

IGC

INTERNATIONAL GEODESIGN COLLABORATION

Changing Geography by Design

The focus of the IGC is academic, to understand better how geodesign can be applied to addressing design challenges in settings that are widely dispersed, differ widely in scale and in the extent of resources available to find geodesign solutions.

We are driven by a specific and exceptionally complex problem: How do we identify and share the lessons and practices developed by a globally-dispersed array of experts so that the resulting knowledge can be leveraged to solve our most pressing societal needs? We know that the solutions will call for deep integration across the traditional expertise in the physical, natural and social sciences, but they will be articulated through the landscape- and city-shaping of planners, designers, engineers and diverse scientists.

We are interested in how multi-disciplinary teams in multi-institutional and multi-national groups consider and respond to the environmental, economic, and social impacts of development and change in natural and increasingly engineered systems. These include structural components such as cultural and governmental differences, but also the leadership skills of individuals, team construction, and communication.



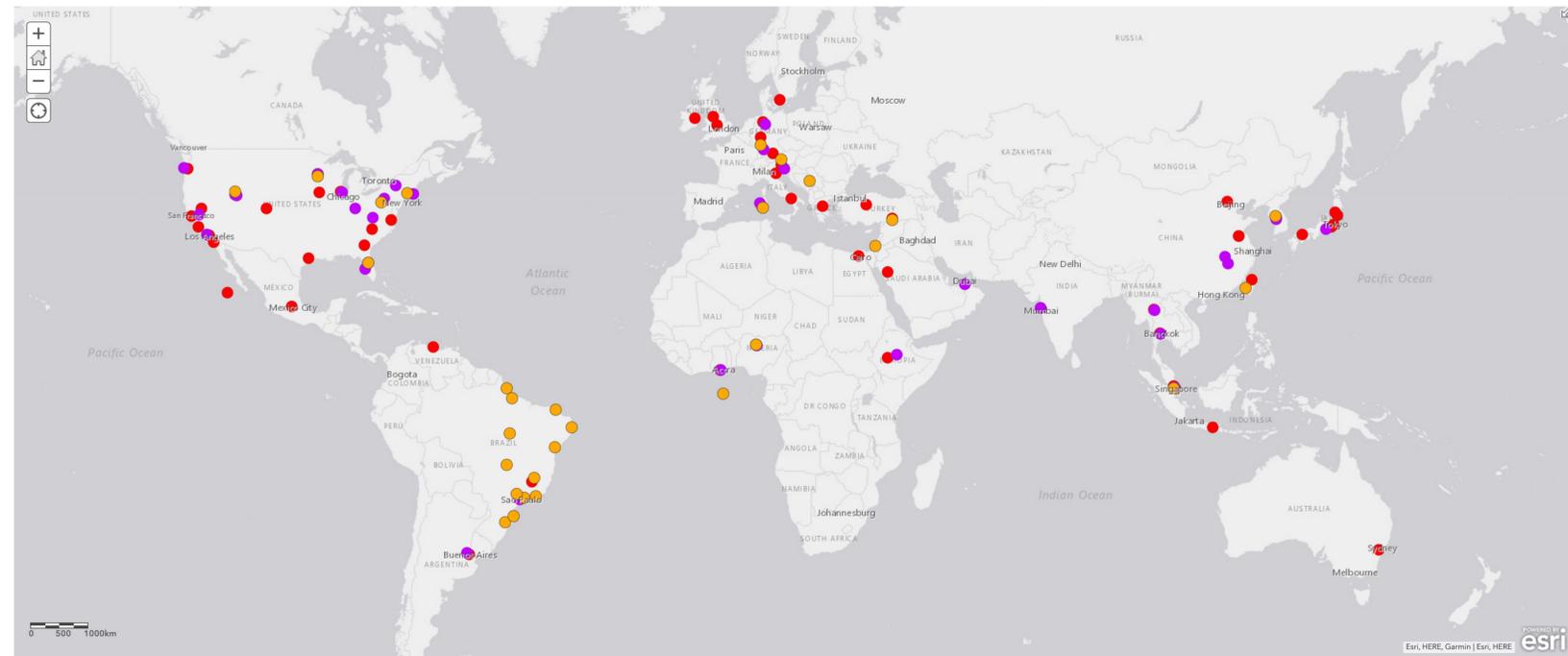
GEODESIGN HUB



MINNESOTA DESIGN CENTER
COLLEGE OF DESIGN UNIVERSITY OF MINNESOTA

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Esri and Jack Dangermond,
Geodesignhub and Hrishi Ballal,
and all the other participants,
schools and organizations.

