

e-Government for Promoting Sustainable Development in SIDS

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Research Framework

Research Question & Strategy

Research Question

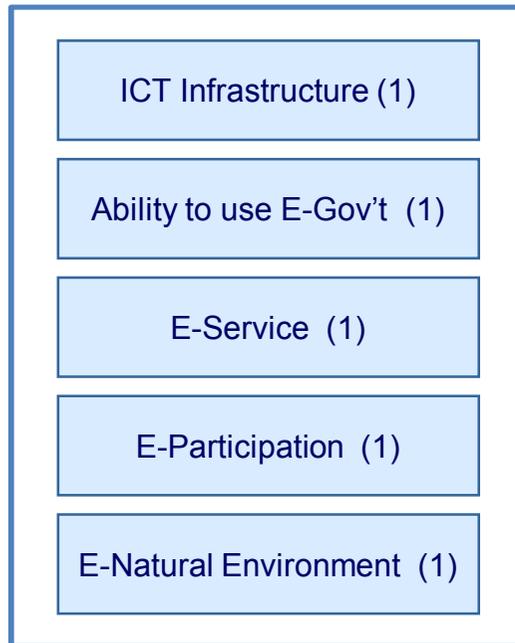
- Does e-gov't have empirically positive effects on the good governance and sustainable development of SIDS?
- If yes, what makes the differences in the good governance, sustainable development, and e-gov't in SIDS?

Research Strategy

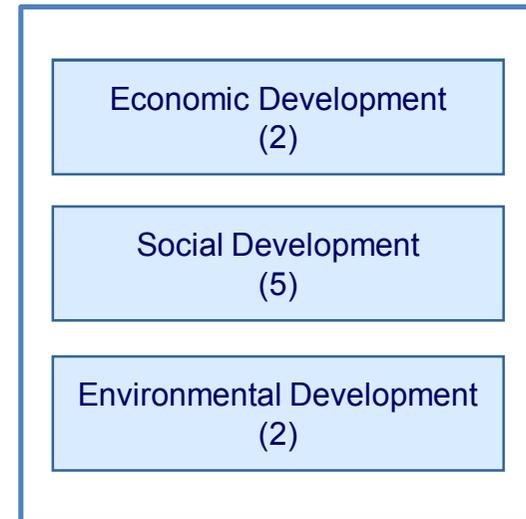
- Statistical analysis: regression analysis, mediation effect analysis
 - Comparative analysis: comparison by success factors among SIDS
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Research Framework

