

*Just
Released!*

THE DOLLARS AND SENSE OF BROADBAND WIRELESS

FROM 700MHZ IN AMERICA TO 3500MHZ IN VIETNAM



The Economics of Broadband Wireless

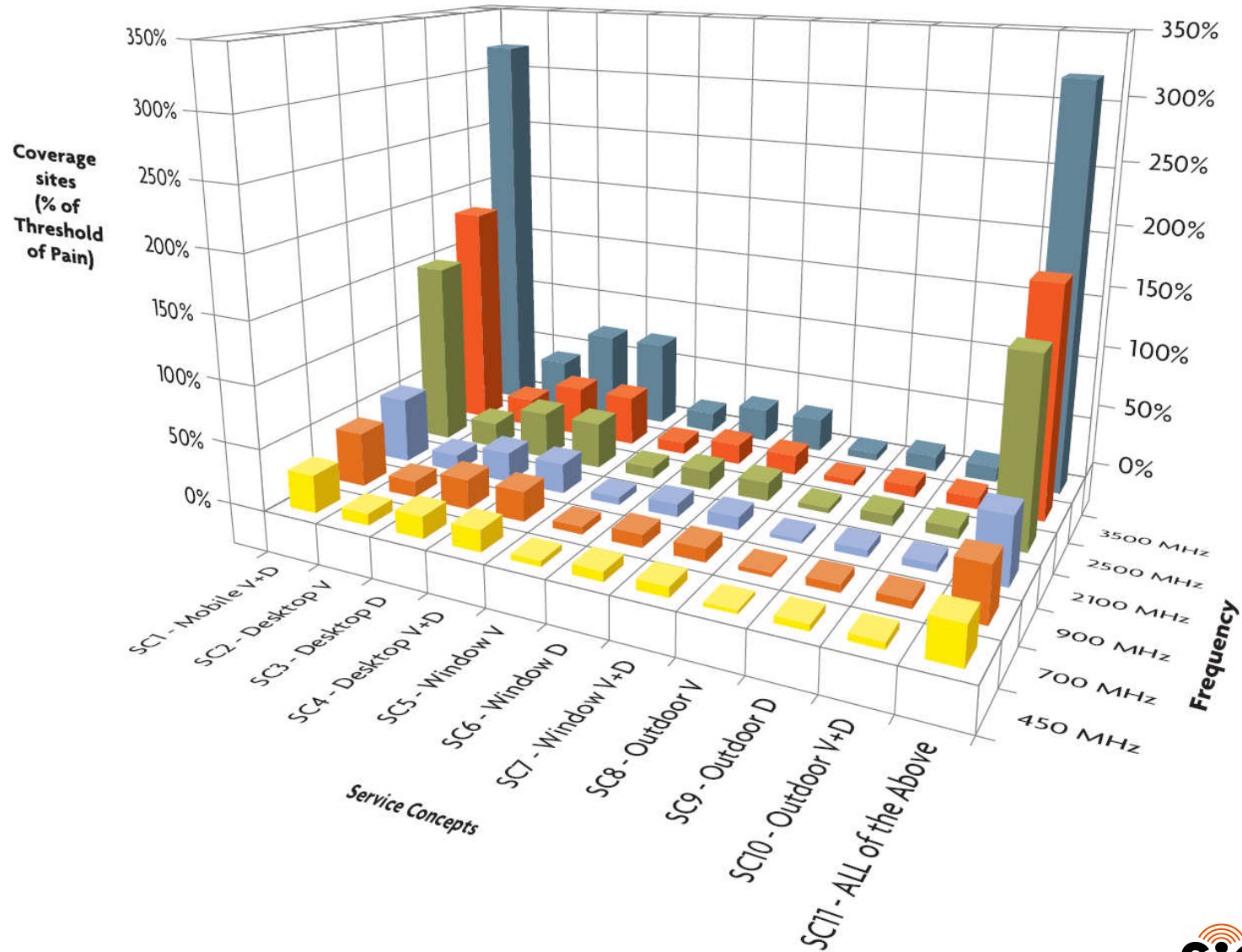
J. Randolph Luening
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WiMAX Forum Asia Congress
in Singapore
April 10th, 2008

