Appendix 3: 321 questions submitted for evaluation in question evaluation survey and their mean, median, variance, and counts based on a 7-category Likert scale. An "x" indicates that the question was included in the final list of top 40 questions.

Question	Category	N	Mean	Median	Var	7s	6s	5s	4s	3s	2s	1s	0s	Top 40
How do policies influence human-nature interactions?	GOVERNANCE	25	6.36	6.00	0.57	12	11	1	1	0	0	0	0	x
How will human population patterns change with ongoing changes in availability of water?	SOCIETY & CULTURE	18	6.33	6.00	0.47	8	8	2	0	0	0	0	0	x
How will climate & other global environmental changes (e.g., water availability) affect agricultural systems in different areas of the world?	LAND USE & AGRICULTURE	24	6.29	6.00	0.65	11	10	2	1	0	0	0	0	x
How can social systems and natural life sciences be integrated to better inform each other to make wise use decisions?	GOVERNANCE	22	6.27	6.00	0.59	10	8	4	0	0	0	0	0	x
How can water management be improved to decrease scarcity, increase security, and make the system less vulnerable?	ADAPTATION & RESILIENCE	24	6.25	6.00	0.46	9	12	3	0	0	0	0	0	x
How is ecosystem resilience changing with changes in climate, land use, and land cover?	ADAPTATION & RESILIENCE	23	6.22	6.00	0.54	9	10	4	0	0	0	0	0	x
How can we control climate change with demands of increasing food production and increasing energy use?	LAND USE & AGRICULTURE	21	6.19	6.00	0.66	9	7	5	0	0	0	0	0	x
How do economic and institutional factors interact at multiple scales to influence local conditions?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	6.19	6.00	0.76	9	8	3	1	0	0	0	0	x
How do humans increase their capacity for adaptation to global environmental change?	ADAPTATION & RESILIENCE	23	6.17	6.00	0.51	8	11	4	0	0	0	0	0	x
How can we ensure that inter-disciplinary projects that include non-academic stakeholders become the norm rather than the exception (especially in sustainability science)?	EDUCATION & SCIENCE COMMUNICATION	20	6.15	6.00	0.77	9	5	6	0	0	0	0	0	x
What other global environmental change besides climate change pose threats to sustainability?	SUSTAINABILITY & DEVELOPMENT	21	6.14	6.00	1.13	10	6	4	0	1	0	0	0	x
What are the human consequences of anthropogenic climate change, and how will those human consequences further shape coupled human and natural systems?	CLIMATE CHANGE & ENERGY	22	6.14	6.00	0.69	8	10	3	1	0	0	0	0	x
What are the environmental and social impacts and underpinnings of a sustainable and just food system?	LAND USE & AGRICULTURE	22	6.14	6.00	0.98	9	9	3	0	1	0	0	0	x

What are the linkages between ecosystem services and human well-being	CONSERVATION & ECOSYSTEM SERVICES	23	6.13	6.00	0.66	9	8	6	0	0	0	0	0	x
How can sustainable ecosystems that are resilient to change and provide ecosystem services for humans be built or managed?	CONSERVATION & ECOSYSTEM SERVICES	23	6.13	6.00	0.75	9	9	4	1	0	0	0	0	x
How is the global economy affecting land-use change at regional and finer scales, and how does this land change impact natural systems?	LAND USE & AGRICULTURE	23	6.13	6.00	0.75	7	14	1	0	1	0	0	0	x
How can we best use the reciprocal nature of CHANS systems to support resilience?	ADAPTATION & RESILIENCE	25	6.12	6.00	0.61	8	13	3	1	0	0	0	0	x
What are the social drivers at multiple scales of complex CHANS?	SOCIETY & CULTURE	18	6.11	6.00	0.81	7	7	3	1	0	0	0	0	x
How can communities adaptively (and peacefully) manage common-pool, declining resources?	GOVERNANCE	20	6.10	6.00	1.36	8	9	2	0	0	1	0	0	
How can we understand causation in complex coupled systems?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	6.10	6.00	0.59	7	9	5	0	0	0	0	0	x
How can scientists best integrate data, methods, and research designs across multiple spatial and temporal scales?	SCALE	21	6.10	6.00	1.19	10	5	5	0	1	0	0	0	x
How can we reintegrate humans into our conceptualization and management of 'natural' systems?	SOCIETY & CULTURE	22	6.09	6.00	0.85	9	7	5	1	0	0	0	0	x
How can we measure and account for ecosystem services in decisions and connect this to policy-making agendas?	CONSERVATION & ECOSYSTEM SERVICES	23	6.09	6.00	0.45	6	13	4	0	0	0	0	0	x
What is the role of spatial scale in understanding the coupling between natural and human systems?	SCALE	26	6.08	6.00	0.47	7	14	5	0	0	0	0	0	x
What pathways of governance can work with complexity, feedbacks, and adaptive managment?	GOVERNANCE	26	6.08	6.00	0.71	9	11	5	1	0	0	0	0	x
How can we design natural resource management approaches that reflect and work with biophysical variability (in time & space)?	GOVERNANCE	18	6.06	6.00	1.00	7	7	2	2	0	0	0	0	x
Under what conditions do social and ecological disturbances create positive/negative feedback and positive/negative social and ecological consequences?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	18	6.06	6.00	1.47	8	7	0	2	1	0	0	0	
How can we better represent social systems and processes in CHANS models?	METHODS	19	6.05	6.00	0.39	4	12	3	0	0	0	0	0	x
How do changes in the environment feed back on individuals, groups and institutions?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	19	6.05	6.00	0.72	6	9	3	1	0	0	0	0	x

How can we incorporate behavior, tipping points, emergent properties and regime shifts especially for ecosystem function and social organizations in CHANS models?	METHODS	19	6.05	6.00	1.16	8	6	4	0	1	0	0	0	x
How does uncertainty of CHANS affect human decision making?	BEHAVIOR & ECONOMICS	20	6.05	6.00	0.79	7	8	4	1	0	0	0	0	x
What characterizes sustainable land use systems and how can we transition to such systems?	LAND USE & AGRICULTURE	22	6.05	6.00	0.52	6	11	5	0	0	0	0	0	x
How do we address the complex interlinkages between rural livelihoods and natural resource use in the face of climate variability?	CLIMATE CHANGE & ENERGY	22	6.05	6.00	1.19	10	5	6	0	1	0	0	0	x
What are the drivers of human decision-making regarding land use/land cover change and natural resources?	BEHAVIOR & ECONOMICS	23	6.04	6.00	0.32	4	16	3	0	0	0	0	0	x
What characterizes and can we predict tipping points or thresholds in CHANS?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	19	6.00	6.00	0.44	4	11	4	0	0	0	0	0	x
What are appropriate and effective methods to bring stakeholders together to address environmental issues?	SOCIETY & CULTURE	16	6.00	6.00	0.53	4	8	4	0	0	0	0	0	x
How can we best represent human decisions, behavior, and human-built elements of natural systems in coupled process models?	METHODS	25	6.00	6.00	0.58	6	14	4	1	0	0	0	0	x
How can resource management practices better integrate ecological resiliency and anticipate disturbance?	GOVERNANCE	24	6.00	6.00	0.61	6	13	4	1	0	0	0	0	x
How do we couple environmental sustainability with social and economic sustainability?	SUSTAINABILITY & DEVELOPMENT	19	6.00	6.00	0.67	6	7	6	0	0	0	0	0	x
How can the public be educated on the link between extreme events and long-term changes in coupled human and natural systems?	EDUCATION & SCIENCE COMMUNICATION	20	6.00	6.00	0.84	7	7	5	1	0	0	0	0	x
What alternative pathways of development are available that have a lesser impact on ecosystems and the biosphere?	SUSTAINABILITY & DEVELOPMENT	21	6.00	6.00	1.10	9	5	5	2	0	0	0	0	x
How can we design socio-ecological research that is relevant to the social communities affected by ecosystem processes?	METHODS	24	6.00	6.00	1.30	11	5	6	1	1	0	0	0	x
How do we integrate social science to understand individual and group behaviors and values and how they scale up in coupled human and natural systems?	BEHAVIOR & ECONOMICS	22	6.00	6.00	1.33	10	5	5	1	1	0	0	0	

