Knowledge and Competencies Framework for Climate Change Adaptation and Resilience Professionals

DRAFT: FOR ASAP MEMBER REVIEW ONLY. Produced by: ASAP Member Advisory Group on Professional Education. Submit feedback HERE. Questions? Contact Rachel Jacobson at rjacobson@adaptpros.org.

Foundational Knowledge: All climate change adaptation and resilience professionals *must possess knowledge of each* of the following concepts, and must be able to demonstrate that knowledge. One's professional role will dictate *how they must be able to demonstrate* each knowledge concept, such as by explaining the concept or the science behind it, describing solutions or examples, or explaining how the concept is connected to adaptation. One's professional role will also dictate the extent to which they must be able to *put each knowledge concept into practice*, such as by using a specific method to quantify, measure, assess, or visualize something related to the concept or using oral, written, or visual media to tell a story related to the concept.

Climate Variability and Change	Why and how climate variability and change occur
Climate-Related Hazards and Impacts	Why and how climate variability and change create hazards and subsequent impacts
Vulnerability	Why and how individuals and systems are vulnerable to climate impacts and how to decrease vulnerability by increasing adaptive capacity and reducing exposure and sensitivity
Risk	What constitutes risk (ie probability and consequence), how risk is impacted by individual perception and preferences, and methods for measuring risk
Climate Resilience	What constitutes climate resilience and what means are available to improve resilience
Climate Change Mitigation	How to mitigate climate change
Systems Thinking	Why and how to think in systems to address climate change
Justice and Equity	Why and how to achieve justice and equity by addressing climate change
Change Management	Why and how to effectively manage change in individuals, organizations, or systems
Decision Making	Theories and methods for understanding decision making in individuals, organizations and political systems
Communication	The theory and methods of values-based, culturally competent communication

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Core Competencies: All Climate Change Adaptation and Resilience Professionals *must possess each* core competency, along with a set of supporting skills associated with each competency (such as those in the right hand column of the table below). Necessary skills associated with each competency will vary by professional role.

Core Competency	Sample List of Associated Skills
Using best available information	Accessing best available data and information
	Accessing relevant policy information
	Facilitating knowledge co-creation and utilization
	Cultural competence, context assessment and context-based practice
	GHG accounting
	Monitoring and evaluating action
Understanding cross-cutting strategies that contribute to climate adaptation goals	Identifying and using windows of opportunity
	Identifying opportunities for mainstreaming climate adaptation action
Communicating climate adaptation concepts and needed actions	Identifying audiences
	Developing framing
	Using engagement models
Building psychological strength to proactively confront change	Embracing deep uncertainty
	Dealing with loss, profound change, and renewal
	Psychological resilience
Planning for and managing adaptation action	Vision, mission, and value-statement development
	Problem orientation, identification, and framing
	Action/option identification and analysis
	Scenario development, assessment, and planning
	Determining critical thresholds
	Capacity building ($$, tools, resources, technical assistance, partnerships)
	Metrics development
	Monitoring
Promoting inclusive planning and action	Leadership
	Creating functional teams of people
	Understanding, mapping, and building power

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	Building trust, legitimacy, and social capital
	Fostering collaboration
	Cultivating stakeholder support and buy-in
	Facilitating difficult, emotion- and value-laden dialogues
Orienting efforts to achieve transformative change	Framing a new narrative, championing it, and inspiring others with it
	Developing (or enabling) creativity and innovation
	Transferring and scaling lessons learned
	Recognizing and accepting the limits of previously used approaches
	Recognizing the limits of existing systems

Glossary

Adaptive Capacity: The ability of an individual, asset, or system to adjust to a hazard, take advantage of new opportunities, or cope with change.[1]

Best available information: Use of the full range of scientific and cultural tools for gathering and analyzing information, including quantitative and qualitative methods, community knowledge, Traditional Ecological Knowledge, collaboration among disciplines and experts, and the informed co-production of knowledge.[2]