IGC PROJECT LOCATIONS



● 2019 Projects ● 2020 Projects ● 2021 Projects

IGC PARTICIPANT ORGANIZATIONS

#	University/Organization	Country	#	University/Organization	Country	#	University/Organization	Country	#	University/Organization	Country
1	Universidad de Buenos Aires	Argentina	52	Technical University of Munich	Germany	103	University of Lisbon	Portugal	154	Harvard University GSD	United States
2	American University of Beirut	Australia	53	TU Kaiserslautern	Germany	104	University of Puerto Rico Mayaguez	Puerto Rico	155	Idaho State University	United States
3	Curtin University	Australia	54	Universität Hildesheim	Germany	105	People's Friendship University of Russia	Russia	156	Antioch University	United States
4	University of Canberra	Australia	55	Weihenstephan-Triesdorf University of Applied Science	Germany	106	Al Ula Royal Commission, Saudi Arabia	Saudi Arabia	157	Iowa State University	United States
5	University of New South Wales	Australia	56	University of Thessaly	Greece	107	University of Belgrade	Serbia	158	JeffCity Geo+Media+Design	United States
6	TU Vienna	Austria	57	Amity University Mumbai	India	108	National University of Singapore	Singapore	159	Kansas State University	United States
7	University of Salzburg	Austria	58	National Institute of Technology, Hamirpur	India	109	University of Ljubljana, Biotechnical Faculty	Slovenia	160	North Carolina State University	United States
8	HoGent University of Applied Sciences and Arts	Belgium	59	School of Environment and Architecture	India	110	Council for Scientific and Industrial Research	South Africa	161	Northeastern University	United States
9	Universidad Mayor de San Andrés	Bolivia	60	Vijayawada University	India	111	University of Cape Town	South Africa	162	Ohio University	United States
10	Federal University of Amapá	Brazil	61	Polytechnic State of Samba	Indonesia	112	University of Kwazulu-Natal	South Africa	163	Old Dominion University	United States
11	Federal University of Ceará	Brazil	62	University of Tehran	Iran	113	University of Pretoria	South Africa	164	Oregon State University	United States
12	Federal University of Goiás	Brazil	63	Geodesignhub	Ireland	114	University of the Western Cape	South Africa	165	Pennsylvania State University	United States
13	Federal University of Minas Gerais	Brazil	64	University College Dublin	Ireland	115	Seoul National University	South Korea	166	Portland State University	United States
14	Federal University of Pará	Brazil	65	Bar-Ilan university	Israel	116	University of Seoul	South Korea	167	Purdue University	United States
15	Federal University of Pará (UFPA)	Brazil	66	Kaplan Planners Ltd.	Israel	117	Universidad de Navarra	Spain	168	Rhode Island School of Design	United States
16	Federal University of Pernambuco	Brazil	67	Ram Eisenberg Environmental Design	Israel	118	Universitat Autònoma de Barcelona	Spain	169	Rutgers University	United States
17	Federal University of Rio de Janeiro	Brazil	68	Technion - Israel Institute of Technology	Israel	119	Blekinge Institute of Technology	Sweden	170	San Diego State University	United States
18	Federal University of Rio Grande do Sul	Brazil	69	Politecnico di Milano	Italy	120	KTH Royal Institute of Technology	Sweden	171	Silvermail Studio	United States
19	Federal University of Santa Catarina	Brazil	70	Politecnico di Torino	Italy	121	Swedish University of Agricultural Science	Sweden	172	Southern Oregon University	United States
20	Federal University of Sul da Bahia	Brazil	71	Università di Cagliari	Italy	122	ETH Zurich	Switzerland	173	Texas A&M University	United States
21	Santa Catarina State University	Brazil	72	University of Basilicata	Italy	123	Zurich University of Applied Science	Switzerland	174	Thomas Jefferson University	United States
22	UNESC - Universidade do Extremo Sul Catarinense	Brazil	73	University of Brescia	Italy	124	Hochschule für Technik Rapperswil HSR	Switzerland	175	University of California Los Angeles	United States
23	University of Sao Paulo	Brazil	74	University of Naples - Federico II	Italy	125	Kunik de Morsier architects	Switzerland	176	University of Albany (SUNY)	United States
24	Dalhousie University	Canada	75	Hiroshima University	Japan	126	National Sun Yat-sen University	Taiwan	177	University of California Davis	United States
25	Fanshawe College	Canada	76	National Institute for Environmental Studies	Japan	127	Academy of Sciences	Tajikistan	178	University of California Berkeley	United States