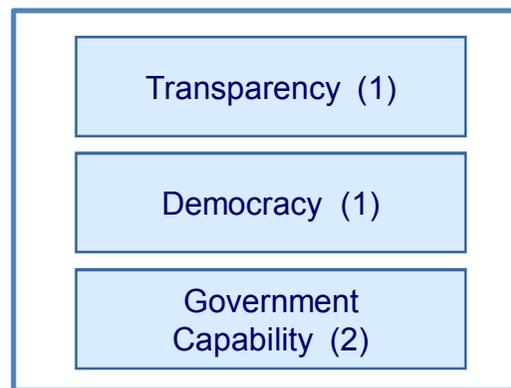
E-Government Development



Economic, Social, & Environmental Development

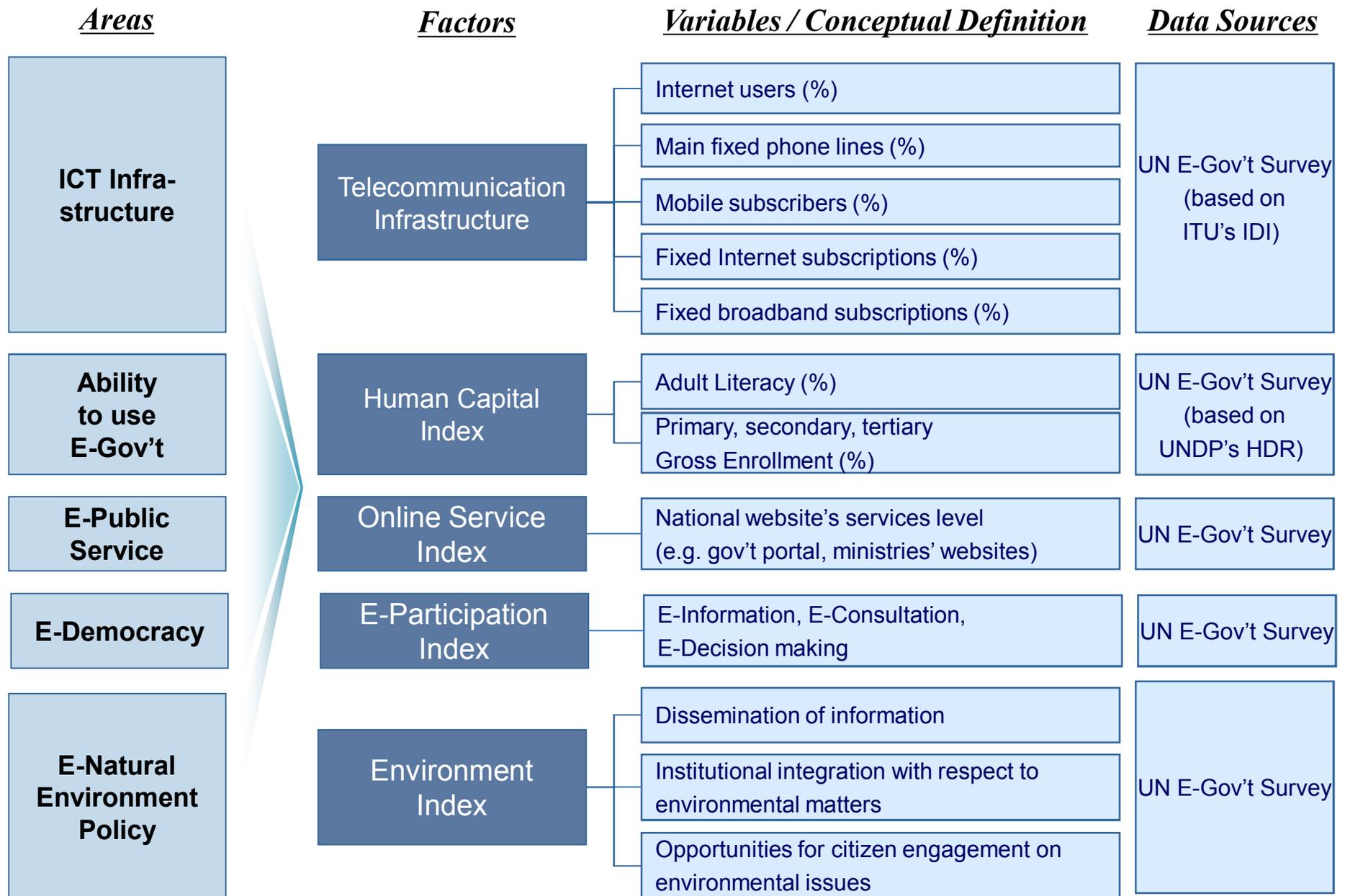


Good Governance

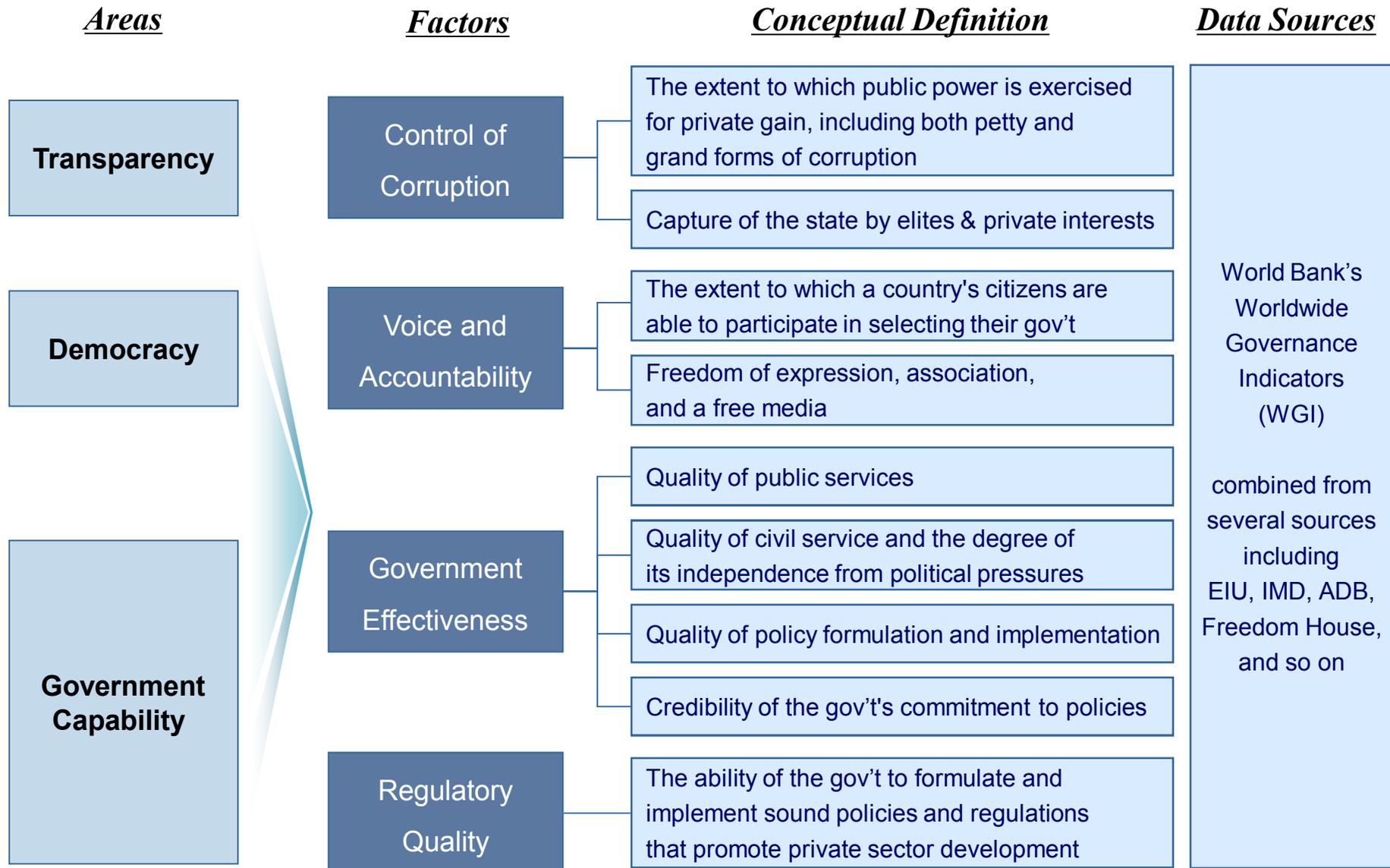


