded as an Estimated Submerged Area by Sea Level Rise caused by worldwide Climate Change.
- Management of the water is the most important issue for Danang City's development.

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