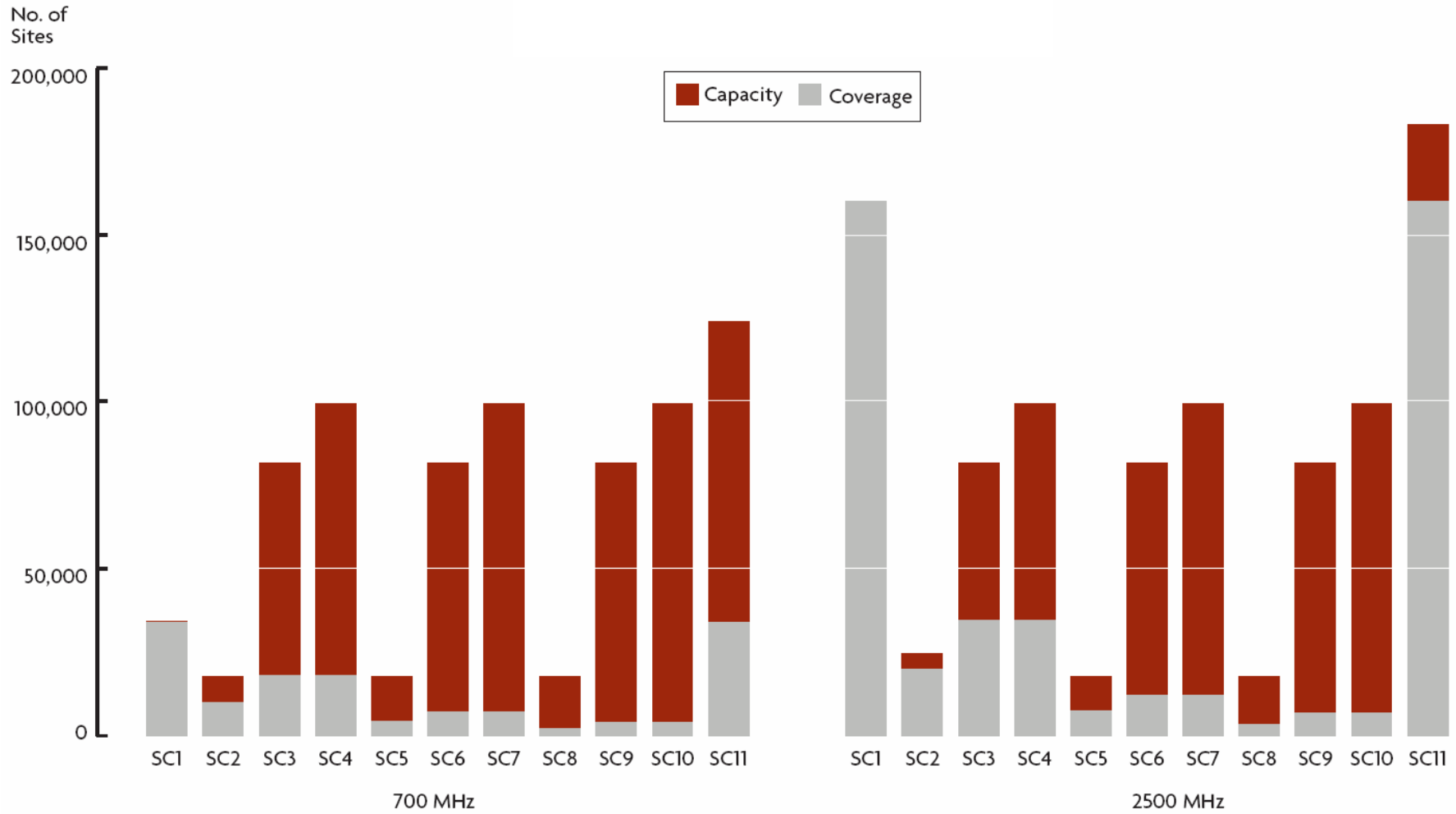
Background

- SRG studied the economics of wireless broadband deployment in 65 countries around the world. We considered:
 - Geography (Demographics, Morphologies, % Population Covered)
 - Frequency Bands: 450 MHz to 3500 MHz
 - Amount of Spectrum: 10MHz, 20MHz, 40MHz, etc
 - Duplex Method: TDD vs. FDD
 - Degree of Mobility: Fully Mobile, Nomadic, Semi-Fixed, and Fixed