How does society improve medium and long term co-viability of ecological and social processes in CHANS?	SUSTAINABILITY & DEVELOPMENT	15	6.00	6.00	1.43	6	6	1	1	1	0	0	0	
What effects will changing agricultural trends have on modern human diet and/or nutrition?	LAND USE & AGRICULTURE	24	5.96	6.00	0.91	7	11	5	0	1	0	0	0	
What is the appropriate balance between economic development and environmental protection?	SUSTAINABILITY & DEVELOPMENT	23	5.96	6.00	0.95	8	8	5	2	0	0	0	0	
How is environmental change affecting people's capacity and prospects for survival?	SOCIETY & CULTURE	22	5.95	6.00	0.81	7	8	6	1	0	0	0	0	
What are the relationships between cultural values, management and natural systems?	SOCIETY & CULTURE	21	5.95	6.00	0.55	5	10	6	0	0	0	0	0	
How do various types and patterns of land uses relate to patterns of biodiversity?	CONSERVATION & ECOSYSTEM SERVICES	21	5.95	6.00	1.05	6	11	2	1	1	0	0	0	
What kinds of governance systems contribute to improved social and ecological outcomes?	GOVERNANCE	21	5.95	6.00	1.35	7	9	4	0	0	1	0	0	
What are the perceptions of landholders/land managers of environmental issues and how do those compare to public perceptions and scientific knowledge?	SOCIETY & CULTURE	16	5.94	6.00	0.60	4	7	5	0	0	0	0	0	
How do human activities alter ecological landscape processes?	LAND USE & AGRICULTURE	25	5.92	6.00	0.91	6	14	3	1	1	0	0	0	
How can political constraints to sustainable management be overcome?	GOVERNANCE	23	5.91	6.00	1.08	7	10	4	1	1	0	0	0	
How do we measure resilience in CHANS, and the how then do we develop predictive models of resilience?	METHODS	21	5.90	6.00	0.99	7	7	5	2	0	0	0	0	
How do human responses to change alter the environment?	BEHAVIOR & ECONOMICS	18	5.89	6.00	0.81	5	7	5	1	0	0	0	0	
How do social and cultural factors affect the management of CHANS?	SOCIETY & CULTURE	18	5.89	6.00	0.81	4	10	2	2	0	0	0	0	
How can social systems and natural life sciences better interact to stop species loss?	CONSERVATION & ECOSYSTEM SERVICES	25	5.88	6.00	1.28	9	8	5	2	1	0	0	0	
How do global environmental changes affect the dynamics of regional and local coupled systems, and how do these feed back to higher level processes?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	24	5.88	6.00	0.90	6	11	6	0	1	0	0	0	
How are the forces of globalization and climate change interacting?	CLIMATE CHANGE & ENERGY	22	5.86	6.00	1.27	6	11	3	0	2	0	0	0	
How do CHANS interact across multiple scales?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	19	5.84	6.00	0.58	4	8	7	0	0	0	0	0	

How can we anticipate and adapt to novel conditions in response to climate change and demographic pressures?	ADAPTATION & RESILIENCE	19	5.84	6.00	0.70	3	12	2	2	0	0	0	0	
How can conservation of natural systems provide resilience of human systems to impacts of climate change, such as extreme weather and rising sea levels?	CLIMATE CHANGE & ENERGY	25	5.84	6.00	1.72	9	9	4	1	1	1	0	0	
What is the relationship between ecosystem services and function in human dominated systems?	CONSERVATION & ECOSYSTEM SERVICES	18	5.83	6.00	0.38	2	11	5	0	0	0	0	0	
How can we systematically consider the tradeoffs between decisions across coupled human and natural systems?	METHODS	24	5.83	6.00	1.19	7	10	4	2	1	0	0	0	
How do values influence human behavior in regards to natural systems?	BEHAVIOR & ECONOMICS	23	5.83	6.00	0.70	5	10	7	1	0	0	0	0	
How do feedbacks control coupled human and natural systems?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	17	5.82	6.00	0.90	4	8	3	2	0	0	0	0	
How do local biophysical changes from human interventions influence regional and global biophysical processes (especially with respect to water)?	SCALE	28	5.82	6.00	1.41	9	10	6	2	0	1	0	0	
How do people best adapt to climate change?	ADAPTATION & RESILIENCE	22	5.82	6.00	0.82	5	10	5	2	0	0	0	0	
What is the impact of human-induced land cover change on climate?	LAND USE & AGRICULTURE	16	5.81	6.00	1.36	6	3	6	0	1	0	0	0	
How do we account for and understand the role of legacy and cummulative effects in CHANS?	SCALE	21	5.81	6.00	0.56	3	12	5	1	0	0	0	0	
How can climate change adaptation and mitigation be integrated?	CLIMATE CHANGE & ENERGY	21	5.81	6.00	0.66	5	7	9	0	0	0	0	0	
How can the interests of people and the environment be balanced in development, particularly in developing countries which still require a lot of natural resources?	SUSTAINABILITY & DEVELOPMENT	21	5.81	6.00	1.06	6	7	7	0	1	0	0	0	
How can governance systems become resilient in the face of rapidly changing social-ecological systems?	GOVERNANCE	21	5.81	6.00	1.16	6	8	5	1	1	0	0	0	
What urbanization strategies best promote sustainable urban landscapes?	LAND USE & AGRICULTURE	26	5.81	6.00	1.20	7	11	6	0	2	0	0	0	
What are some economical and social factors that prevent sustainable agriculture and permaculture from succeeding?	LAND USE & AGRICULTURE	20	5.80	6.00	0.59	3	11	5	1	0	0	0	0	
How will spatially differential climate change impacts affect local, national and international policy responses?	CLIMATE CHANGE & ENERGY	20	5.80	6.00	1.12	7	4	7	2	0	0	0	0	