(): Number of Factors

Measures on E-Government Development



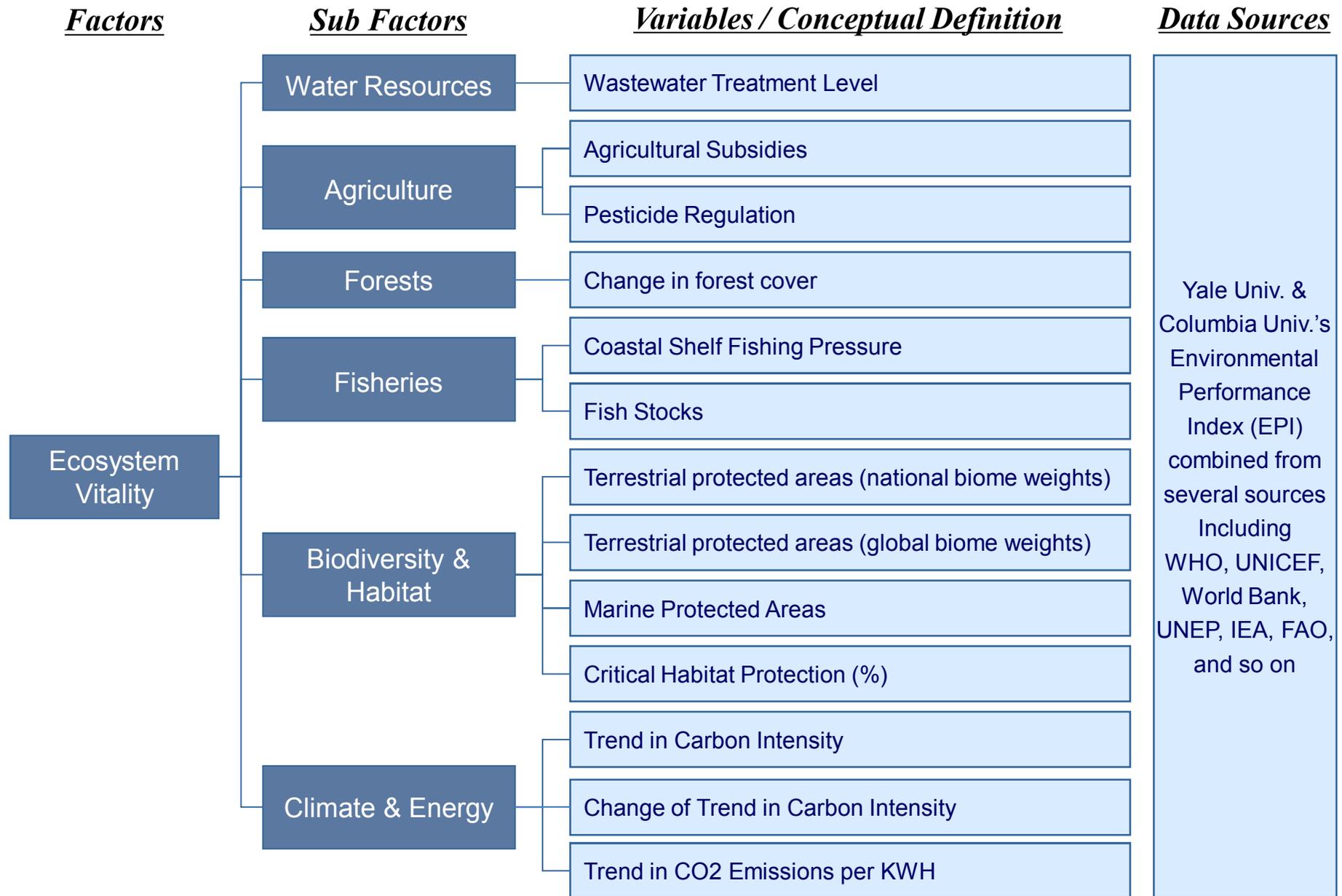
Measures on Good Governance



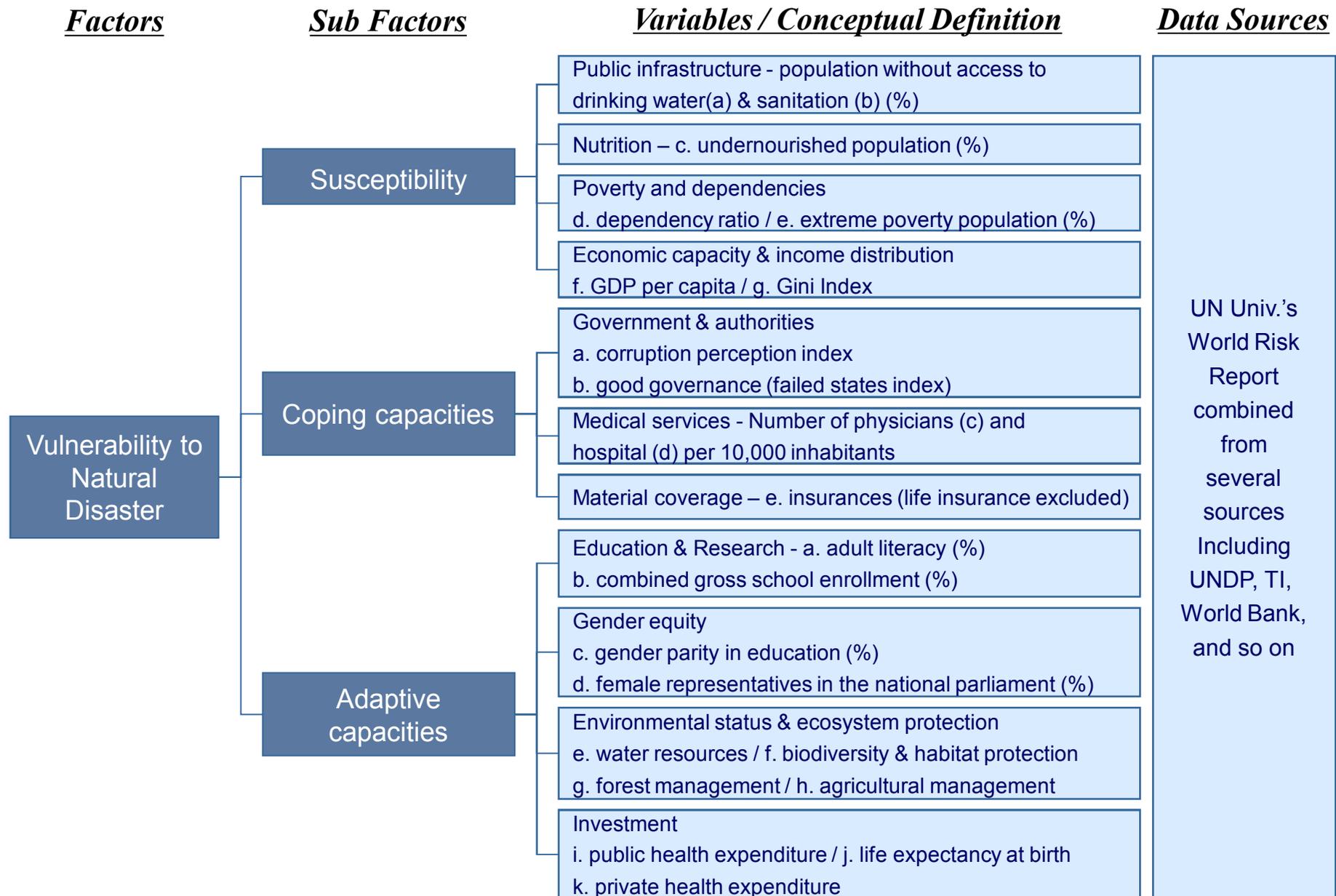
Measures on Economic & Social Development

