

CCEL-Community Resilience Framework:

A Tool for Assessing the Impact of CCEL's Programing on Community Resilience

August 10, 2018

Prepared by

Amber Heckelman, MA, MS
UBC Sustainability Scholar, 2018

Prepared with

UBC Centre for Community Engaged Learning

Table of contents

TABLE OF CONTENTS	2
ACKNOWLEDGMENTS	3
INTRODUCTION	4
METHODS	5
UNDERSTANDING COMMUNITY RESILIENCE	5
Key Concepts	5
Key Considerations	6
Features of Community Resilience	8
APPLYING THE COMMUNITY RESILIENCE FRAMEWORK	9
Identify partnerships with stakeholders	9
Qualify and quantify indicators	10
Other uses & Recommendations	13
CONCLUSION	14
REFERENCES	14
APPENDICES	17
Appendix 1: CCEL Community Resilience Framework	17

Resilience is the capacity of individuals, communities, institutions, businesses, and systems to survive, adapt and grow no matter what kinds of chronic stresses and acute shocks they experience.

(100 Resilient Cities Program, n.d.)

Building resilience is a transformative process of strengthening the capacity of women and men, communities, institutions, and countries to anticipate, prevent, recover, adapt and/or transform from shocks, stresses, and change.

(UNDP, 2013)

A resilient community is one whose members are connected to one another and work together in ways that enable it to function in the face of stress and trauma.

(Price-Robertson & Knight, 2012)

Acknowledgments

This project was the outcome of a partnership between the Centre for Community Engaged Learning (CCEL) and the Sustainability Scholar Program at the University of British Columbia. Major acknowledgements go out to Naomi Schatz, Jill Porter, Yusuf Alam, and Susan Grossman for their support and feedback provided throughout this project. Special thank you to all of the CCEL staff for sharing your insights and for creating a welcoming and positive work environment. Finally, much gratitude to Karen Taylor for her guidance and to all the past, current, and future sustainability scholars for striving to make an impact.

Introduction

The Centre for Community Engaged Learning works collaboratively on complex community-based issues, supports lasting relationships between the University of British Columbia and the Greater Vancouver community, and enables students to apply their academic knowledge to real-world issues. Such engagements likely augment community resilience (see **Box 1**). However, until now, exploring and articulating the Centre's impact on community resilience had not been done.

This report shares the outcome of a UBC Sustainability Scholars Project. The purpose of the project was to develop a community resilience framework (CRF) and explore the ways in which the Centre contributes to the various processes, experiences, and outcomes linked to community resilience. The CRF is intended to serve as an assessment tool that can be utilized to facilitate reflexivity and collaboration that will enable the Centre to orient its programming toward building community resilience.

Within the last decade, there has been an accumulation of resilience assessment tools developed by government agencies, academia, NGOs, communities, and the private sector (see City of Montreal, 2018; State of Victoria, 2015; Pfefferbaum et al., 2014; Resilience Alliance, 2010; IFRC, 2014). "These tools vary in range and purpose—top-down to bottom-up, qualitative to quantitative, hazard specific to hazard-neutral, local to global, and pre- to post-event" (Committee on Measures of Community Resilience, 2015: 3). This project sifts through this literature to navigate and identify the right tool or combination of tools that are relevant to the Centre and the Greater Vancouver region.

The remainder of the report is organized into four sections. First, the methods used to carry out this project are described in brief. Second, the fundamentals of community resilience are laid out in terms of key concepts, considerations, and features emphasized in the literature. Third, instructions and recommendations on using the CRF are discussed. Finally, a summary of the project and its intended contributions are provided at the end.

Box 1: Intended programming outcomes

Students gain a deeper understanding of academic content, communities, and develop critical thinking and professional skills.

Faculty learn how to foster reciprocal and active learning, and gain first-hand knowledge of and cultivate relationships with communities.

Partners gain additional human resources and the opportunity to co-educate youth, increase public awareness of key issues, and correct misconceptions.

Communities contain citizens that are informed, educated, resilient, and committed to creating meaningful

Methods

The methods used to carry out this project include a review of resources and literature on community resilience. Academic (peer-review) and grey literature were used to draw out key messages and consistencies across the literature, and ultimately determine defining features of community resilience.