Change Management: the control and coordination of processes with the intention to orchestrate a transition to a preferred outcome for an individual, organization, or system. Transitioning to the preferred outcome may require or result in new system structure or function, new working arrangements, or new ways of operating.[3]

Climate Change: Changes in average weather conditions that persist over multiple decades or longer. Climate change encompasses both increases and decreases in temperature, as well as shifts in precipitation, changing risk of certain types of severe weather events, and changes to other features of the climate system.[4]

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[1] Adapted from U.S. Climate Resilience Toolkit Glossary https://toolkit.climate.gov/content/glossary
[2] Adapted from ASAP Living Guide to the Principles of Climate Change Adaptation
adaptationprofessionals.org/livingguide
[3] Adaptated from http://sociology.iresearchnet.com/sociology-of-organizations/change-management/
[4] USGCRP https://www.globalchange.gov/climate-change/glossary

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Climate Change Adaptation and Resilience Professionals: people who integrate consideration of future climate conditions in their day-to-day work.[5]

Climate Impacts: Effects on natural and human systems that result from hazards.[6]

Climate Change Mitigation: Processes that can reduce the amount and speed of future climate change by reducing emissions of heat-trapping gases or removing them from the atmosphere.[7]

Climate-Related Hazards: A condition or event produced or exacerbated by climate variability or change that may cause harm.[8]

Climate Resilience: The capacity of an individual, group, or system to prevent, withstand, respond to, and recover from a climate-related disruption.[9]

Climate Variability: Natural changes in climate that fall within the observed range of extremes for a particular region, as measured by temperature, precipitation, and frequency of events. Drivers of climate variability include the El Niño Southern Oscillation and other phenomena.[10]

Context Assessment: an exercise in information gathering and analysis intended to improve understanding of a geographic target area and/or field of inquiry within a specific timeframe[11]

Core Competency: The knowledge, skills, abilities, and attitude needed to perform an essential job function.[12]

Critical threshold: The level of magnitude of a system process at which sudden, rapid, or irreversible change occurs.[13]

Cultural competence: The awareness, knowledge, attitude and skills to understand, communicate with and positively interact with people from cultures or belief systems different from one's own.[14]

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[5] ASAP

[6] Adapted from U.S. Climate Resilience Toolkit Glossary https://toolkit.climate.gov/content/glossary

[7] U.S. Climate Resilience Toolkit Glossary https://toolkit.climate.gov/content/glossary

[8] ASAP

[9] Adapted from U.S. Climate Resilience Toolkit Glossary https://toolkit.climate.gov/content/glossary

[10] USGCRP https://www.globalchange.gov/climate-change/glossary

[11] USAID https://www.spring-nutrition.org/sites/default/files/publications/tools/spring_guide_to_context_assessment_tools.pdf

[12] ASAP Professional Education Member Advisory Group

[13] Adapted from http://www.physicalgeography.net/glossary.html

[14] Adapted from American Psychological Association https://www.apa.org/monitor/2015/03/cultural-competence

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Decision Making: The process of purposely choosing one course of action from a set of alternatives to advance personal or organizational goals.

Equity: re-apportioning or redistributing resources so individuals can access opportunities.[15]

Foundational Knowledge: The knowledge required as part of gaining a competency (see "core competency")[16]

Framing: placing, organizing, or structuring information within a field of meaning in order to influence the choices people make about how to process and use that information.[17]

Greenhouse gas accounting: the process of inventorying and auditing greenhouse gas (GHG) emissions. [18]

Justice: Equal access to rights, resources, and opportunities. Achieving justice involves dismantling systems of oppression and privilege that create systemic disadvantages and barriers for certain individuals and groups.[19]

Knowledge co-creation: people from different departments, backgrounds, or disciplines joining efforts to learn something new[20]

Mainstreaming: integrating climate change into existing planning and decision-making processes.[21]

Problem orientation: a strategy for addressing complex, interdisciplinary issues which calls for framing research questions and research processes with the aim of solving specific problems.[22]