<u>Areas</u>	<u>Factors</u>	<u>Variables / Conceptual Definition</u>	<u>Data Sources</u>
Economic Development	GDP per capita	GDP / population	World Bank
	GDP Growth Rate	$[\text{GDP}(t) - \text{GDP}(t-1)] / \text{GDP}(t-1) \times 100$	
Social Development	Rule of Law	The extent to which agents have confidence in and abide by the rules of society	World Bank's Worldwide Governance Indicators(WGI) combined from several sources including EIU, IMD, ADB, Freedom House, and so on
		Quality of contract enforcement, property rights, the police, and the courts	
		Likelihood of crime and violence	
	Political Stability & Absence of Violence/Terrorism	Unlikelihood that the gov't will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence & terrorism	
	Under-five Mortality	Under-five mortality (per 1,000 live births)	
Health Index	Life expectancy at birth	UNDP's Human Development Index (HDI 2013)	
Gender Inequality	Inequality in achievements b/w women and men in three dimensions: reproductive health, empowerment & the labor market (data deficiency)		

Measures on Environmental Development



Measures on Environmental Development





Statistical Analysis

1. Regression Analysis Result

□ Effects of E-Gov't development on Good governance

Index		Control of corruption	Voice & accountability	Gov't effectiveness	Regulatory quality
Model 1	EGDI	1.743^{***}	-0.032	2.509^{***}	1.458^{***}
Model 2	HCI	-0.074	-0.041	0.028	-0.131
	ISI	2.607^{***}	0.488	2.752^{***}	1.220^{**}
	OSI	0.718[*]	0.000	0.999^{***}	2.511^{***}
Model 3	EPI	2.664^{***}	0.349	3.488^{***}	3.262^{***}

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

1. Regression Analysis Result

- Effects of E-Gov't development on Good governance
 - For the model 2, we divided EGDI into the three components to specify which component has an influence on the good governance indicators.
 - Due to the multicollinearity between EPI and OSI, we analyzed the effects of EPI in a different model.
 - In general, the e-gov't development indices have positive influences on the good governance except the voice & accountability.
 - Human capital index is not found to have any significant impact on the good governance indicators.
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1. Regression Analysis Result

□ Effects of Good governance on Economic, Social, & Environmental dev't

Index	GDP per capita	Rule of law	Political Stability & Absence of Violence/Terrorism	Under-five Mortality	Health index	Ecosystem vitality	Vulnerability to natural disaster
Control of corruption	1324.2***	0.257***	0.216***	-8.086***	0.043***	1.343	-0.318
Voice & accountability	-448.4	0.472***	0.580***	-13.516***	0.036***	-4.855***	0.591
Gov't effectiveness	1370.2**	0.252***	0.185**	-12.070***	0.053***	5.972***	-13.389***
Regulatory quality	411.3	0.251***	-0.109	2.908	-0.009**	1.231	4.131**

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

1. Regression Analysis Result

□ Effects of Good governance on Economic, Social, & Environmental dev't

- Overall, the good governance indicators are found to have significant impacts on the economic, social, environmental development indices.
 - In particular, the gov't effectiveness is shown to affect all the economic, social, environmental development.
 - Even though regulatory quality does not seem to have less impacts on the economic, social, and environmental development, it is not easy to confirm such results due to the multicollinearity between the gov't effectiveness and the regulatory quality (correlation coefficient: 0.9^{***}).
 - Moreover, regulatory quality is shown to have a statistically significant & positive effect on the economic, social, and environmental development indicators except for the stability & absence of violence/terrorism if the gov't effectiveness is excluded from the model.
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1. Regression Analysis Result

□ Effects of E-Gov't development on Economic, Social, & Environmental dev't

Index		GDP per capita	Rule of law	Political Stability & Absence of Violence/Terrorism	Under-five mortality	Health index	Ecosystem vitality	Vulnerability to natural disaster
Model 1	EGDI	5862.3***	0.855***	0.099	-43.35***	0.283***	-0.546	-49.77***
Model 2	HCI	483.2	0.064	-0.124	-8.44**	0.127***	0.043	-8.48
	ISI	12844.1***	-0.284	0.841	-56.71***	0.242***	3.055	-58.21***
	OSI	125.1	0.531**	0.006	-0.863	0.041**	-1.422	7.96
Model 3	EPI	10458.3***	1.513***	0.421	-13.23*	0.112***	7.481	-32.29***
Model 4	EI	-	-	-	-	-	37.504***	-