26	University of Alberta	Canada	77	Ritsumeikan University	Japan	128	Khorog State University	Tajikistan	179	University of California Santa Barbara	United States
27	University of British Columbia	Canada	78	Tohoku University	Japan	129	Chulalongkorn University	Thailand	180	University of Cincinnati	United States
28	University of Guelph	Canada	79	University of Tokyo	Japan	130	King Mongkut's University of Technology Thonburi	Thailand	181	University of Connecticut	United States
29	University of Toronto, Daniels Faculty	Canada	80	University of Tsukuba	Japan	131	Ankara University	Turkey	182	University of Florida	United States
30	Universidad de Santiago de Chile	Chile	81	Al-Farabi Kazakh National University	Kazakhstan	132	Harran University	Turkey	183	University of Georgia	United States
31	Beijing Forestry University	China	82	Jomo Kenyatta University of Agriculture and Technology	Kenya	133	Istanbul Technical University	Turkey	184	University of Idaho	United States
32	Chinese University of Hong Kong	China	83	Maseno University	Kenya	134	Makerere University	Uganda	185	University of Illinois at Urbana Champaign	United States
33	Harbin Institute of Technology	China	84	Taita Taveta University	Kenya	135	United Arab Emirates University	U.A.E.	186	University of Illinois Chicago	United States
34	Henan Agricultural University	China	85	Technical University of Kenya	Kenya	136	Birmingham City University	United Kingdom	187	University of Maryland	United States
35	Huazhao University	China	86	University of Nairobi	Kenya	137	Lancaster University	United Kingdom	188	University of Minnesota	United States
36	Huazhong University of Science and Technology	China	87	Kyrgyz State University of Construction, Transport and	Kyrgyzstan	138	Newcastle University	United Kingdom	189	University of Nebraska-Lincoln	United States
37	Jiangxi Normal University	China	88	American University of Beirut	Lebanon	139	University College London	United Kingdom	190	University of North Carolina at Charlotte	United States
38	Nanjing Forestry University	China	89	Liechtenstein Institute for Strategic Development	Liechtenstein	140	University of Manchester	United Kingdom	191	University of Redlands	United States
39	Peking University	China	90	University of Malta	Malta	141	University of Sheffield	United Kingdom	192	University of Richmond	United States
40	Tianjin University	China	91	Universidad Autonoma Metropolitana	Mexico	142	Arizona State University	United States	193	University of Southern California	United States
41	Tongji University	China	92	Hassan II Institute of Agronomy and Veterinary Science	Morocco	143	Aspen Global Change Institute	United States	194	University of Tennessee Chattanooga	United States
42	Mendel University in Brno	Czechia	93	Vrije Universiteit	Netherlands	144	Ball State University	United States	195	University of Texas at Austin	United States
43	Ministry of tourism and antiquities	Egypt	94	Lincoln University	New Zealand	145	Boston Architectural College	United States	196	University of Washington	United States
44	National Research Institute of Astronomy and Geophysics	Egypt	95	University of Auckland	New Zealand	146	California Polytechnic State University Pomona	United States	197	University of Wyoming	United States
45	Addis Ababa University/EiABC	Ethiopia	96	University of Canterbury	New Zealand	147	California Polytechnic State University San Luis Obispo	United States	198	Utah State University	United States
46	French Ministry of Culture and Communication	France	97	Ahmadu Bello University, Zaria-Nigeria.	Nigeria	148	Cambridge College	United States	199	Virginia Tech	United States
47	Universite Omar Bongo	Gabon	98	University of Lagos	Nigeria	149	College of the Atlantic	United States	200	West Virginia University	United States
48	Anhalt University	Germany	99	Norwegian University of Life Sciences (NMBU)	Norway	150	Colorado College	United States	201	National University of Uzbekistan	Uzbekistan
49	Leibniz Universität Hannover	Germany	100	University of Management & Technology (UMT) / Studi	Pakistan	151	Cornell University	United States	202	Tashkent State Technical University	Uzbekistan
50	Liechtenstein Institute for Strategic Development	Germany	101	Cracow University of Technology	Poland	152	Esri (Redlands, CA)	United States	203	Universidad Simon Bolivar	Venezuela
51	Ruhr University Bochum	Germany	102	Warsaw University of Life Sciences	Poland	153	Georgia Institute of Technology	United States	203	Universities and others	59 countries