How can the importance of long-term consequences be weighed into decisions on human impacts on ecosystems?	BEHAVIOR & ECONOMICS	24	5.79	6.00	0.69	6	7	11	0	0	0	0	0	
What quantifiable impacts on natural systems do human activities have?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	24	5.79	6.00	2.43	11	5	4	2	1	0	1	0	
What are the linkages between inequality and CHANS processes?	SUSTAINABILITY & DEVELOPMENT	19	5.79	6.00	0.62	3	10	5	1	0	0	0	0	
What are the feedbacks between human decision making and natural system processes?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	23	5.78	6.00	0.91	5	10	7	0	1	0	0	0	
How do we use past systems behavior as a predictor for future systems behaviors?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	22	5.77	6.00	0.76	5	8	8	1	0	0	0	0	
How can natural processes (i.e. ecosystem services) be integrated into human-dominated landscapes?	CONSERVATION & ECOSYSTEM SERVICES	22	5.77	6.00	1.23	6	9	4	2	1	0	0	0	
What attitudes, dispositions, and knowledge are needed to further the transition to a just sustainability?	SUSTAINABILITY & DEVELOPMENT	22	5.77	6.00	1.33	6	8	7	0	0	1	0	0	
How is decision making coupled across scales?	SCALE	26	5.77	6.00	0.82	7	7	11	1	0	0	0	0	
Where do individuals obtain information about the natural environment and their impact on it, and how do they evaluate the reliability of that information?	BEHAVIOR & ECONOMICS	17	5.76	6.00	0.82	4	6	6	1	0	0	0	0	
What are the feedbacks between CHANS?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	5.76	6.00	1.29	7	6	4	4	0	0	0	0	
What factors predispose CHANS to be more or less sustainable, both in absolute and in relative terms?	SUSTAINABILITY & DEVELOPMENT	25	5.76	6.00	1.27	5	14	3	2	0	1	0	0	
How do individual values and governance systems interact to produce outcomes?	GOVERNANCE	16	5.75	6.00	0.73	3	7	5	1	0	0	0	0	
What institutional frameworks best facilitate adaptation to environmental change and resource scarcity?	GOVERNANCE	20	5.75	6.00	1.04	5	7	7	0	1	0	0	0	
How do humans best mitigate climate change?	CLIMATE CHANGE & ENERGY	26	5.73	6.00	1.24	6	11	7	1	0	1	0	0	
How can we enhance ecosystem services while reducing negative anthropogenic effects?	CONSERVATION & ECOSYSTEM SERVICES	22	5.73	6.00	1.06	6	7	6	3	0	0	0	0	
How do CHANS respond to external perturbations?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	18	5.72	6.00	0.45	1	12	4	1	0	0	0	0	
What mechanisms facilitate social learning for sustainability?	EDUCATION & SCIENCE COMMUNICATION	17	5.71	6.00	0.72	3	7	6	1	0	0	0	0	
How does social organization mediate human interaction with the environment, i.e., amplify or attenuate perceptions of risk associated with environmental change?	SOCIETY & CULTURE	17	5.71	6.00	1.10	4	6	6	0	1	0	0	0	

What determines how people in the role of decision-makers value the environment?	BEHAVIOR & ECONOMICS	20	5.70	6.00	1.17	6	5	6	3	0	0	0	0	
How can we change the stovepipe attitudes of academia and its stovepipe training of students?	EDUCATION & SCIENCE COMMUNICATION	20	5.70	6.00	1.48	6	5	8	0	0	1	0	0	
How does the spatial configuration of land use contribute to ecosystem services and sustainability?	LAND USE & AGRICULTURE	23	5.70	6.00	1.13	6	7	8	1	1	0	0	0	
How do human social networks affect the way humans interact with ecological systems?	SOCIETY & CULTURE	23	5.70	6.00	1.58	7	8	4	2	2	0	0	0	
What are the behavioral explanations for why people use resources one way in one place, but a different way in another place?	BEHAVIOR & ECONOMICS	26	5.69	6.00	0.70	4	12	8	2	0	0	0	0	
What are the linkages between globalization processes and CHANS?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	19	5.68	6.00	0.89	4	7	6	2	0	0	0	0	
What are the social and economic challenges to moving forward to a low impact path of development?	SUSTAINABILITY & DEVELOPMENT	19	5.68	6.00	0.89	3	9	6	0	1	0	0	0	
How can researchers improve assessment strategies at appropriate time and space scales?	SCALE	25	5.68	6.00	0.56	3	12	9	1	0	0	0	0	
What steps will result in the incorporation of market externalities without causing large negative impacts on significant segments (e.g. low-income) of society?	BEHAVIOR & ECONOMICS	21	5.67	6.00	0.53	2	11	7	1	0	0	0	0	
What are the interrelated and interacting human institutions that must be created (or altered) to identify and cope with different coupled-system changes?	GOVERNANCE	21	5.67	6.00	0.93	3	11	5	1	1	0	0	0	
Under what conditions do people exhibit a limited or strong ability to respond to the (anticipated or observed) effects of climate change?	CLIMATE CHANGE & ENERGY	24	5.67	6.00	1.01	5	9	8	1	1	0	0	0	
What is the scale at which humans are most capable of sustainable interaction with the natural world?	SCALE	21	5.67	6.00	1.63	5	9	5	0	1	1	0	0	
What are the linkages between human populations and natural systems?	SOCIETY & CULTURE	29	5.66	6.00	1.95	10	8	6	2	2	1	0	0	
How do CHANS dynamics and feedbacks vary across spatial and temporal scales?	SCALE	115	5.65	6.00	1.16	23	47	35	5	3	1	1	0	
How can we learn about ecological boundaries before we cross them, and adjust our human systems to avoid irreparable damage?	ADAPTATION & RESILIENCE	23	5.65	6.00	2.33	9	5	4	4	0	0	1	0	
How can CHANS feedbacks best be managed for both human needs and the environment's good?	GOVERNANCE	20	5.65	6.00	0.66	1	13	5	0	1	0	0	0	