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

1. Regression Analysis Result

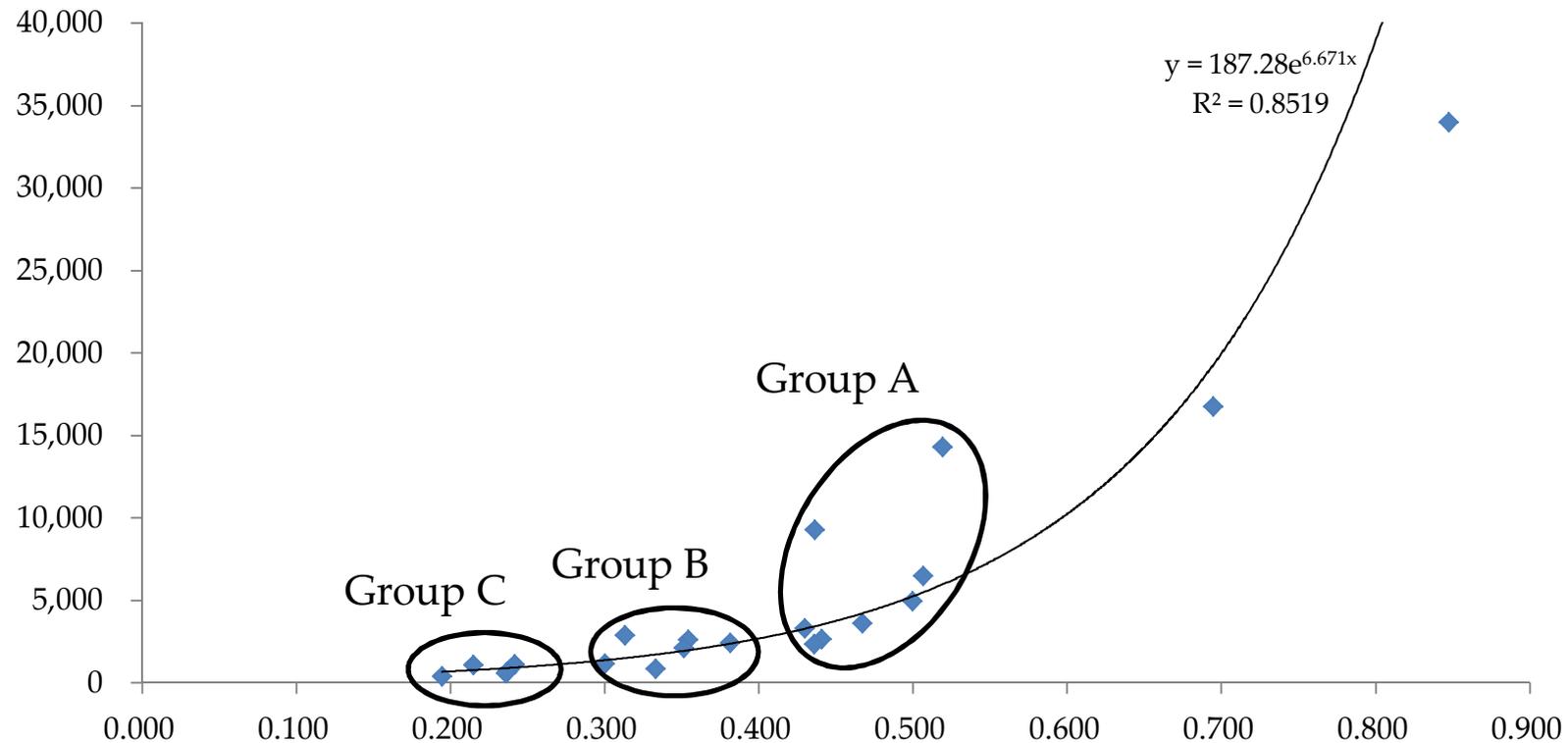
- Effects of E-Gov't development on Economic, Social, & Environmental dev't
 - The increase in the ICT infrastructure and e-participation level as well as EGD I can leads to economic growth.
 - E-gov't development tends to affect more health-related social development than law-related social development and social stability.
 - As we guessed on the basis of the low relationship between the e-gov't development and the political stability & absence of violence/terrorism, their causal relationship is not statistically significant.
 - None of the traditional e-gov't development indices has a significant effect on the ecosystem vitality. However, the environment index of the E-Gov't Survey 2012 is shown to have a positive effect on the ecosystem vitality.
 - This result implies that the development of e-gov't in a specific area is more effective in improving the corresponding governmental function and achieving its ultimate performances outside the gov't than the overall e-gov't development.
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Comparative Analysis

1. Sub-grouping of SIDS

- Scatter plot of EGDI and GDP per capita in 2012



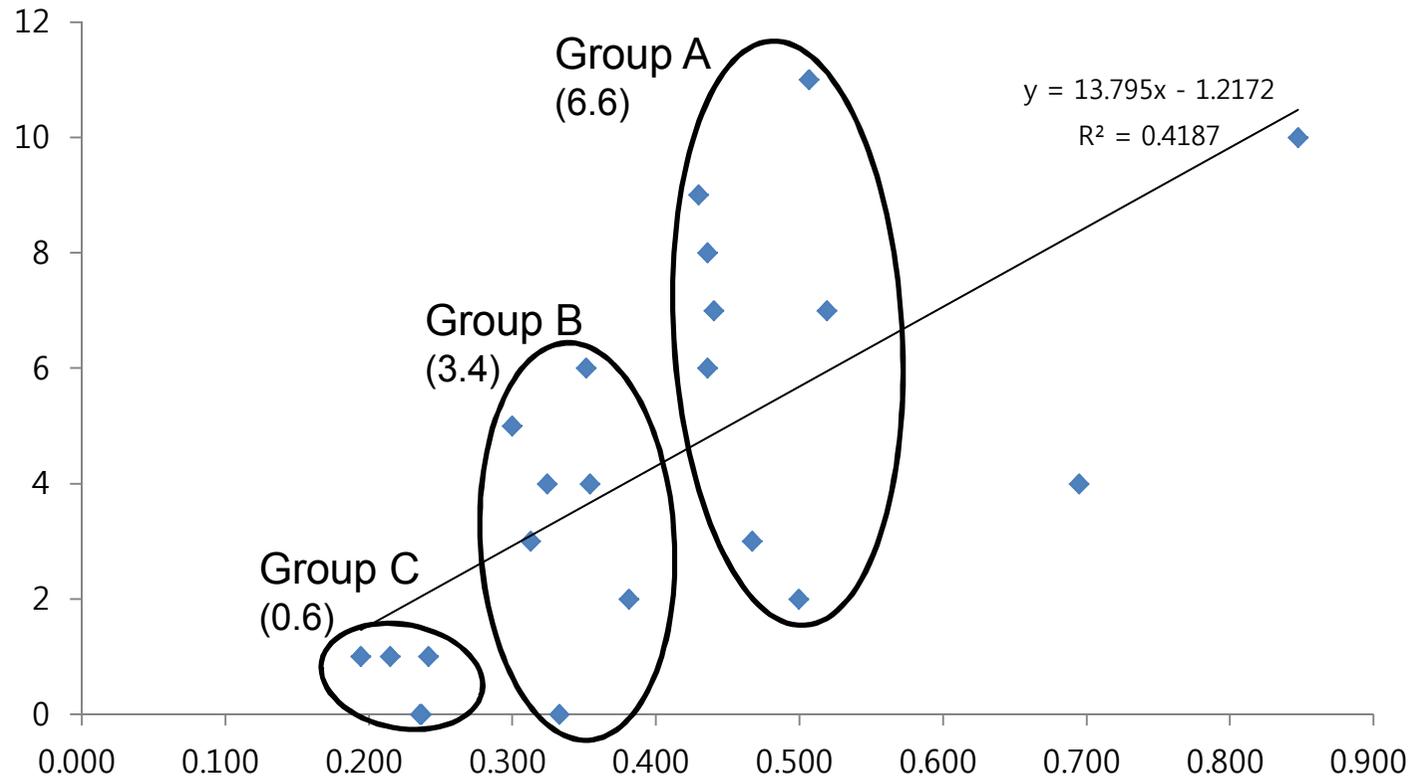
- The 22 SIDS can be classified into three groups apart from two outliers (Singapore and Bahrain)
-