 - Current Demand for Telecommunications Services:
 - Mobile Voice
 - Mobile Data
 - Fixed (Landline) Voice
 - Fixed Data (Cable, DSL)
 - GDP per Capita
- We found that changing key drivers resulted in dramatically different economics. The following pages highlight a few of our findings.

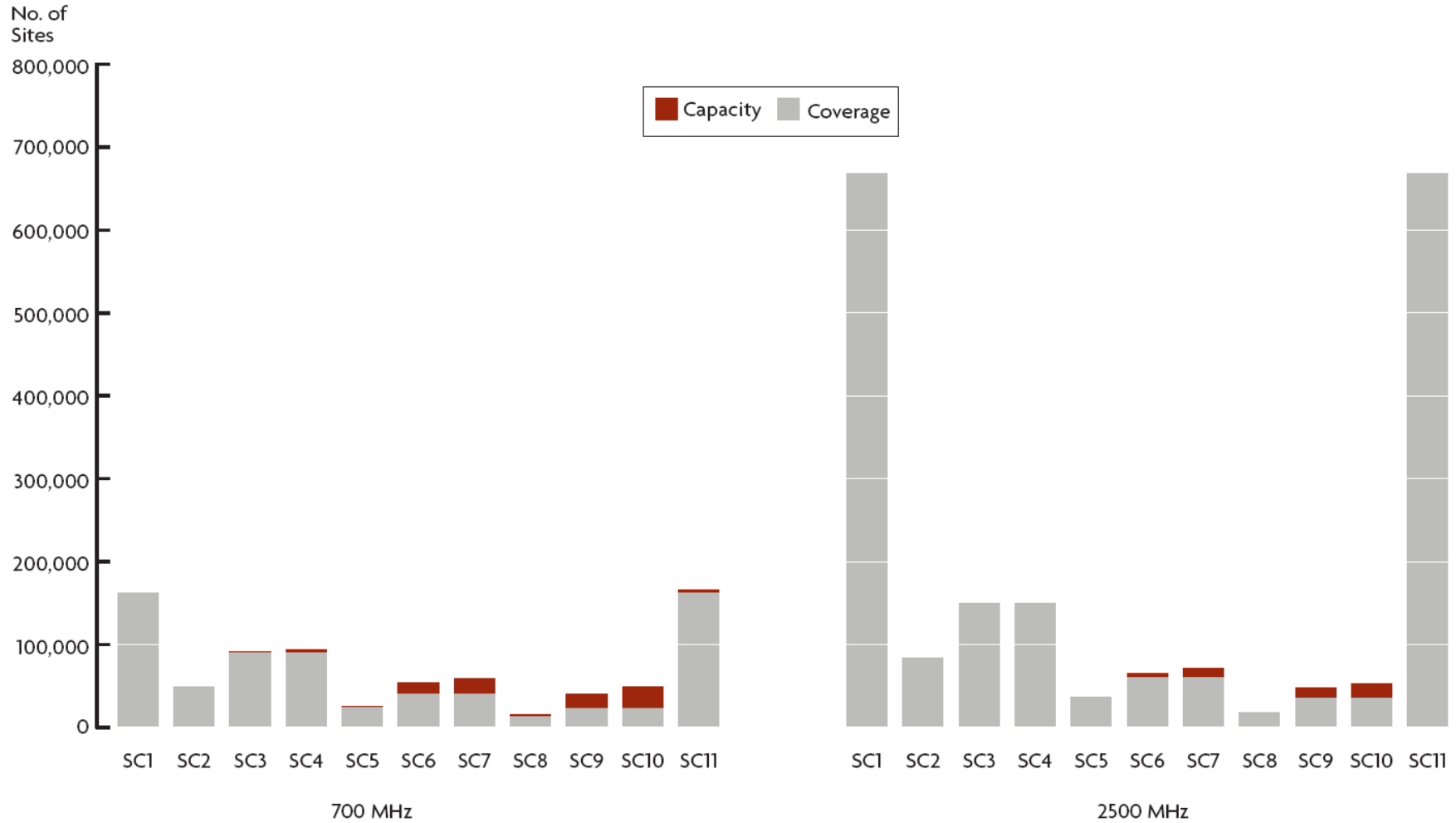
View of the World – Sites Required for Coverage