How can uncertainty be more effectively employed in understanding and managing coupled systems?	GOVERNANCE	20	5.65	6.00	1.50	5	8	4	1	2	0	0	0	
What are ecological and socio-political consequences of land cover change?	LAND USE & AGRICULTURE	17	5.65	6.00	1.12	3	8	4	1	1	0	0	0	
What new data sets should we be building to improve our modeling of human-natural system dynamics?	METHODS	17	5.65	6.00	1.49	5	5	4	2	1	0	0	0	
How will human consumption patterns change in the coming decades?	SOCIETY & CULTURE	22	5.64	6.00	1.29	6	6	7	2	1	0	0	0	
How does climate change affect ecosystems and biodiversity?	CLIMATE CHANGE & ENERGY	19	5.63	6.00	1.13	4	8	3	4	0	0	0	0	
What areas of human systems have the greatest potential for mitigation of human impacts on natural systems?	SOCIETY & CULTURE	19	5.63	6.00	1.58	5	6	6	1	0	1	0	0	
What policies improve management of CHANS?	GOVERNANCE	21	5.62	6.00	1.95	7	6	4	1	3	0	0	0	
How do we better understand linkages between systems?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	5.62	6.00	2.15	7	7	2	3	1	1	0	0	
How does culture motivate or demotivate humans in protecting their natural environments?	SOCIETY & CULTURE	26	5.62	6.00	0.81	4	11	8	3	0	0	0	0	
How can issues of accelerating uncertainty for future projections from coupled human and natural systems be modelled?	METHODS	18	5.61	6.00	0.60	2	8	7	1	0	0	0	0	
How do we quantify the spatio-temporal interactions among human and natural systems?	SCALE	18	5.61	6.00	1.19	4	6	6	1	1	0	0	0	
What are the most effective ways to communicate and/or implement interventions in CHANS?	EDUCATION & SCIENCE COMMUNICATION	18	5.61	6.00	1.55	4	8	3	1	2	0	0	0	
How do we rebuild the connection between humanity and the natural environment in order to foster a protective attitude to sustainability?	SUSTAINABILITY & DEVELOPMENT	23	5.61	6.00	1.61	6	9	3	3	2	0	0	0	
What are the tipping points in CHANS due to climate change?	CLIMATE CHANGE & ENERGY	23	5.61	6.00	1.70	6	8	6	1	1	1	0	0	
How can cultures be transformed into more sustainable social systems?	SOCIETY & CULTURE	23	5.61	6.00	1.89	6	8	6	2	0	0	1	0	
How can we design protected areas that are both biologically effective and socially just?	CONSERVATION & ECOSYSTEM SERVICES	20	5.60	6.00	1.20	5	6	5	4	0	0	0	0	
What influences human behavioral change towards natural systems?	BEHAVIOR & ECONOMICS	25	5.60	6.00	1.42	6	8	8	2	0	1	0	0	
What is the relationship between poverty, livelihoods and environmental degradation?	SUSTAINABILITY & DEVELOPMENT	15	5.60	6.00	1.69	3	7	3	1	0	1	0	0	

How do we measure externalities and interactions in coupled human and natural systems?	METHODS	20	5.60	5.50	1.73	7	3	7	1	2	0	0	0
How does climate variability and water resource accessibility affect population growth and distribution?	CLIMATE CHANGE & ENERGY	20	5.60	6.00	2.04	7	5	4	1	3	0	0	0
How do scientists best integrate data, methods, and epistomologies from different discipines to best understand CHANS?	METHODS	19	5.58	6.00	1.37	5	5	6	2	1	0	0	0
How do humans perceive and respond to natural systems?	BEHAVIOR & ECONOMICS	21	5.57	6.00	1.16	4	8	6	2	1	0	0	0
What drives variability in CHANS and how does variabilty govern system behavior?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	5.57	6.00	1.36	4	9	5	1	2	0	0	0
How do certain political and social development decisions impact natural systems?	SUSTAINABILITY & DEVELOPMENT	14	5.57	5.50	1.49	4	3	5	1	1	0	0	0
How do we improve cooperation in the commons?	GOVERNANCE	23	5.57	6.00	1.44	5	8	7	2	0	1	0	0
How do scientists best communicate the complexity of CHANS to resource managers, policy makers, and the public?	EDUCATION & SCIENCE COMMUNICATION	23	5.57	6.00	2.08	7	6	7	1	0	2	0	0
How do we best manage complex, multi-scaled, multi-objective CHANS?	GOVERNANCE	18	5.56	5.50	0.85	3	6	7	2	0	0	0	0
Under what scenarios will drivers of urbanization and land use change promote sustainable city development?	LAND USE & AGRICULTURE	18	5.56	6.00	2.03	5	6	4	1	1	1	0	0
How do we co-produce knowledge between scientists, managers and society?	EDUCATION & SCIENCE COMMUNICATION	20	5.55	6.00	1.21	2	11	5	1	0	1	0	0
How do we convince society of the value of data to support information-driven management?	EDUCATION & SCIENCE COMMUNICATION	22	5.55	5.50	0.74	3	8	9	2	0	0	0	0
What is the plasticity (ease of change) and elasticity of major human drivers of environmental change?	ADAPTATION & RESILIENCE	22	5.55	6.00	0.83	2	11	7	1	1	0	0	0
What types of outreach measures are needed to draw the link between humans and natural systems for non science demographics?	EDUCATION & SCIENCE COMMUNICATION	22	5.55	6.00	1.02	4	8	6	4	0	0	0	0
How can we empower community-based decisions that satisfy as many stakeholders as possible?	SOCIETY & CULTURE	22	5.55	5.50	2.26	8	3	7	3	0	0	1	0
How rapidly can humans adapt to environmental change?	ADAPTATION & RESILIENCE	24	5.54	6.00	1.30	5	9	5	4	1	0	0	0
What are the right policies for achieving optimal scale of economy relative to the natural systems?	GOVERNANCE	17	5.53	6.00	1.14	2	9	3	2	1	0	0	0
What is the role of bottom-up versus top-down policy in the management of these systems?	GOVERNANCE	19	5.53	6.00	1.49	5	5	5	3	1	0	0	0

How do we mobilize individuals for collective action?	BEHAVIOR & ECONOMICS	19	5.53	6.00	1.93	4	9	2	2	1	1	0	0	
How do we break through and begin discussing the role of hard/uncomfortable issues in coupled processes (e.g., privilege, racism, etc.)?	SOCIETY & CULTURE	19	5.53	6.00	2.04	3	10	4	0	1	0	1	0	
Why and how do social inequalities emerge, grow, persist, and diminish, and with what consequences?	SUSTAINABILITY & DEVELOPMENT	21	5.52	6.00	0.56	1	11	7	2	0	0	0	0	
How can we deal with externalities of human acitvities?	BEHAVIOR & ECONOMICS	23	5.52	6.00	1.44	6	6	6	4	1	0	0	0	
How do we transform (or retrofit) existing socio-political systems/institutions that serve as barriers to change?	GOVERNANCE	25	5.52	6.00	2.09	4	15	1	2	2	0	1	0	
How do we use technological advances to manage and mitigate environmental change	GOVERNANCE	24	5.50	6.00	0.96	2	12	8	0	2	0	0	0	
How do land use and land cover change influence household and/or community vulnerability and vice versa, especially in marginal envrionments?	LAND USE & AGRICULTURE	18	5.50	5.50	1.09	3	6	7	1	1	0	0	0	
How and when do humans feel connected to natural systems?	SOCIETY & CULTURE	20	5.50	5.00	1.21	5	3	10	1	1	0	0	0	
Can we better understand and manage the environmental impacts of the resource and waste streams through which people's needs and wants are met?	GOVERNANCE	22	5.50	6.00	1.60	4	10	4	1	3	0	0	0	
How do different types of ownership of resources (public, private, commons) affect the viability of CHANS?	SOCIETY & CULTURE	24	5.50	6.00	1.83	6	8	6	0	4	0	0	0	
How best can various disciplines be integrated for effective research on CHANS?	METHODS	18	5.50	6.00	2.15	5	6	3	2	1	1	0	0	
How do short term actions affect the long term behavior of CHANS?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	23	5.48	6.00	0.53	1	11	9	2	0	0	0	0	
What explains resilience in CHANS?	ADAPTATION & RESILIENCE	23	5.48	6.00	1.26	3	11	5	2	2	0	0	0	
How can we design decision-making structures to bring together groups with disparate objectives?	GOVERNANCE	23	5.48	6.00	1.62	5	7	8	1	1	1	0	0	
How can we use our knowledge of 'natural' systems to understand cities?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	5.48	5.00	0.86	3	7	8	3	0	0	0	0	
How can we quantify and incorporate culturally valued resources in SES?	METHODS	21	5.48	5.00	0.96	3	7	9	1	1	0	0	0	
What is the most effective way to get managers and policy makers involved in coupled systems research?	GOVERNANCE	21	5.48	5.00	1.06	4	5	10	1	1	0	0	0	