1. Sub-grouping of SIDS

Group	Country	EGDI	CoC	V&A	Gov Eff	RQ	GDP_ capita	RoL	PS&AVT	UFM	HI	EV	Vul	No. of good Performance
Outliers	Singapore	0.847	2.154	0.082	2.152	1.961	33,989	1.772	1.343	2.9	0.966	70.01	32.47	10
	Bahrain	0.695					16,765			9.6	0.870	30.90	42.44	4
Group A	Seychelles	0.519	0.334	0.085	0.376	-0.310	14,303	-0.037	0.755	13.1	0.848	37.02	43.46	7
	Mauritius	0.507	0.334	0.855	0.934	0.984	6,496	0.935	0.965	15.1	0.844	39.11	41.21	11
	Maldives	0.499	-0.443	-0.519	-0.160	-0.347	4,968	-0.500	-0.278	10.5	0.901			2
	Fiji	0.467	-0.435	-0.875	-0.899	-0.601	3,612	-0.801	-0.041	22.4	0.779	41.33	49.4	3
	Tonga	0.440	-0.072	0.437	-0.194	-0.599	2,658	0.027	0.931	12.8	0.827	52.51	51.78	7
	Palau	0.436	-0.284	1.201	-0.558	-1.010	9,281	0.901	1.061	20.8	0.822	29.82		6
	Samoa*	0.436	0.153	0.470	0.090	-0.339	2,350	0.696	1.022	17.8	0.831		49.58	8
	Cape Verde	0.430	0.806	0.954	0.099	0.040	3,321	0.479	0.783	22.2	0.856	29.85	53.72	9
Group B	Micronesia	0.381	-0.109	1.049	-0.632	-0.984	2,443	-0.022	1.161	38.5	0.775			2
	Tuvalu*	0.354	-0.296	0.687	-0.687	-1.250	2,624	0.460	1.325	29.7				4
	Vanuatu*	0.351	0.446	0.508	-0.223	-0.767	2,112	0.244	1.181	17.9	0.809	38.39	57.04	6
	Sao Tome & Principe*	0.333	-0.393	0.128	-0.717	-0.803	840	-0.808	0.020	53.2			58.55	0
	Nauru	0.324	0.047	1.090	-0.558	-1.202		0.694	1.061					4
	Marshall Islands	0.313	-0.142	1.192	-1.649	-1.015	2,879	0.077	1.061	37.9				3
	Kiribati*	0.300	0.004	0.765	-0.834	-1.360	1,160	0.111	1.325	59.9	0.763	58.73	58.32	5
Group C	Solomon Islands*	0.242	-0.444	-0.018	-0.824	-1.071	1,145	-0.601	0.250	31.1	0.761	21.56	60.55	1
	Timor-Leste*	0.237	-0.979	0.047	-1.193	-1.024	682	-1.199	-0.270	56.7	0.677	35.74	66.59	0
	Comoros*	0.236	-0.725	-0.532	-1.546	-1.420	606	-1.034	-0.387	77.6	0.654	20.72	67.91	0
	Papua New Guinea	0.215	-1.037	-0.045	-0.769	-0.522	1,076	-0.864	-0.643	63.0	0.681	41.17	63.38	1
	Guinea-Bissau*	0.194	-1.225	-1.408	-1.244	-1.239	397	-1.520	-0.926	129.1	0.450	39.52	67.88	1
Average		0.398	-0.110	0.293	-0.430	-0.613	5,415	-0.047	0.557	35.324	0.784	39.092	54.018	4.3