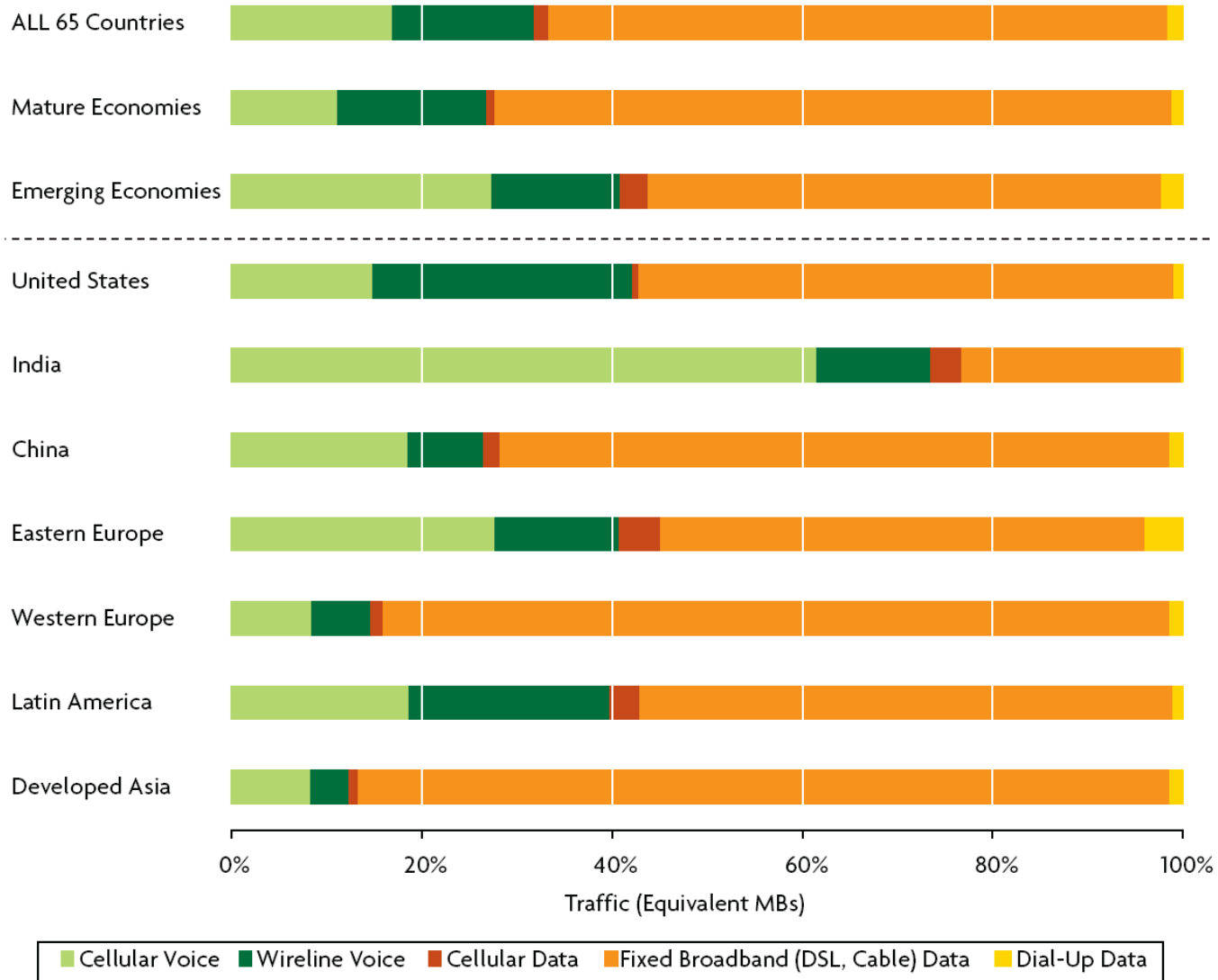
Mature Economies – 10 MHz of Spectrum



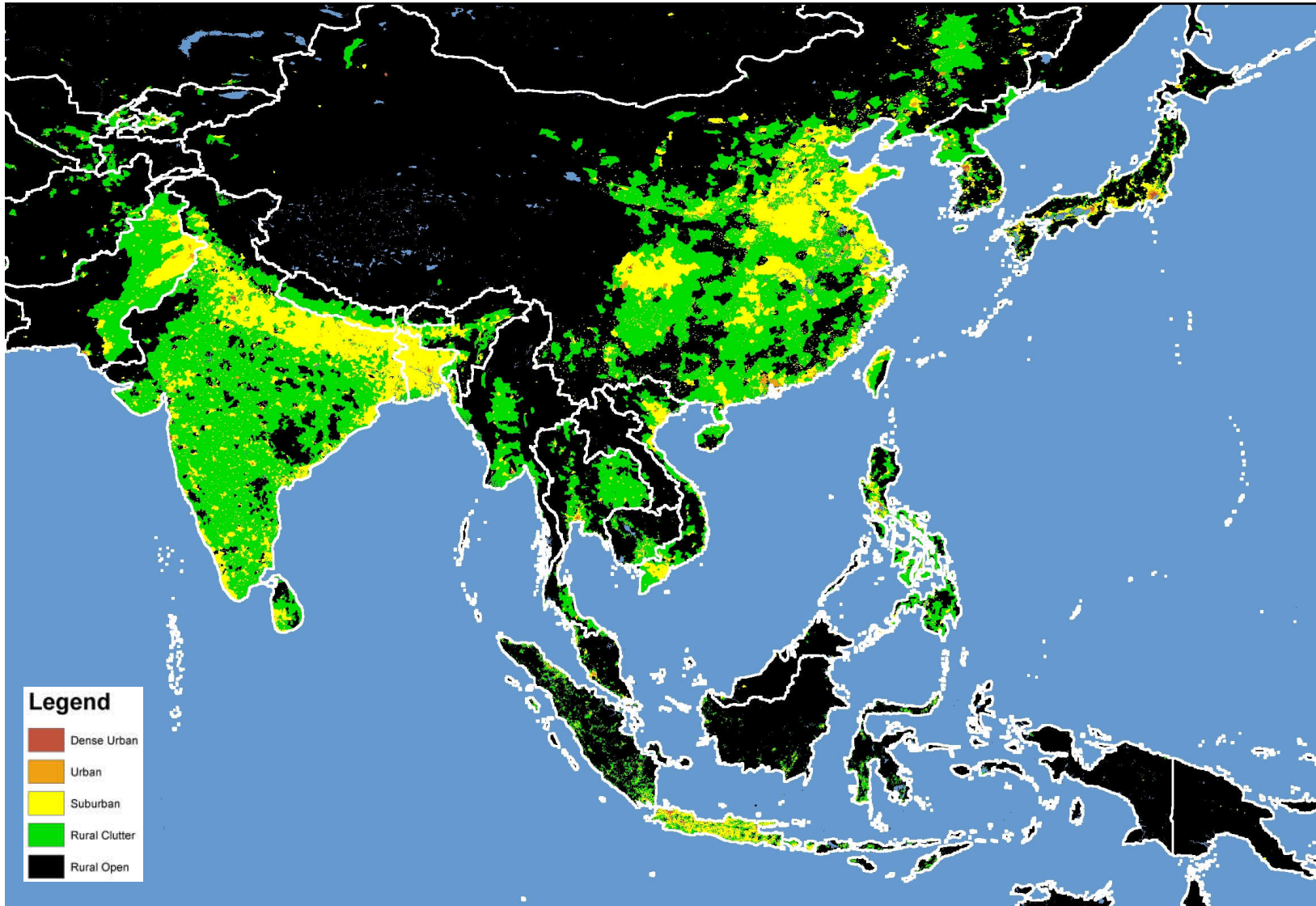
Emerging Economies – 10 MHz of Spectrum



Distribution of Demand: Voice, Data, Fixed, Mobile



Demographics and Morphologies in Asia



Economics: 2500MHz, TDD, 40MHz of Spectrum

	Voice Cost / Minute (\$)							Data Cost / MB (\$)							Utilization	Coverage Sites	Total Sites	Covered Pop.	Covered Area (km ²)	
	.1x	.2x	.5x	1x	2x	5x	10x	.1x	.2x	.5x	1x	2x	5x	10x						
SC1 Mobile V+D	Afghanistan	1.134	0.567	0.227	0.113	0.057	0.023	0.012	3.243	1.622	0.649	0.325	0.163	0.066	0.034	0%	5,501	5,501	22,561,808	116,972
	Algeria	0.271	0.136	0.054	0.028	0.014	0.006	0.003	0.778	0.389	0.156	0.079	0.040	0.017	0.009	1%	5,940	5,940	23,448,579	97,461
	Argentina	0.448	0.224	0.090	0.045	0.023	0.010	0.005	1.286	0.643	0.258	0.130	0.066	0.027	0.014	1%	8,626	8,626	28,318,848	143,756
	Australia	0.218	0.109	0.044	0.022	0.011	0.005	0.003	0.624	0.312	0.126	0.063	0.032	0.014	0.008	2%	4,201	4,201	14,351,793	14,721