How do you best value natural resources especially when there is great uncertainty regarding environmental change?	BEHAVIOR & ECONOMICS	19	5.47	5.00	0.49	1	8	9	1	0	0	0	0	
How can people adapt to changing system behavior while still getting what they need from the system?	ADAPTATION & RESILIENCE	19	5.47	6.00	0.82	2	8	6	3	0	0	0	0	
If both people and the environment should be considered in development, how can we strike the balance?	SUSTAINABILITY & DEVELOPMENT	19	5.47	6.00	2.49	6	6	2	2	2	1	0	0	
How do we move beyond the case study in the governance of CHANS?	GOVERNANCE	26	5.46	6.00	1.38	4	11	7	1	3	0	0	0	
How can we transform the human dimension to be more aware of its integration and dependence on natural systems?	SUSTAINABILITY & DEVELOPMENT	26	5.46	6.00	2.34	7	8	6	3	0	1	1	0	
How do natural resource institutions influence the adaptive capacity of coupled systems?	ADAPTATION & RESILIENCE	22	5.45	6.00	1.21	2	11	6	2	0	1	0	0	
How do we truly incorporate iterative process into our decision making process?	GOVERNANCE	20	5.45	6.00	1.52	4	7	5	2	2	0	0	0	
			5.79											
What is and what explains the variability in coupling between human and natural systems?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	18	5.44	6.00	1.56	3	7	5	2	0	1	0	0	
How can we anticipate system change in a very narrow management time frame?	GOVERNANCE	23	5.43	6.00	0.53	0	13	7	3	0	0	0	0	
How do we scale up smaller-scale analyses of managed processes in the enviroment to reflect policy and governance?	SCALE	23	5.43	5.00	0.62	2	8	11	2	0	0	0	0	
How does scientific information--e.g., predictions, risk assessments, response plans, or scientific study in general--influence people, organizations, and societies in their approach to coupled or potentially coupled human and natural systems?	SOCIETY & CULTURE	23	5.43	6.00	1.17	2	11	7	2	0	1	0	0	
How does human learning at the individual and group level affect the interaction of coupled human and natural systems?	BEHAVIOR & ECONOMICS	23	5.43	6.00	1.53	4	9	5	4	0	1	0	0	
What are the key sets of internal system feedback connections, that are most likely to trigger system change, or be affected by external changes?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	23	5.43	6.00	1.53	3	9	9	1	0	0	1	0	
How can we develop CHANS theory?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	23	5.43	6.00	1.98	5	8	6	2	0	2	0	0	

How can coupled-system complexity be reconciled with societal need for a degree of clarity and predictability, and how does this need vary at different social/ecological scales?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	5.43	6.00	1.16	3	8	6	3	1	0	0	0	
How will the benefits provided by nature and the persistence and distribution of species change in the future?	CONSERVATION & ECOSYSTEM SERVICES	26	5.42	6.00	1.37	3	12	7	2	1	1	0	0	
What are the long and short term socio-economic impacts of contaminated ecosystem mitigation due to Hydraulic fracturing processes?	CLIMATE CHANGE & ENERGY	19	5.42	5.00	1.04	4	3	9	3	0	0	0	0	
How do human interactions with an ecosystem circulate through ecological networks?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	24	5.42	6.00	2.60	7	7	5	1	3	0	1	0	
How can CHANS methods be developed beyond integrative modeling?	METHODS	22	5.41	5.50	0.92	2	9	8	2	1	0	0	0	
What are the mechanisms and circumstances that create the conditions appropriate for successful collective action?	GOVERNANCE	22	5.41	6.00	1.40	3	9	6	3	0	1	0	0	
What essential 'rules' are most important to understand in various complex adaptive systems that are being managed?	ADAPTATION & RESILIENCE	22	5.41	5.00	1.68	4	6	10	1	0	0	1	0	
How can we link landscape ecology and life cycle assessment to promote sustainable landscapes?	LAND USE & AGRICULTURE	22	5.41	6.00	1.78	5	7	4	5	0	1	0	0	
How does upstream degradation affect downriver ecosystem service delivery?	CONSERVATION & ECOSYSTEM SERVICES	20	5.40	5.00	0.88	2	7	9	1	1	0	0	0	
How can we employ an ecosystem services approach to management from the local to global scale?	CONSERVATION & ECOSYSTEM SERVICES	25	5.40	6.00	1.58	4	10	6	3	1	1	0	0	
How are the clear facts of coupled human and natural systems obscured in policy, in management, and in Western cultural orientations?	SOCIETY & CULTURE	15	5.40	6.00	1.83	1	10	1	1	1	1	0	0	
What issues need to be investigated from the prism of CHANS?	METHODS	15	5.40	5.00	1.83	4	3	5	1	2	0	0	0	
How do we improve connectivity of wildlife habitat across a landscape?	CONSERVATION & ECOSYSTEM SERVICES	23	5.39	5.00	0.79	2	8	11	1	1	0	0	0	
Which modeling tools and what scales are suitable for understanding and forecasting land use change in developing regions?	LAND USE & AGRICULTURE	18	5.39	5.50	1.08	2	7	6	2	1	0	0	0	
What has been gained from knowledge of coupled human and natural systems, and what more can be gained?	EDUCATION & SCIENCE COMMUNICATION	24	5.38	6.00	2.07	6	7	5	3	2	1	0	0	

How do we improve primary education on the complexity of CHANS?	EDUCATION & SCIENCE COMMUNICATION	19	5.37	6.00	1.80	4	6	4	4	0	1	0	0	
What are the best methods for the study of CHANS?	METHODS	22	5.36	6.00	1.10	2	10	5	4	1	0	0	0	
What factors positively contribute to reducing the impact of the global market system that erodes resilience of social-ecological systems?	ADAPTATION & RESILIENCE	22	5.36	5.00	1.58	4	6	9	1	1	1	0	0	
How sustainable are our current industrial food systems?	LAND USE & AGRICULTURE	25	5.36	6.00	2.24	5	9	6	3	0	1	1	0	
How do power dynamics and differentials within social systems affect CHANS dynamics?	SOCIETY & CULTURE	14	5.36	5.50	1.02	1	6	5	1	1	0	0	0	
What can we know about the behaviour of systems to new human and physical perturbations?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	17	5.35	5.00	1.24	3	5	4	5	0	0	0	0	
What is the role of technology and human adaptation in managing CHANS systems?	SOCIETY & CULTURE	20	5.35	5.00	0.56	1	7	10	2	0	0	0	0	
What is the role of CHANS researchers in the policy debates that are generated as a function of the community's research?	EDUCATION & SCIENCE COMMUNICATION	20	5.35	6.00	1.71	3	8	5	2	1	1	0	0	
What are the relationships among environment, population dynamics, settlement structure, and human mobility?	SOCIETY & CULTURE	23	5.35	5.00	0.51	1	8	12	2	0	0	0	0	
How much mechanistic knowledge is needed of coupled systems dynamics in order to predict likely responses?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	23	5.35	5.00	2.42	6	5	8	2	0	1	1	0	
How do we find more resources for research and management?	GOVERNANCE	18	5.33	5.00	0.71	1	7	7	3	0	0	0	0	
How can we explore the question of networks between and within CHANS?	METHODS	21	5.33	6.00	1.63	3	8	6	2	1	1	0	0	
How do CHANS evolve?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	5.33	5.00	1.63	4	6	7	1	3	0	0	0	
How can we best model complex, multi-scale, multi-actor CHANS ?	METHODS	25	5.32	6.00	1.31	2	11	8	2	1	1	0	0	
How can income streams be linked to various ecosystem services so that better environmental outcomes can be realized?	CONSERVATION & ECOSYSTEM SERVICES	25	5.32	5.00	1.73	5	6	10	1	2	1	0	0	
Can researchers develop transferable operationalized metrics showing connections between social and ecological systems?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	22	5.32	6.00	1.66	3	9	5	3	1	1	0	0	
How should we evaluate biodiversity for human needs?	CONSERVATION & ECOSYSTEM SERVICES	19	5.32	5.00	0.56	0	9	7	3	0	0	0	0	