Resources and literature on community engaged learning were also reviewed, including the Centre’s website and several internal documents; the latter of which was used to gather details on current CCEL programming, in terms of partnerships forged, activities carried out, and intended outcomes.

Conceptually, a *socioecological systems approach* and *theory of change* was used to synthesize the information gathered (see **Box 2**). Connections were drawn between features of community resilience and CCEL programming in order to customize the CRF for the Centre.

Understanding Community Resilience

The concept of community resilience is used regularly in both political and public discourse (Price-R & Knight, 2012). However, the accumulation of different definitions (Brose, 2015) and the challenge of operationalizing those definitions often creates a barrier for service providers and practitioners to take action (Price-R & Knight, 2012). This project provides CCEL with some guidance on how to overcome this barrier and align its programming with a suite of processes and outcomes significant to building resilience; beginning with fostering a working understanding of community resilience and the fundamentals of resilience building.

Key Concepts

Community can be defined in many ways and individuals may belong to multiple communities simultaneously (IFRC, 2014). Community can refer to a group living in a bound geographical area, share certain characteristics (e.g., cultural history, religious belief), and/or come together through shared interests or concerns (Maguire & Cartwright, 2008; IFRC, 2014). “The word

Box 2: Conceptual framework

A **socioecological systems approach** takes a cross-disciplinary approach to “build a more comprehensive perspective on human–environment relations” (Fabinyi et al., 2014: 6); as well as considers “matters of social differentiation, equity, and power” (Miller et al., 2010: 16).

According to The Centre for Theory of Change (2017), **theory of change** is a comprehensive description and map of how a ‘desired change’ can be achieved. It links goals to conditions, activities, and interventions necessary to achieve sought after outcomes.

Resilience starts within community, and the lived experience of our residents is among our greatest assets in shaping this strategy.

(City of Vancouver, 2017)

community can even be used to describe a feeling of connection, reciprocity and positive interaction” (Price-Robertson & Knight, 2012: 3).

Community resilience is the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise (Magis, 2010). A *resilient community*, therefore, takes intentional action to enhance the personal and collective capacity of its citizens and institutions to respond to and influence the course of social and economic change (Canadian Centre for Community Renewal, 2000). *Community capacity* refers to the interaction of human capital, organizational resources, and social capital existing/available to a given community that can be leveraged to solve collective problems and improve or maintain the well-being of a given community (Chaskin et al, 2001).

Key Considerations

Community resilience is an ongoing process rather than a static state. Hence, interventions should be oriented toward building versus achieving resilience as a fixed goal (Lerch, 2017). Researchers have identified people, systems thinking, adaptability, transformability, sustainability, and courage as fundamental to enhancing community capacities for resilience building (Lerch, 2017).

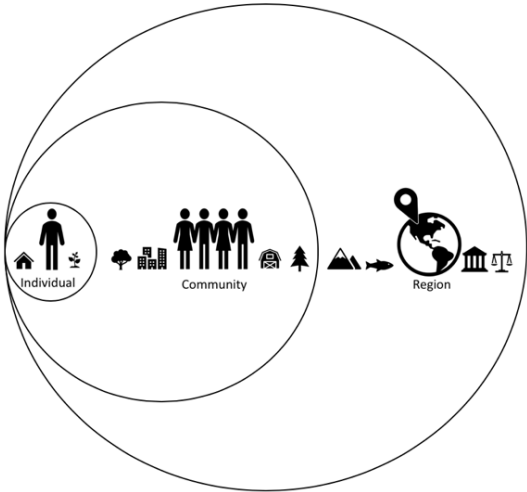
Community resilience is also multi-scalar and interdependent (see **Figure 1**); involving multiple stakeholders and requiring integrative and collaborative approaches to interventions (Gunderson & Holling, 2002).

Our communities are thoroughly integrated subsystems of a single global social-ecological system.

They are connected to or influenced by external factors like regional water supplies, national energy policy, and global climate change. Our communities are also complex systems in their own right, with innumerable components constantly changing and interacting with one another, the larger whole, and outside systems. Local economic activity, relationships among different social groups, and local cultural patterns all influence the community from the inside out.

The challenges we face are complex, so we cannot approach them as if they were linear problems. Systems thinking helps us understand the complex [sic] crises as well as how our complex societies and communities work.