	Austria	0.354	0.177	0.071	0.036	0.018	0.008	0.004	1.008	0.504	0.202	0.101	0.051	0.021	0.012	1%	2,011	2,011	5,741,640	28,694
	Bangladesh	0.859	0.430	0.172	0.086	0.044	0.018	0.009	2.473	1.237	0.495	0.248	0.125	0.051	0.026	0%	32,774	32,774	106,195,441	65,750
	Belgium	0.388	0.194	0.078	0.039	0.020	0.008	0.004	1.107	0.554	0.222	0.111	0.056	0.023	0.012	1%	2,326	2,326	7,278,099	8,731
SC4 Desktop V+D	Afghanistan	2.450	1.225	0.490	0.245	0.123	0.049	0.025	6.846	3.423	1.370	0.685	0.343	0.138	0.069	0%	1,200	1,200	22,561,808	116,972
	Algeria	0.059	0.030	0.012	0.006	0.003	0.002	0.002	0.164	0.082	0.033	0.017	0.010	0.005	0.004	5%	1,322	1,322	23,448,579	97,461
	Argentina	0.028	0.014	0.006	0.004	0.002	0.002	0.002	0.080	0.040	0.017	0.010	0.007	0.005	0.005	10%	1,880	1,880	28,318,848	143,756
	Australia	0.009	0.005	0.003	0.002	0.002	0.002	0.002	0.024	0.014	0.008	0.006	0.005	0.005	0.005	43%	940	992	14,351,793	14,721
	Austria	0.012	0.006	0.003	0.002	0.002	0.002	0.002	0.032	0.017	0.008	0.006	0.005	0.005	0.004	37%	449	463	5,741,640	28,694
	Bangladesh	0.653	0.326	0.131	0.065	0.033	0.013	0.007	1.862	0.931	0.373	0.187	0.094	0.038	0.020	0%	7,093	7,093	106,195,441	65,750