How do we ensure regulations are flexible and practical while also ensuring environmental safety?	GOVERNANCE	19	5.32	5.00	1.45	3	6	6	2	2	0	0	0	
What are the perceived and real tradeoffs in valuing specific ecosystem services (for society, environment,...)?	CONSERVATION & ECOSYSTEM SERVICES	19	5.32	6.00	1.56	3	7	4	3	2	0	0	0	
How do we understand context-dependency and place as a driving force?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	19	5.32	5.00	1.89	4	5	6	2	1	1	0	0	
How can management planners use basic science most effectively?	GOVERNANCE	19	5.32	6.00	2.01	2	9	5	1	1	0	1	0	
How will human per capita population growth rates change and what will be the spatial distribution of that change?	SOCIETY & CULTURE	16	5.31	5.00	2.36	5	2	5	2	1	1	0	0	
What are the most effective ways to model human behavior and decision making?	BEHAVIOR & ECONOMICS	16	5.31	6.00	3.43	4	5	5	0	0	0	2	0	
How can we effectively leverage rich place-based studies and "big data" to create more comprehensive knowledge?	METHODS	23	5.30	6.00	3.04	6	7	6	0	1	2	1	0	
Which system elements function as underlying, persisting, slow variables vs. fast variables?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	20	5.30	5.00	0.54	1	6	11	2	0	0	0	0	
How can we accurately measure human response to a CHANS project?	METHODS	21	5.29	5.00	0.81	2	5	12	1	1	0	0	0	
To what extent is our understanding of hierarchies in CHANS an accurate reflection of what is occuring, and what are alternate explanations?	SCALE	21	5.29	6.00	1.21	2	9	4	5	1	0	0	0	
How have human relationships with nature changed over time and how will they change in the future?	SOCIETY & CULTURE	28	5.29	6.00	1.84	5	10	5	5	2	1	0	0	
How do we operationalize a measure of human well-being?	METHODS	21	5.29	5.00	2.41	6	4	6	1	3	1	0	0	
What is the perceived value of the cost or benefit of management of climate change and land use change?	BEHAVIOR & ECONOMICS	25	5.28	5.00	0.46	0	10	12	3	0	0	0	0	
How can scientific results in climate be used to address CHANS research?	CLIMATE CHANGE & ENERGY	18	5.28	5.50	0.80	0	9	6	2	1	0	0	0	
What are the constants in socio-ecological perception and values across race, culture, and economic status?	SOCIETY & CULTURE	22	5.27	5.00	0.78	1	8	10	2	1	0	0	0	
How can connections to nature of a global urbanizing population be strengthened?	SOCIETY & CULTURE	19	5.26	5.00	1.54	3	5	8	0	3	0	0	0	
What is the human influence on the biogeochemical cycling of toxic trace elements within Earth's System?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	23	5.26	6.00	1.11	1	11	6	3	2	0	0	0	

What are the costs and benefits of channeling human and fiscal resources to coupled systems research vs fundamental disciplinary research?	METHODS	23	5.26	5.00	1.66	4	7	6	3	3	0	0	0	
How can human incentives be better aligned with their spatially and temporally removed impacts?	BEHAVIOR & ECONOMICS	20	5.25	5.00	1.14	2	6	9	1	2	0	0	0	
Are existing governance structures, policies and service delivering mechanisms effective in addressing marginal places and persons in urban areas, especially in developing economies?	GOVERNANCE	24	5.25	5.50	1.59	3	9	6	4	1	1	0	0	
How does one promote human awareness of the CHANS basis for human livelihoods?	CONSERVATION & ECOSYSTEM SERVICES	20	5.25	5.50	1.78	3	7	5	3	1	1	0	0	
How do we move from proxy variables and simple models of human behavior toward direct measurement?	BEHAVIOR & ECONOMICS	24	5.25	5.00	2.37	5	6	9	1	1	1	1	0	
How can forest disappearance due to the expansion of industrial agriculture and urbanization be stopped?	LAND USE & AGRICULTURE	25	5.24	6.00	1.77	4	9	4	6	1	1	0	0	
How do we recognize teleconnections and represent them in CHANS models?	METHODS	17	5.24	5.00	1.19	2	5	6	3	1	0	0	0	
How can knowledge of CHANS be co-produced among various stakeholders for learning and action?	SOCIETY & CULTURE	17	5.24	5.00	2.32	5	3	3	3	3	0	0	0	
How can society better control the spread of invasive species that endanger agricultural and native ecosystems?	CONSERVATION & ECOSYSTEM SERVICES	26	5.23	5.50	0.98	0	13	9	1	3	0	0	0	
How can the ever-increasing natural resource needs of communities be balanced with the needs of wildlife?	CONSERVATION & ECOSYSTEM SERVICES	22	5.23	5.50	2.18	4	7	5	4	1	0	1	0	
How do telecouplings shape socioeconomic and environmental sustainability across local to global levels?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	18	5.22	5.00	1.24	2	5	8	1	2	0	0	0	
Do people respond to predictive indicators of environmental stress?	BEHAVIOR & ECONOMICS	25	5.20	5.00	0.58	1	7	13	4	0	0	0	0	
How do we integrate humans into the natural world rather than treat them as 'coupled'?	SOCIETY & CULTURE	20	5.20	5.50	2.48	4	6	5	2	2	0	1	0	
Under what livelihood and environmental conditions do we see an alleviation of poverty?	SUSTAINABILITY & DEVELOPMENT	20	5.20	5.00	2.48	5	4	6	2	1	2	0	0	
Do humans respond similarly to general classes of ecological processes (e.g. linear, non-linear, slow, fast, threshold) despite local context (ecological, political, socio-economic)? Are there general CHANS principles?	BEHAVIOR & ECONOMICS	116	5.19	5.00	1.89	21	32	30	21	6	5	1	0	