(Lerch, 2017)

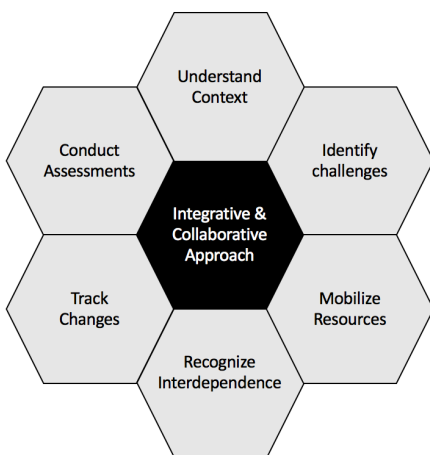


How we do this work is just as important as which initiatives we undertake

(State of Victoria, 2015)

Figure 1: Multi-scalar and interdependent

A significant consistency throughout the community resilience literature is this emphasis on *integrative and collaborative approaches* to resilience building (Agrawal & Gibson, 1999; Gunderson & Holling, 2002; Folke, 2006; Magis, 2010; Berkes & Ross, 2012; Constan & Barret, 2013; Ross & Berkes, 2014). Researchers and practitioners argue that building community resilience requires working *with* stakeholders to understand context, identify challenges, mobilize resources, recognize interdependencies, track changes, and conduct assessments (see **Figure 2**). These recommendations provide guiding principles for CCEL to consider when designing or orienting programming to augment resilience building capacities.



Use an integrative and collaborative approach to:	
Understand context	Identify community objectives, shared norms, interests, priorities
Identify challenges	Locate existing challenges, constraints, and adverse social and environmental conditions
Mobilize resources	Build on individual and community strengths to augment features of community resilience
Recognize interdependence	Provide support at multiple levels/scales and recognize coevolution of social and natural systems
Track changes	Monitor stresses, shocks, instability within community, and track impacts and changes over time
Conduct assessments	Carryout participatory assessments on an on-going basis in order to foster reflexive social learning

Figure 2: Guiding principles for building resilience

Features of Community Resilience

Due to resilience being heavily context dependent it is difficult to develop a universal model or framework for community resilience. Hence researchers have argued that it is useful to consider factors or characteristics that are generally agreed upon to be features of resilience when building a framework. These features should include physical, procedural, and social characteristics (McAslan 2011, see **Box 3**).

20 features of community resilience, that are also relevant to CCEL programming, have been identified. The 20 identified features can be categorized into four domains: *social capital*, *environment*, *health and well-being*, and *economic security* (see **Table 2**). A fifth domain is added to explicitly account for the role of *partnerships*, as interactions at multiple levels and between stakeholders within a community – such as cooperation and advocacy of community with local government (Frankenberger, 2013); and strengthening capacities of individuals, communities, institutions, businesses, and systems (UNDP, 2013; State of Victoria, 2015) – are significant to resilience building.

Table 2: Features of community resilience organized by domain

Domains	Features
SOCIAL CAPITAL <i>Build capacities to withstand and overcome adversity through continual learning and collaboration.</i>	Personal Development
	Social Learning
	Reflexive Learning
	Self-organizing
	Agency
ENVIRONMENT <i>Maintain healthy ecosystems, promote sustainability, and ensure that infrastructure is well-maintained and accessible.</i>	Recognizes co-evolution of social and natural systems
	Accessible Infrastructure
	Disaster Prepared
	Exhibits renewal
	Contains redundancies
HEALTH & WELL-BEING <i>Overcome adverse effects of shocks and stressors by ensuring access to support services and promoting inclusion.</i>	Copes with stress
	Promotes wellness
	Well supported
	Sense of belonging
	Food security/sovereignty
ECONOMIC SECURITY <i>Support diverse economies, equity, and equality as</i>	Assets
	Financial Resources
	Equity/Equality

Box 3: Characteristics to consider

Physical characteristics of the community (e.g. local infrastructure, local emergency and health services)

Procedural characteristics of the community (e.g. disaster policies and plans, local knowledge)

Social Characteristics of the community (e.g. community cohesion, community leaders)

Talking seriously about the community's future also means talking about the community's past, including how its current trajectory came to be. This discussion can lead to uncomfortable but important conversations about present and past injustices and how power is wielded in the community. Although they can be awkward, such conversations open the door to deliberation about how power can be more equitably shared in the community. In fact, if such discussions about community resilience-building efforts are not challenging, they are probably not going deep enough.