1. Sub-grouping of SIDS

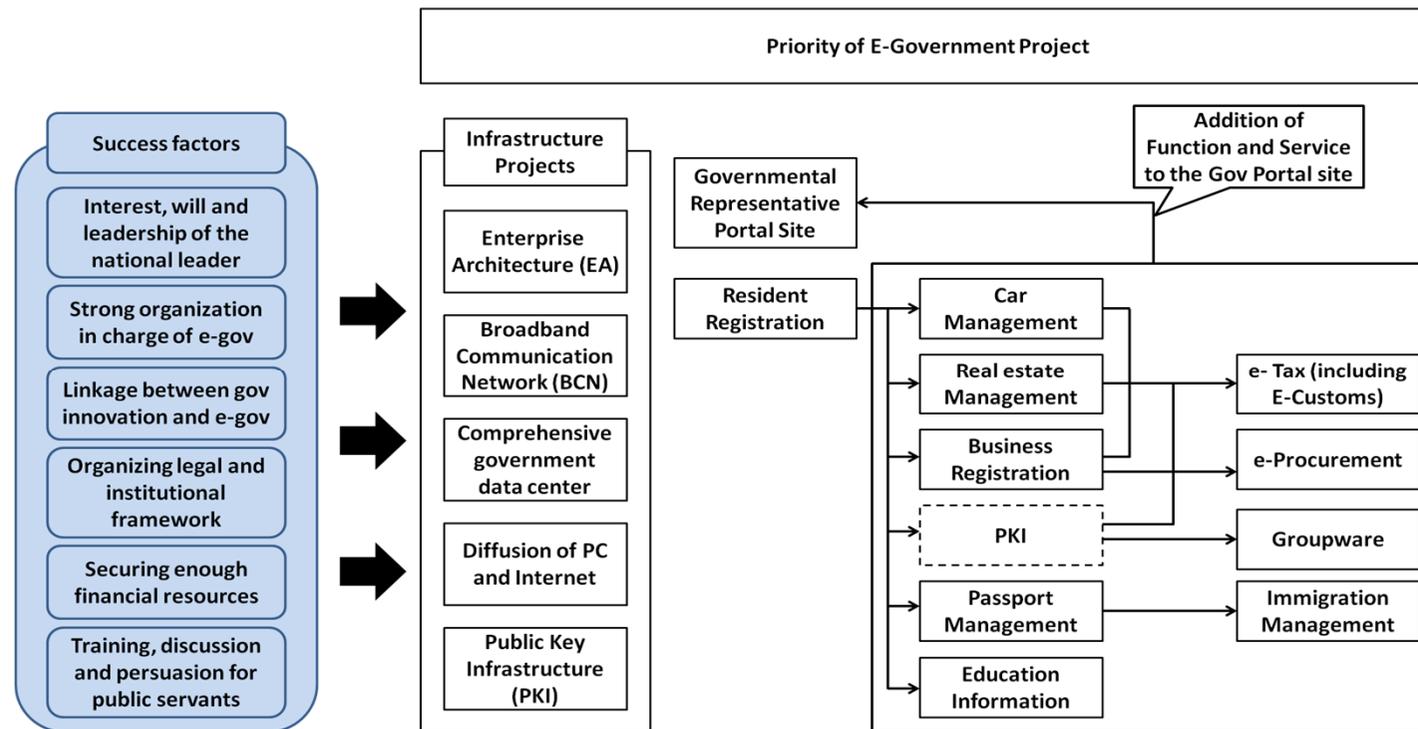
- Scatter plot of EGDI and the number of good performances in 2012



- The three groups show distinguished performances not only in economic area but also in social and environmental areas.
-

2. Comparison between the Groups

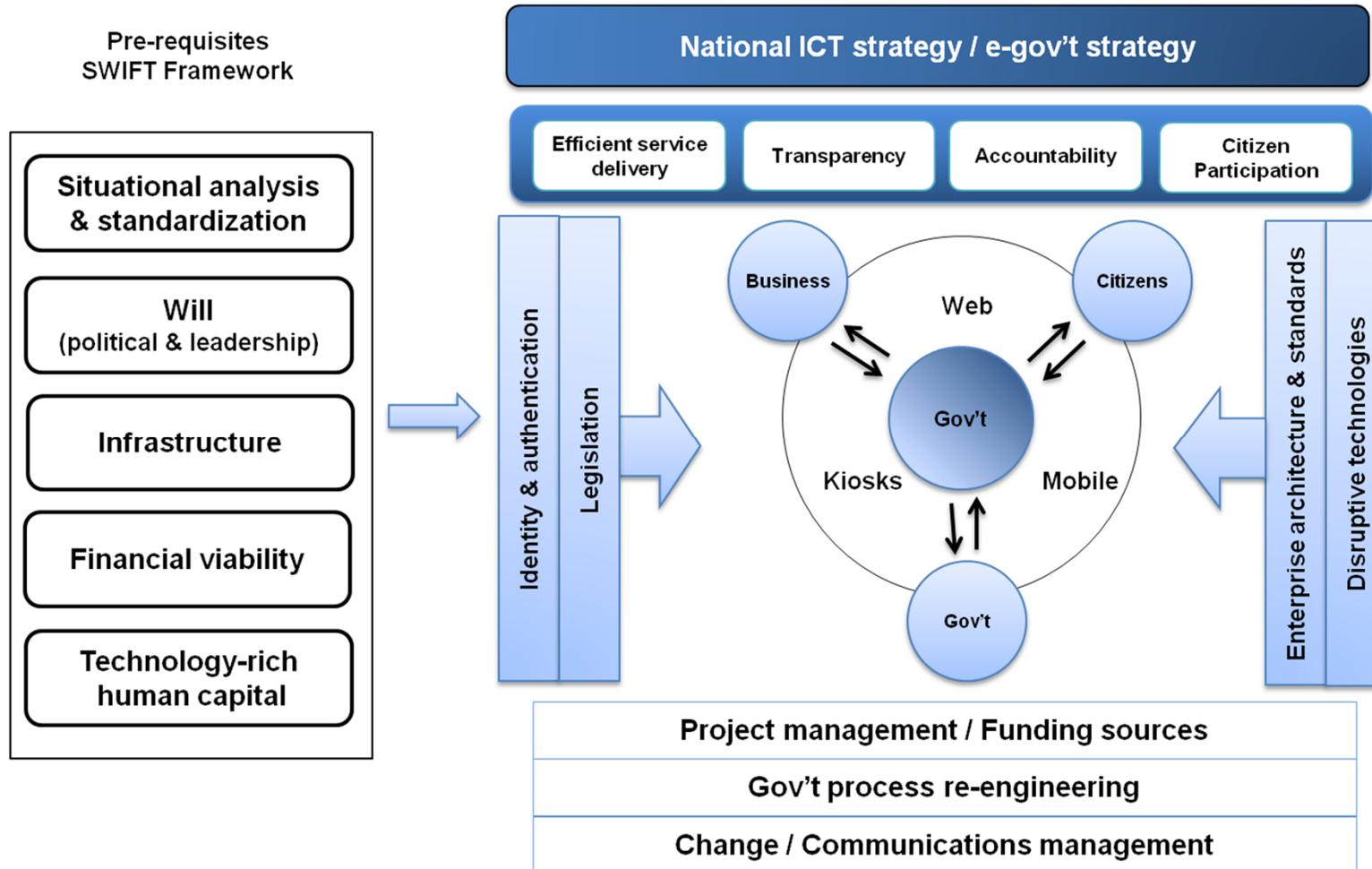
- Standards for the comparison
 - According to Lee (2012) and Ming, Awan, and Somani (2013), there are commonly mentioned major success factor and component of e-government development plan.