<http://www.geodesigncollab.org>



IGC GLOBAL ASSUMPTIONS AND SYSTEM INNOVATIONS

We identified systems that are fundamental to geodesign. Participants were assigned to individual systems groups and a further group focusing on identifying assumptions about global change.

GLOBAL ASSUMPTIONS

The global assumptions and the associated specific concerns addressed on the following displays were identified by teams of IGC participants and reflect current projections, forecasts, and predictions.

In order to guide, but not overwhelm, conversations across the geodesign projects, the number of assumptions and innovations has been limited.

The global assumptions describe issues that may be relevant to particular projects, but they are not relevant for all projects.

Recommendations for specific outcomes or goals are not included; however, each assumption is written with the knowledge that individual nations and municipalities do have such goals.

SYSTEM INNOVATIONS

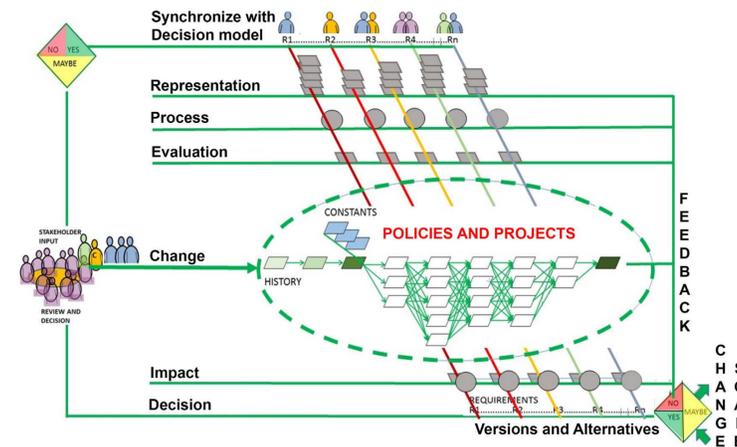
The groups were asked to identify system innovations that may occur by 2035, and others by 2050, that identify useful design and planning response strategies to address anticipated system changes.

The following posters illustrate and share ideas; the key elements of an innovation description are a brief description, key website URLs and illustrations. Participants chose whether to adopt a particular innovation for their project, and how to design or plan for it.

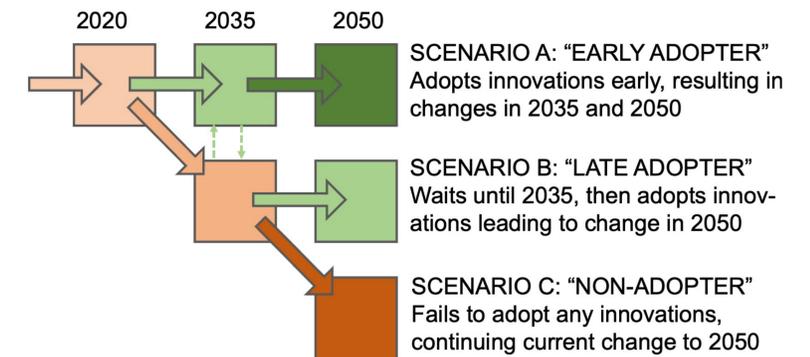
IGC SYSTEMS, SCENARIOS, WORKFLOW AND SCHEDULE



A WORKFLOW FOR GEODESIGN



SCENARIOS AND TIME STAGES



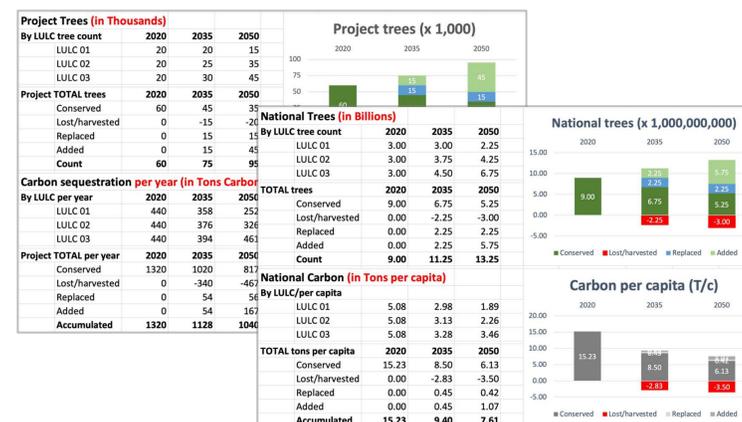
TEN GEODESIGN SYSTEMS

Water Infrastructure	WAT	Ocean, Rivers and Lakes
		Water supply, treatment, recycling
Agriculture	AGR	Agriculture
		Forestry
Green Infrastructure	GRN	Recreation
		Conservation landscape
Energy Infrastructure	ENE	Energy production
		Energy distribution
Transport Infrastructure	TRAN	Rail, airport, ship port transport
		Road transport
Industry and Commerce	IND/COM	Industry - light, and Commerce
		Industry - heavy
Institutional	INST	Institutional - Government, Military
		Institutional - Education, Healthcare
Residential, Mixed	MIX	Residential - Rural
		Residential - Low Density
		Residential - Medium Density, Mixed
		Residential - High Density, Mixed
		Commercial, Offices
		Commercial, Shopping
		Tourism, Cultural
		Tourism, Historical
		Special landscape e.g. Desert,
		Special landscape e.g. Mangrove
Two flexible systems	FLEX 1	
	FLEX 2	

PERFORMANCE VS. UN-SDG GOALS



METRICS FOR TREE PLANTING AND CARBON SEQUESTRATION



IGC 2021 CALENDAR