(Lerch, 2017)

<i>mechanisms for improving living standards and reducing vulnerabilities.</i>	Autonomy
	Fosters worth
PARTNERSHIPS <i>Build partnerships across communities, sectors, and scales to foster interaction, communication, connection, and cooperation between diverse stakeholders.</i>	Researchers, Academics & Think Tanks
	Community Organizations
	Businesses
	Philanthropic Foundations
	Service Providers
	Governments

Applying the community resilience framework

Three components and corresponding indicators were identified for each of the 20 features of resilience listed in the top four domains; the fifth domain contains 17 Indicators, for a total of 77 indicators (see **Appendix 1**). These 77 indicators provide the Centre with the means for determining the impact and contribution of CCEL programming on features of community resilience.

Before using the CRF, the scope (i.e. project or programing) and timeframe (i.e. annual or quintennial) should be determined. Additionally, it is important to keep in mind that although the indicators are oriented toward collecting relevant data on CCEL programming, the framework itself is comprehensive, going beyond the engagements of current CCEL programming. For indicators that are ‘not applicable’, for instance, will identify features of community resilience that either the specific programming or the Centre does not contribute to. In this way, such areas can also serve as potential areas for future programming development.

Identify partnerships with stakeholders

To use the CRF to assess CCEL programming, begin with identifying and quantifying *partnerships* with stakeholders. Responses should guide the Centre in articulating the ways in which CCEL programming builds partnerships across communities, sectors, and scales to foster interaction, communication, connection, and cooperation between diverse stakeholders.

Resilience building cannot turn a blind eye to the political and economic processes that determine what gets done, how it gets done, who decides, and who benefits. People of all interests and means must be able to participate in and benefit from resilience building; indeed, if they are to build true resilience, communities must embrace dissent and diversity.

(Lerch, 2017)

Partnerships

Stakeholders	Indicators
Researchers, Academics & Think Tanks	# of faculty # of students # of departments/faculties # of academic institutions
Community Organizations	# of partners # of organization types (i.e. purpose)
Businesses	# of partners # of business types (i.e. sectors)
Philanthropic Foundations	# of partners # of grants awarded # of types of projects funded
Service Providers	# of partners # of service types (i.e. food assistance)
Governments	# of partners # of partners in local government # of partners in provincial government # of partners in federal government

Qualify and quantify indicators

Next, qualify and quantify the remaining indicators. Responses to indicators for *social capital* should articulate the ways in which CCEL programming helps build community capacities to withstand and overcome adversity through continual learning and collaboration.

Social Capital

Features	Components	Indicators
Personal Development	Leadership opportunities Improve/expand knowledge Exhibits courage	# of leadership opportunities # of knowledge and skill building opportunities Facilitates difficult conversations with opposing views; provides spaces for individuals to speak out (Y/N)
Social Learning	Social networks Coordinating social interactions Evidence informed research and decision making	# of social networking activities (i.e. opportunities that connect members of one community or group to another) # of opportunities for sharing knowledge and experience # of instances where research findings were shared and informed community decisions
Reflexive Learning	Monitoring change/record keeping Engaged in participatory research Feedback and improvement of interventions	# of assessments conducted # of participatory research projects # of times assessments led to improvements in programming
Self-organizing	Collective action Garnering external resources Senses emerging risks	# of collective action opportunities Types and quantity of resources mobilized (i.e. financial, human resources, expert/specialist knowledge) Actively identifies risks, challenges, needs (Y/N)
Agency	Leadership Community-based planning Influence social change	# of persons leading community-based programs/projects # of community-based programs/projects # of projects oriented toward citizen action/engagement, policy making, etc.

Responses to indicators for the *environment* should communicate how CCEL programming contributes to maintaining healthy ecosystems, promotes sustainability, and ensures that infrastructure is well-maintained and accessible.