Psychological resilience: the ability to cope with a crisis or to return to pre-crisis status quickly. Psychological resilience exists when the person uses mental processes and behaviors in promoting personal assets and protecting self from the potential negative effects of stressors.[23]

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[15] Adapted from the Avarna Group https://theavarnagroup.com/wp-content/uploads/2016/01/Vocab-Sheet-v6.pdf
[16] ASAP
[17] Adapted from Davie https://masscommtheory.com/theory-overviews/framing-theory/
[18] ASAP
[19] Adapted from the Avarna Group https://theavarnagroup.com/wp-content/uploads/2016/01/Vocab-Sheet-v6.pdf
[20] Van Amstel http://fredvanamstel.com/blog/the-co-creation-of-knowledge
[21] ASAP
[22] Adapted from Kueffer et al https://www.ecologyandsociety.org/vol17/iss4/art8/
[23] DeTerte and Stephens and Robertson et al

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Risk: The potential for consequences where something of value is at stake and where the outcome is uncertain. Risk is often evaluated as the probability of a hazard occurring multiplied by the consequence that would result if it did occur.[24]

Scenario development: creation of storylines that explore plausible future states of the world or alternate states of a system.[25]

Skill: An ability or capacity, stemming from knowledge, practice or aptitude, to do something well.

Systems Thinking: A holistic approach to analysis requiring the capacity to solve problems at a complex, systems-level scale, where many interrelated and interdependent parts interact within the whole system. Systems thinking requires the ability to understand system structure, recognize interconnections, identify feedback loops, understand non-linear relationships and adjust to dynamic conditions and behavior.[26]

Transformative change: Irreversible, persistent adjustment in societal values, outlooks and behaviours of sufficient width and depth to alter any preceding situation. A structural change that alters the interplay of institutional, cultural, technological, economic and ecological dimensions of a given system.[27]

Vulnerability: The propensity or predisposition of individuals, assets, or systems to be adversely affected by hazards. Vulnerability encompasses exposure, sensitivity, potential impacts, and adaptive capacity.[28]

Windows of opportunity: the use of climate-related shocks to trigger latent adaptive capacities which lead to systemic improvement.[29]

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[24] Adapted from IPCC https://www.ipcc.ch/site/assets/uploads/2019/01/SYRAR5-Glossary_en.pdf
[25] UN Environment Program
https://www.unep-wcmc.org/system/comfy/cms/files/files/000/000/803/original/Scenario_Development_2016_WEB.pdf
[26] Adapted from Arnold and Wade https://www.sciencedirect.com/science/article/pii/S1877050915002860
[27] UN Environment Program
https://www.climateactiontransparency.org/wp-content/uploads/2018/05/ICAT-TC-Ch-3-What-is-transformational-change.pdf
[28] U.S. Climate Resilience Toolkit https://toolkit.climate.gov/content/glossary
[29] Adapted from McSweeney and Coomes https://www.pnas.org/content/108/13/5203

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Source Material Synthesized for Framework Development

Robin Leichenko, Rutgers University: Climate Change Adaptation & Vulnerability
Kauneckis Syllabus
Rising to the Challenge, Together
ASAP Living Guide to the Principles of Climate Change Adaptation
Key competencies in sustainability: a reference framework for academic program development (Wiek et al)
Skyline College Course Outline -- Climate Resilience Community-Based Application
ACCO Suite of Certified Climate Change® Credentials
Climate Change Response Framework
Adaptation Planning and Practices training
"What you need to know" online climate education series
EcoAdapt Ladder of Engagement
Climate Ready Communities; Geos Institute
The Steps to Resilience

ASAP Member Advisory Group on Professional Education Knowledge and Competencies Framework Subgroup Members

- Josh Foster, ASAP Board of Directors
- Ned Gardiner, NOAA Climate Program Office
- Rachel Jacobson, ASAP Staff Liaison
- Derek Kauneckis, Voinovich School of Leadership and Public Affairs, Ohio University
- Chris Swanston, USFS Northern Institute of Applied Climate Science

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