How can research inform the urban sustainability community to foster the creation of resilient cities?	EDUCATION & SCIENCE COMMUNICATION	22	5.18	5.50	1.49	1	10	7	1	2	1	0	0	
Are there general CHANS principles that tend to produce similar human adaptation processes for a variety of global change drivers (e.g., climate change, globalization) despite local context?	ADAPTATION & RESILIENCE	17	5.18	5.00	1.65	1	6	8	1	0	0	1	0	
How can the monetary system and the economy be transformed, so that they don't require growth to avoid collapse, and don't continually concentrate wealth and power in few hands?	SUSTAINABILITY & DEVELOPMENT	23	5.17	6.00	3.15	5	8	4	2	2	0	2	0	
How can we rescue natural systems in socially depressed areas of big cities in Latin America as a tool for human development?	SUSTAINABILITY & DEVELOPMENT	20	5.15	5.00	1.19	1	8	6	3	2	0	0	0	
How much has economic valuation of natural resources helped in protecting natural systems from destruction and over-exploitation?	BEHAVIOR & ECONOMICS	21	5.14	5.00	1.93	2	8	7	1	1	2	0	0	
How do different socio-cultural contexts affect CHANS research itself, for example, when CHANS research is applied internationally?	SOCIETY & CULTURE	22	5.14	5.00	2.03	3	6	9	1	2	0	1	0	
How can the existing knowledge of human behavior within multiple social science disciplines serve in answering whether lab or field based models can help us better understand as well as predict how human decisions influence physical systems and vice versa?	METHODS	24	5.13	5.00	1.51	4	5	7	6	2	0	0	0	
What tools can measure various ecological services with economic currencies?	CONSERVATION & ECOSYSTEM SERVICES	25	5.12	5.00	1.44	3	7	8	4	3	0	0	0	
How much of human action, and the ways that humans couple with natural systems, stems from intrinsic (e.g., preferences and values) vs. extrinsic factors?	BEHAVIOR & ECONOMICS	26	5.12	5.50	2.11	2	11	8	1	2	1	1	0	
How do we create a translational research framework for managing human ecosystems?	METHODS	26	5.12	5.00	2.35	5	7	6	4	3	0	1	0	
How has culture been integrated to improve community based natural resource management?	SOCIETY & CULTURE	18	5.11	5.00	1.28	2	3	10	2	0	1	0	0	
How do telecouplings (i.e., socioeconomic and environmental interactions among CHANS over distances) evolve?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	19	5.11	5.00	1.10	1	6	8	2	2	0	0	0	
Is governance up to the task of managing global change?	GOVERNANCE	19	5.11	5.00	2.77	5	3	5	3	2	0	1	0	

How can an environmentally sustainable energy system be constructed within existing institutional frameworks?	CLIMATE CHANGE & ENERGY	20	5.10	5.00	0.62	0	6	11	2	1	0	0	0	
Are their common dynamics and couplings across all CHANS at all scales?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	20	5.10	5.00	2.52	4	5	6	1	2	2	0	0	
What are the economic trade-offs in multiple-use management of natural resourses?	BEHAVIOR & ECONOMICS	21	5.10	5.00	0.59	0	6	12	2	1	0	0	0	
What are the similarities, differences and relationships between physical, biological and sociocultural evolution?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	5.10	5.00	2.09	2	7	8	2	0	1	1	0	
What is the role of ideology in understanding system change?	SOCIETY & CULTURE	22	5.09	5.00	1.42	1	8	9	1	2	1	0	0	
What are the linkages between local-global governance of social-ecological systems?	GOVERNANCE	22	5.09	5.00	2.18	3	7	7	1	2	2	0	0	
What are the tradeoffs between resolution, model fidelity, scale, and tightness of coupling?	METHODS	23	5.09	5.00	1.36	2	6	10	3	1	1	0	0	
What role should citizen stakeholders play in CHANS research?	METHODS	17	5.06	5.00	1.93	2	5	6	1	2	1	0	0	
How do CHANS researchers determine the most appropriate system boundaries for CHANS for effective research and management?	SCALE	19	5.05	5.00	1.39	0	9	6	0	4	0	0	0	
What are the emergent properties in CHANS?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	19	5.05	5.00	1.50	2	4	9	2	1	1	0	0	
How can analysis of currently employed measures of human-environment interactions be effectively used, or improved, to improve observations or change?	METHODS	20	5.05	5.50	1.52	0	10	5	2	2	1	0	0	
What is the extent of the existence of a resources curse in areas with abundant natural resources but high rates of poverty?	SUSTAINABILITY & DEVELOPMENT	21	5.05	5.00	1.35	2	6	6	5	2	0	0	0	
How should we manage the impacts of improved adapative capacity and ecological justice?	GOVERNANCE	22	5.05	6.00	2.52	2	10	4	2	2	1	1	0	
How do we move beyond ecosystem services to re-conceptualize CHANS linkages?	CONSERVATION & ECOSYSTEM SERVICES	22	5.05	5.00	2.90	6	2	8	2	2	1	1	0	
How can we effectively identify both the relevant human and nonhuman actors within systems?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	25	5.04	5.00	2.04	3	8	7	3	2	2	0	0	
Why do people ignore what is in their best interest even when they know that it is in their best interest?	BEHAVIOR & ECONOMICS	21	5.00	5.00	1.30	1	6	9	3	1	1	0	0	
Can researchers Integrate models for a Global System Science that serves to both design and	METHODS	26	5.00	5.00	1.36	2	7	9	6	1	1	0	0	

create technology for biological and socio-technical systems?														
How do we integrate efficient high population density communities within an urban sprawl framework?	LAND USE & AGRICULTURE	20	5.00	5.00	1.37	1	7	6	3	3	0	0	0	
How can we protect the glaciers, highlands and the local population from opencast mining?	CLIMATE CHANGE & ENERGY	24	5.00	5.00	1.57	2	7	8	4	2	1	0	0	
How can we build science/arts conjoined programs in the public school system with limited budgets?	EDUCATION & SCIENCE COMMUNICATION	21	5.00	5.00	1.60	3	4	7	4	3	0	0	0	
How can science (ecology) embrace novel ecosystems?	CONSERVATION & ECOSYSTEM SERVICES	17	5.00	5.00	1.63	1	6	5	3	1	1	0	0	
To what extent should resarch design and management be different to best address CHANS issues?	METHODS	22	4.95	5.00	1.57	2	5	9	3	2	1	0	0	
How should CHANS be situated in an institutional/political context?	GOVERNANCE	19	4.95	5.00	1.16	1	5	7	4	2	0	0	0	
What are the population dynamics in ecosystems that are heavily impacted by humans?	CONSERVATION & ECOSYSTEM SERVICES	19	4.95	5.00	2.39	2	6	6	2	0	3	0	0	
How can trade-offs among ecosystem services be quantitatively assessed to optimize ecosystem functioning and human livelihoods?	CONSERVATION & ECOSYSTEM SERVICES	18	4.94	5.00	2.41	2	6	5	1	2	2	0	0	
What are the socioeconomic effects on local communities of shale gas energy development in interior natural areas?	CLIMATE CHANGE & ENERGY	24	4.92	5.00	1.56	2	6	8	5	2	1	0	0	
What factors enable motivated people to govern social-ecological systems effectively?	GOVERNANCE	22	4.91	5.00	1.52	1	8	5	4	4	0	0	0	
How do we reform global governance (UN work) so that scientists and research carries the day?	GOVERNANCE	22	4.91	5.00	2.37	3	7	4	2	5	1	0	0	
What factors of the human system affect the environmental system?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	20	4.90	6.00	4.52	5	7	1	1	2	2	2	0	
How are sustainability and peace linked? Can conservation and other sustainability efforts, as well as CHANS research help promote peace or conflict resolution?	SUSTAINABILITY & DEVELOPMENT	19	4.89	5.00	2.32	2	4	9	1	1	1	1	0	
Can the public trust doctrine offer a framework for delivering better social and ecological outcomes?	GOVERNANCE	26	4.88	5.00	2.51	3	7	8	4	2	0	2	0	
How do researchers evaluate the data needs of a CHANS approach in inquiry?	METHODS	25	4.88	5.00	2.28	2	9	5	5	2	1	1	0	