Environment

Features	Components	Indicators
Recognizes co-evolution of social and natural systems	People-Place Relationships Sustainability oriented Accounts for community's past and current trajectory	Emphasis on the coupling, interdependence, and coevolution of social and natural systems; and seeks to build on strengths (Y/N) (e.g. landscape management that promotes biodiversity, farming practices that utilize locally available resources responsibly) # of sustainability focused projects Accounts for community's past and current trajectory (Y/N)
Accessible Infrastructure	Safe spaces Transportation Information & Communication	# of projects that create/maintain safe spaces for community (both social and natural) Helps ensure access, maintenance, and/or improvement of transportation services (Y/N) Helps ensure access to information and communication services, including language translation (Y/N)
Disaster Prepared	Exposure to change; understands thresholds Ability to absorb change Ability to respond/recover from change	Accounts for change cycles across space and time scales (Y/N) Helps ensure the reliability of infrastructure and services (Y/N) Provides disaster response and recovery services (Y/N)
Exhibits renewal	Enhances biodiversity Improves landscape/watershed health Mitigates environmental degradation	# of project focused on enhancing biodiversity # of projects engaged in restoring landscape/watershed health (e.g. soil quality, water quality, etc.) # of projects aimed at reducing environmental degradation (e.g. waste reduction, resource conservation, renewable energy, etc.)
Contains redundancies	Multiple sources for energy Multiple sources for water Multiple support services	Supports the provision of multiple energy sources (Y/N) Supports the provision of multiple water sources (Y/N) Supports the provision of multiple support services (e.g. food banks, housing, counseling services, etc.) (Y/N)

Responses to indicators for *health and well-being* should highlight the ways in which CCEL programming supports mechanisms for overcoming adverse effects of shocks and stressors by ensuring access to support services and promoting inclusion.

Health & Well-being

Features	Components	Indicators
Copes with stress	Understand stress and supporting roles of government, community, family Assist people suffering from displacement Inter-generational interaction/reduced isolation	# of people reached through education and awareness # of projects providing housing/shelter # of projects facilitating inter-generational interaction

Promotes wellness	Understand initial conditions and wellbeing dynamics	# of people reached through education and awareness
	Address special needs of individuals and groups	Recognizes special needs of individuals and groups (e.g. minority status, health issues, mobility, and socioeconomic status) (Y/N)
	Regularly refine community's identity	Encourages community to regularly revisit and refine what the community's identity is (Y/N)
Well supported	Access to support services	# of projects supporting/providing support services
	Raise awareness of at-risk individuals	Identifies at-risk individuals (Y/N)
	Sense of fairness and shared effort	Promotes fairness and sharing within community; btw stakeholders (Y/N)
Sense of belonging	Inclusion/reduced marginalization	Celebrates diversity and privileges voices from traditionally disempowered or dissenting groups (Y/N)
	Intercultural, inter- and intra-religious engagement and understanding	Facilitates exchange between communities; emphasis on shared values (Y/N)
	Connection and caring	Fosters support, hope, and nurturance (Y/N)
Food security/sovereignty	Access to food/reduced hunger	# of projects providing food access (i.e. food procurement)
	Diverse/nutritious diet	# of projects aimed at reducing malnutrition (i.e. community health and nutrition programs)
	Cultural preferences met	Considers food preferences, allergies, etc. (Y/N)

Responses to indicators for *economic security* should demonstrate how CCEL programming participates in efforts to support diverse economies, equity, and equality as mechanisms for improving living standards and reducing vulnerabilities.

Economic Security

Features	Components	Indicators
Assets	Housing	# of projects aimed at improving temporary/permanent housing availability, affordability, etc.
	Community Resources	# projects oriented toward building/maintaining community resources (i.e. community gardens, recreation centers, etc.)
	Social cohesion and trust	Exhibits openness and transparency; in alignment with shared values (Y/N)
Financial Resources	Livelihood	# of projects aimed at growing/improving livelihood assets (i.e. income, livestock, crops, land access)
	Financial support services	Types of financial/funding services provided (i.e. grants, scholarships, etc.)
	Savings	Helps individuals to accumulate savings (Y/N)
Equity/Equality	Reduction in poverty	# of projects aimed at improving quality of life
	Equal opportunity	# of projects that address pathways/barriers to opportunity
	Shared responsibility; reciprocity	Engages multiple stakeholders in problem solving (Y/N)
Autonomy	Influence social and economic change	# of participants that identify as change agents

	Career advancement Flexibility	# of projects that provide pathways for career advancement (Y/N) Increases livelihood options (Y/N)
Fosters worth	Meaningful life; satisfaction Happiness Fosters positive outlook	# of reflections that express fulfillment and purpose # of reflections that share moments of happiness, laughter, and generosity # of reflections that express positive outlook, future expectations

Other uses & Recommendations

In addition to communicating the Centre’s role in augmenting community resilience capacities, the CRF can be used to determine what features/components of community resilience CCEL programming *does not* engage with; thereby identifying areas that can be targeted for the development of interventions.