Source: Lee (2012)

2. Comparison between the Groups

- Standards for the comparison



Source: Ming, Awan, and Somani (2013)

2. Comparison between the Groups

- Key success factors

- This report adopts the following standards for the comparison based on the reports of Lee (2012) and Ming, Awan, and Somani (2013),

- 1) Existence of national e-gov't strategy

- 2) Linkage between gov't reform & e-gov't

- 3) Political commitment

- 4) Legal framework for ICT and e-government development

- 5) Coordination of the organizations in charge of ICT and e-government

- 6) Financial feasibility

- 7) E-awareness policy for public employees, citizens, and students

2. Comparison between the Groups

□ What makes the differences of the three groups?

Criteria		Group A	Group B	Group C
Existence of nat'l e-gov't strategy		○	△	X
Linkage b/w gov't reform & e-gov't		○	X	X
Political commitment		○	△	X
Legal framework		○	△	X
Coordination of organizations		○	△	X
Financial feasibility		△	△	X
E-awareness policy for	Public servants	○	△	X
	Citizens	X	△	X
	Students	△	△	X

○ The three groups show differences in terms of national e-gov't policy and strategy.



Implications for SIDS

Implications for SIDS

- ICT and e-gov't development can raise the level of economic, social, and environmental development directly and via good governance.

 - This report strongly recommends SIDS to actively pursue e-gov't development policy and strategy, considering the seven success factors.
 - National e-gov't strategy
 - Linkage between gov't reform & e-gov't
 - Political commitment
 - Legal framework for ICT and e-government development
 - Coordination of the organizations in charge of ICT and e-government
 - Financial feasibility
 - E-awareness policy for public employees, citizens, and students
-

Implications for SIDS

- Especially for SIDS, international partnership and cooperation are crucial in developing the e-gov't and addressing the challenges regarding sustainable development .
 - Overcome the lack of human & financial resources, and the experiences of huge projects, the features of many SIDS.
 - The tangible and intangible supports from international organizations (UN, ADB, OECD), and various ODA programs from individual developed countries will be very helpful to SDIS.
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Country Profile

American Samoa

Region	Pacific
UN member	X / LDC X
Population	68,061 (July 2012 – CIA est.)
Surface area	199 km ²
GDP (current \$)	462.2 million (2005)
Language	Cantonese 4.1%, Teochew 3.2%, Malay (official) 1.2%
Religion	Buddhist 33.9%, Muslim 14.3%, Taoist 11.3%, Catholic 7.1%, Hindu 5.2%



	VALUE	RANK		VALUE	RANK
1. E-government			4. Social Development		
1.1 EGDI	n/a	n/a	4.1 Rule of Law	1.138	31/212
1.1.1 ICT Infrastructure	n/a	n/a	4.2 Political Stability & Absence of Violence/Terrorism	0.987	43/212
1.1.2 Human Capital	n/a	n/a	4.3 Gender Inequality	n/a	n/a
1.1.3 Online Service	n/a	n/a	4.4 Under-five mortality	n/a	n/a
1.2 E-Participation	n/a	n/a	4.5 Health Index	n/a	n/a
2. Good Governance			5. Environmental Development		
2.1 Control of Corruption	0.350	68/210	5.1 Ecosystem Vitality	n/a	n/a
2.2 Voice & Accountability	1.058	38/212	5.1.1 Water Resources	n/a	n/a
2.3 Gov't Effectiveness	0.477	67/210	5.1.2 Agriculture	n/a	n/a
2.4 Regulatory Quality	0.355	81/210	5.1.3 Forests	n/a	n/a
3. Economic Development			5.1.4 Fisheries	n/a	n/a
3.1 GDP per capita	8,000 (2007 est.)		5.1.5 Biodiversity & Habitat	n/a	n/a
			5.1.6 Climate & Energy	n/a	n/a

Sources: E-gov't survey 2012 (UN), WGI 2013 (World Bank), HDI 2013 (UNDP), EPI 2014 (Yale Univ. & Columbia Univ.)

Commonwealth of the Northern Marianas

Region	Pacific
UN member	X / LDC X
Population	44,582 (July 2012 – CIA est.)
Surface area	477 km ²
GDP (current \$)	733 million (2010 est.)
Language	Philippine languages 32.8%, Chamorro (official) 24.1%, English (official) 17%, other Pacific island languages 10%
Religion	Christian



	VALUE	RANK		VALUE	RANK
1. E-government			4. Social Development		
1.1 EGDI	n/a	n/a	4.1 Rule of Law	n/a	n/a
1.1.1 ICT Infrastructure	n/a	n/a	4.2 Political Stability & Absence of Violence/Terrorism	n/a	n/a
1.1.2 Human Capital	n/a	n/a	4.3 Gender Inequality	n/a	n/a
1.1.3 Online Service	n/a	n/a	4.4 Under-five mortality	n/a	n/a
1.2 E-Participation	n/a	n/a	4.5 Health Index	n/a	n/a
2. Good Governance			5. Environmental Development		
2.1 Control of Corruption	n/a	n/a	5.1 Ecosystem Vitality	n/a	n/a
2.2 Voice & Accountability	n/a	n/a	5.1.1 Water Resources	n/a	n/a
2.3 Gov't Effectiveness	n/a	n/a	5.1.2 Agriculture	n/a	n/a
2.4 Regulatory Quality	n/a	n/a	5.1.3 Forests	n/a	n/a
3. Economic Development			5.1.4 Fisheries	n/a	n/a
3.1 GDP per capita	13,600 (2010 est.)		5.1.5 Biodiversity & Habitat	n/a	n/a
			5.1.6 Climate & Energy	n/a	n/a

Sources: E-gov't survey 2012 (UN), WGI 2013 (World Bank), HDI 2013 (UNDP), EPI 2014 (Yale Univ. & Columbia Univ.)