	Belgium	0.008	0.005	0.003	0.002	0.002	0.002	0.002	0.023	0.013	0.008	0.006	0.005	0.005	0.005	48%	527	545	7,278,099	8,731
SC7 Window V+D	Afghanistan	1.074	0.537	0.215	0.108	0.054	0.022	0.011	2.879	1.440	0.576	0.289	0.145	0.058	0.030	0%	450	450	22,561,808	116,972
	Algeria	0.028	0.014	0.006	0.003	0.002	0.002	0.002	0.074	0.037	0.016	0.009	0.006	0.004	0.004	11%	535	535	23,448,579	97,461
	Argentina	0.012	0.006	0.003	0.002	0.002	0.002	0.002	0.032	0.017	0.008	0.006	0.005	0.004	0.004	28%	689	689	28,318,848	143,756
	Australia	0.004	0.003	0.002	0.002	0.002	0.002	0.002	0.012	0.008	0.006	0.005	0.005	0.005	0.005	88%	372	482	14,351,793	14,721
	Austria	0.006	0.003	0.002	0.002	0.002	0.002	0.002	0.015	0.009	0.005	0.005	0.004	0.004	0.004	78%	172	219	5,741,640	28,694
	Bangladesh	0.240	0.120	0.048	0.024	0.012	0.005	0.003	0.672	0.336	0.135	0.068	0.034	0.015	0.009	1%	2,520	2,520	106,195,441	65,750
	Belgium	0.005	0.003	0.002	0.002	0.002	0.002	0.002	0.012	0.008	0.006	0.005	0.005	0.005	0.005	100%	221	264	7,278,099	8,731