The CRF can also be used as a tool to guide discussions on how CCEL programming can better align with efforts to build resilience in the Greater Vancouver region. To this end, the CRF could be used to collect insights and feedback from community partners on their visions of the Centre’s role in enhancing community resilience. It can also be used to inform decisions made by the CCEL Advisory Committee, should the Centre choose to prioritize strategies for building resilience capacities.

Moving Forward

Additional efforts should be made to engage community partners in: 1) finalizing and/or refining the CRF; 2) identifying which components should be prioritized; and 3) developing a scoring system. To the first point, collaboration is critical to resilience building, hence collecting and incorporating feedback from community partners is key. Second, due to community resilience being highly contextual, the needs and prioritizes of communities need to be defined by the communities themselves. One way of collecting this information is to have community partners identify and rank 5 features that align with their priorities. Finally, due to not containing a scoring system, the current version of the CRF should be treated as a preliminary assessment tool. A scoring system could be added which would enable the Centre to evaluate CCEL programming overtime. A scoring system should be developed collaboratively

While important, frameworks and tools designed to understand and assess community resilience are not enough on their own. Rather, they comprise part of a suite of strategies and techniques that can be utilised by those working to support children, families and communities.

(Price-R & Knight, 2012)

with community partners. For example, based on input provided by community partners, a Likert scale (1-5) can be applied to each indicator (see **Table 2**).

Table 2: Example of scoring indicators

Feature	Component	Indicator	Score
Self-organizing	Collective action	# of collective action opportunities	0=0, 1-9=2, 10-19=4, 20+=5
	Garnering external resources	Types and quantity of resources mobilized (i.e. financial, human resources, expert/specialist knowledge)	If 0 types, then 0; if ≤ 2, then 3; if ≥ 3, then 5.
	Senses emerging risks	Actively identifies risks, challenges, needs (Y/N)	No=0; Yes=5

Average score for **Self-organizing**: 0-5

Conclusion

The purpose of this framework is to provide the Centre a tool for articulating the ways in which its programming builds capacities for enhancing community resilience. Measurable indicators allow for a preliminary assessment of CCEL programming, as well as the identification of key leverage points and interventions that should be included in programming.

In order to build and expand the framework into an evaluation tool, a scoring system will need to be collaboratively developed with community partners. Recommendations for developing a scoring system are discussed in the above.

References

100 Resilient Cities (n.d.). What is Urban Resilience. Retrieved from <https://www.100resilientcities.org/resources/#section-2>

Agrawal, A., and C. C. Gibson (1999). Enchantment and disenchantment: The role of community in natural resource conservation. *World Dev.* 27:629–649.

Armitage, D., F. Berkes, A. Dale, E. Kocho-Schellenberg, and E. Patton (2011). Co-management and the co-production of knowledge: Learning to adapt in Canada’s Arctic. *Global Environ. Change* 21:995–1004.

Barrett, C. B., & Constanas, M. A. (2014). Toward a theory of resilience for international development applications. *Proceedings of the National Academy of Sciences*, 111(40), 14625–14630. <http://doi.org/10.1073/pnas.1320880111>

Berkes, F., & Ross, H. (2013). Community Resilience: Toward an Integrated Approach. *Society & Natural Resources*, 26(1), 5–20. <http://doi.org/10.1080/08941920.2012.736605>

Buikstra, E., H. Ross, C. A. King, P. G. Baker, D. Hegney, K. McLachlan, and C. Rogers-Clark (2010). The components of resilience: Perceptions of an Australian rural community. *J. Commun. Psychol.* 38:975–991.

Canadian Centre for Community Renewal (2000). *The community resilience manual. A resource for rural recovery and renewal.* Port Alberni, Canada: Centre for Community Enterprise.
http://communityrenewal.ca/sites/all/files/resource/P200_0.pdf

Center for Theory of Change (2017). What is Theory of Change? Retrieved from:
<http://www.theoryofchange.org/what-is-theory-of-change/>

Chapin, F. S. III, G. P. Kofinas, and C. Folke, eds. (2009). *Principles of ecosystem stewardship: Resilience-based resource management in a changing world.* New York, NY: Springer-Verlag.