Can we generate political ecology/economy methods that incorporate history, assymetrical power, and access?	METHODS	19	4.84	5.00	2.25	3	4	5	1	6	0	0	0	
How can we effectively treat technological-infrastructural systems within a CHANS framework?	METHODS	24	4.83	5.00	1.36	1	6	9	5	2	1	0	0	
How can recent innovations in data science (i.e. storage, access, processing power) be used to understand CHANS?	METHODS	24	4.83	5.00	1.45	1	7	7	6	2	1	0	0	
How do we evaluate models of environmental change in a no-analogue earth system state?	METHODS	21	4.81	5.00	0.76	0	5	8	7	1	0	0	0	
What are the points at which ceding decision making about highly technical matters to a professional elite break down?	GOVERNANCE	26	4.81	5.00	1.92	0	10	8	5	0	2	1	0	
How do we achieve a steady state economy?	SUSTAINABILITY & DEVELOPMENT	20	4.80	5.00	1.96	1	5	8	4	0	1	1	0	
How can we best use incentives to manage CHANS?	BEHAVIOR & ECONOMICS	25	4.80	5.00	2.50	1	10	6	3	3	0	2	0	
What self-organizing and managing parts are necessary in CHANS?	ADAPTATION & RESILIENCE	24	4.79	5.00	1.30	1	6	7	8	1	1	0	0	
What types of education and skills are needed by CHANS scientists?	EDUCATION & SCIENCE COMMUNICATION	19	4.79	5.00	2.51	1	7	5	2	2	1	1	0	
Are CHANS dynamics lawful (i.e. universal)?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	23	4.78	5.00	3.00	3	6	6	4	1	1	2	0	
What is the best way to sample annual systems with long-term studies?	SCALE	18	4.78	5.00	1.12	1	3	7	5	2	0	0	0	
How many syllabi or curricula at the undergraduate level include CHANS?	EDUCATION & SCIENCE COMMUNICATION	18	4.72	5.00	1.15	0	3	11	1	2	1	0	0	
What is the best way to get communities to pay for ecosystem services with little history of doing so and where enforcement is weak?	CONSERVATION & ECOSYSTEM SERVICES	19	4.68	5.00	1.01	0	3	10	4	1	1	0	0	
To what extent might we develop a "global culture" of understanding and managing of CHANS?	EDUCATION & SCIENCE COMMUNICATION	18	4.67	4.00	3.41	5	1	2	6	2	1	1	0	
How can non-traditional ontologies and epistemologies be used to understand and manage CHANS?	GOVERNANCE	20	4.65	4.50	1.92	2	3	5	8	1	0	1	0	
What are the feedbacks among sending, receiving, and spillover systems in the telecoupled world?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	28	4.64	5.00	1.65	2	4	11	6	3	2	0	0	
How do we account for spatial autocorrelation and distance relationships in these systems?	SCALE	22	4.64	5.00	1.58	0	6	9	1	5	1	0	0	

How can we use our knowledge of cities - the ultimate CHANS - to understand and manage other coupled systems?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	19	4.63	5.00	1.25	0	4	8	4	2	1	0	0	
How can we "unresilience" bad system dynamics while enhancing "good" dynamics?	ADAPTATION & RESILIENCE	19	4.63	5.00	1.80	1	4	7	2	4	1	0	0	
How can we deal with issues of discounting?	BEHAVIOR & ECONOMICS	21	4.62	4.00	2.25	3	4	3	4	7	0	0	0	
Is a good life predicated on negative environmental footprints?	SUSTAINABILITY & DEVELOPMENT	18	4.61	5.00	2.13	1	5	5	1	5	1	0	0	
What types of science has a real influence on management?	GOVERNANCE	18	4.61	5.00	4.13	3	5	2	4	1	0	3	0	
How do we effectively link mechanistic and agent-based models in simulating CHANS?	METHODS	21	4.57	5.00	1.26	0	4	9	4	3	1	0	0	
Would the mushrooming of sustainability programs at the graduate level produce the critical mass of people who appreciate coupled human and natural systems?	EDUCATION & SCIENCE COMMUNICATION	22	4.55	5.00	1.59	0	5	8	6	0	3	0	0	
How persistent is youth education (into adulthood) and how effective is 'spillover' to parents?	EDUCATION & SCIENCE COMMUNICATION	24	4.54	5.00	1.30	1	2	11	7	1	2	0	0	
What is the relationship of settlement type to ecosystem type?	SOCIETY & CULTURE	19	4.53	5.00	3.26	2	4	7	0	2	3	1	0	
What are the linkages between evolving concepts of nature and the changing earthscape?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	18	4.50	5.00	2.50	1	2	10	1	2	0	2	0	
What is the degree of the success of urban biodiversity conservation in major cities of the world?	CONSERVATION & ECOSYSTEM SERVICES	22	4.45	4.50	2.16	2	4	5	3	7	1	0	0	
How do the self-organizing processes of CHANS recognize each other?	GENERAL PRINCIPLES & SYSTEM DYNAMICS	21	4.43	5.00	1.86	1	2	9	5	2	1	1	0	
What is the most appropriate scale at which to study CHANS?	SCALE	25	4.36	5.00	2.82	2	5	6	4	5	1	2	0	
Under what sorts of circumstances does land sharing as opposed to land sparing occur?	LAND USE & AGRICULTURE	19	4.26	4.00	1.65	0	3	5	8	1	1	1	0	
Are GMOs safe for the environment and can GMOs be contained to minimize ecological impact?	LAND USE & AGRICULTURE	24	4.17	5.00	2.84	2	2	9	2	5	2	2	0	
What products and outcomes are most useful and relevant in this era of wicked problems and post-normal science?	EDUCATION & SCIENCE COMMUNICATION	19	4.05	4.00	2.27	0	3	5	6	2	1	2	0	
What are the neurological explanations for behavior in CHANS?	BEHAVIOR & ECONOMICS	22	4.00	4.00	2.00	0	4	5	3	8	1	1	0	
Do network-based hydrologic CHANS behave in fundamentally different ways from patchwork-based terrestrial CHANS?	LAND USE & AGRICULTURE	20	3.75	4.00	1.67	0	1	5	7	3	3	1	0	