SC10 Outdoor V+D	Afghanistan	0.685	0.351	0.150	0.083	0.041	0.017	0.008	1.717	0.861	0.348	0.177	0.089	0.036	0.018	0%	257	257	22,561,808	116,972
	Algeria	0.029	0.021	0.016	0.014	0.008	0.004	0.003	0.045	0.024	0.012	0.008	0.006	0.004	0.004	21%	296	296	23,448,579	97,461
	Argentina	0.019	0.016	0.014	0.014	0.008	0.004	0.003	0.022	0.013	0.009	0.007	0.006	0.005	0.005	49%	398	398	28,318,848	143,756
	Australia	0.012	0.011	0.011	0.011	0.006	0.004	0.003	0.010	0.008	0.007	0.007	0.006	0.005	0.005	97%	209	437	14,351,793	14,721
	Austria	0.025	0.023	0.022	0.022	0.012	0.006	0.004	0.012	0.008	0.006	0.006	0.005	0.005	0.005	92%	99	184	5,741,640	28,694
	Bangladesh	0.154	0.084	0.041	0.027	0.014	0.006	0.004	0.392	0.197	0.081	0.042	0.021	0.010	0.007	1%	1,434	1,434	106,195,441	65,750
	Belgium	0.013	0.012	0.012	0.012	0.007	0.004	0.003	0.010	0.007	0.006	0.006	0.006	0.006	0.005	100%	124	263	7,278,099	8,731

The figures above show how *service concepts* and *geography* – among other factors - profoundly impact network economics



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