Chaskin, R. J. (2008). Resilience, community, and resilient communities: Conditioning contexts and collective action. *Child Care Pract.* 14:65–74.

City of Montreal (2018). *Montreal's Resilient City Strategy.* 100 Resilient Cities. Retrieved from
<http://100resilientcities.org/strategies/montreal/>

City of Vancouver (2017). *Sharing Our Stories: Building Community Resilience in Vancouver* [Press Release]. Retrieved from <https://www.sfu.ca/publicsquare/past-events/2017/sharing-our-stories.html>

Committee on Measures of Community Resilience: From Lessons Learned to Lessons Applied, Resilient America Roundtable, Policy and Global Affairs, National Research Council. (2015). *Developing a Framework for Measuring Community Resilience: Summary of a Workshop.* <http://doi.org/10.17226/20672>

Fabinyi, M., Evans, L., & Foale, S. J. (2014). Social-ecological systems, social diversity, and power: insights from anthropology and political ecology. *Ecology and Society*, 19(4), art28. <http://doi.org/10.5751/ES-07029-190428>

Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological systems analyses. *Global Environ. Change* 16:253–267.

Frankenberger, T., Mueller M., Spangler T., and Alexander S. (2013). *Community Resilience: Conceptual Framework and Measurement Feed the Future Learning Agenda.* Rockville, MD: Westat.

Gunderson, L. H., and C. S. Holling, eds. 2002. *Panarchy. Understanding transformations in human and natural systems.* Washington, DC: Island Press.

International Federation of Red Cross (2014). *IFRC Framework for Community Resilience.* International Federation of Red Cross and Red Crescent Societies.

Kulig, J. C., D. Hegney, and D. S. Edge (2010). Community resiliency and rural nursing: Canadian and Australian perspectives. In *Rural nursing: Concepts, theory and practice*, 3rd ed., ed. C. A. Winters and H. J. Lee, 385–400. New York, NY: Springer.

Lerch, D. (2017). *The Community Resilience Reader.* Island Press.

Magis, K. (2010). Community Resilience: An Indicator of Social Sustainability. *Society & Natural Resources*, 23(5), 401–416. <http://doi.org/10.1080/08941920903305674>

Maguire, B., & Cartwright, S. (2008). Assessing a community's capacity to manage change: A resilience approach to social assessment. Canberra: Bureau of Rural Sciences.

McAslan, A. (2011). Community resilience: Understanding the concept and its application. Adelaide: Torrens Resilience Institute.

Miller, F., Osbahr, H., Boyd, E., Thomalla, F., Bharawani, S., Ziervogel, G., ... & Hinkel, J. (2010). Resilience and vulnerability: complementary or conflicting concepts?. *Ecology and Society*, 15(3).

Norris, F. H., S. P. Stevens, B. Pfefferbaum, K. F. Wyche, and R. L. Pfefferbaum (2008). Community resilience as a metaphor, theory, set of capabilities, and strategy for disaster readiness. *Am. J. Commun. Psychol.* 41:127–150.

Pfefferbaum, R. L., Pfefferbaum, B., Nitiéma, P., Houston, J. B., & Van Horn, R. L. (2014). Assessing Community Resilience. *American Behavioral Scientist*, 59(2), 181–199. <http://doi.org/10.1177/0002764214550295>

Price-Robertson, R., & Knight, K. (2012). Natural disasters and community resilience: A framework for support. Commonwealth of Australia.

Resilience Alliance (2010). Assessing Resilience in Social-Ecological Systems: Workbook for Practitioners, version 2.0. <https://www.resalliance.org/practice>

Ross, H., & Berkes, F. (2014). Research Approaches for Understanding, Enhancing, and Monitoring Community Resilience. *Society & Natural Resources*, 27(8), 787–804. <http://doi.org/10.1080/08941920.2014.905668>

Scheffer, M. (2009). Critical transitions in nature and society. Princeton, NJ: Princeton University Press.

Sonnentag, S. (2015). Dynamics of Well-Being. *Annual Review of Organizational Psychology and Organizational Behavior*, 2(1), 261–293. <http://doi.org/10.1146/annurev-orgpsych-032414-111347>

State of Victoria (2015). Strategic Framework to Strengthen Victoria's Social Cohesion and the Resilience of Its Communities. The Victorian Government.

Walker, B., Sayer, J., Andrew, N. L., & Campbell, B. (2010). Should enhanced resilience be an objective of natural resource management research for developing countries? *Crop Science*, 50, 10.

Appendices

Appendix 1: CCEL Community Resilience Framework

Domain	Features	Components	Indicators
SOCIAL CAPITAL <i>Build capacities to withstand and overcome adversity through continual learning and collaboration.</i> Sources: Magis 2010; Armitage et al., 2011; Luthar and Cicchetti 2000; Almedom et al., 2007; Fawcett et al., 1995; Canadian Centre for Community Renewal, 2000; Resilience Alliance; Ross & Berkes, 2014; Sendzunur et al., 2011; Walker et al, 2010; Ross et al., 2010; Kulig et al., 2010; Pfefferbaum et al., 2015; Price-Robertson & Knight, 2012; Lerch, 2017	Personal Development	Leadership opportunities Improve/expand knowledge Exhibits courage	# of leadership opportunities # of knowledge and skill building opportunities Facilitates difficult conversations with opposing views; provides spaces for individuals to speak out (Y/N)
	Social Learning	Social networks Coordinating social interactions Evidence informed research and decision making	# of social networking activities (i.e. opportunities that connect members of one community or group to another) # of opportunities for sharing knowledge and experience # of instances where research findings were shared and informed community decisions
	Reflexive Learning	Monitoring change/record keeping Engaged in participatory research Feedback and improvement of interventions	# of assessments conducted # of participatory research projects # of times assessments led to improvements in programming
	Self-organizing	Collective action Garnering external resources Senses emerging risks	# of collective action opportunities Types and quantity of resources mobilized (i.e. financial, human resources, expert/specialist knowledge) Actively identifies risks, challenges, needs (Y/N)
	Agency	Leadership Community-based planning Influence social change	# of persons leading community-based programs/projects # of community-based programs/projects # of projects oriented toward citizen action/engagement, policy making, etc.
ENVIRONMENT <i>Maintain healthy ecosystems, promote sustainability, and ensure that infrastructure is well-maintained and accessible.</i>	Recognizes co-evolution of social and natural systems	People-Place Relationships Sustainability oriented Accounts for community's past and current trajectory	Emphasis on the coupling, interdependence, and coevolution of social and natural systems; and seeks to build on strengths (Y/N) (e.g. landscape management that promotes biodiversity, farming practices that utilize locally available resources responsibly) # of sustainability focused projects Accounts for community's past and current trajectory (Y/N)
	Accessible Infrastructure	Safe spaces Transportation Information & Communication	# of projects that create/maintain safe spaces for community (both social and natural) Helps ensure access, maintenance, and/or improvement of transportation services (Y/N) Helps ensure access to information and communication services, including language translation (Y/N)

Sources: Ross & Berkes, 2014; Folke, 2006; Scheffer, 2009; Maguire & Cartwright, 2008; Cutter et al., 2008; Kulig et al., 2010; Ross et al., 2010; Buikstra et al., 2010; Price-Robertson & Knight, 2012; Lerch, 2017; Magis, 2010; Pfefferbaum et al., 2015; Committee on Measures of Community Resilience, 2015	Disaster Prepared	Exposure to change; understands thresholds Ability to absorb change Ability to respond/recover from change	Accounts for change cycles across space and time scales (Y/N) Helps ensure the reliability of infrastructure and services (Y/N) Provides disaster response and recovery services (Y/N)
	Exhibits renewal	Enhances biodiversity Improves landscape/watershed health Mitigates environmental degradation	# of project focused on enhancing biodiversity # of projects engaged in restoring landscape/watershed health (e.g. soil quality, water quality, etc.) # of projects aimed at reducing environmental degradation (e.g. waste reduction, resource conservation, renewable energy, etc.)
	Contains redundancies	Multiple sources for energy Multiple sources for water Multiple support services	Supports the provision of multiple energy sources (Y/N) Supports the provision of multiple water sources (Y/N) Supports the provision of multiple support services (e.g. food banks, housing, counseling services, etc.) (Y/N)

HEALTH & WELL-BEING <i>Overcome adverse effects of shocks and stressors by ensuring access to support services and promoting inclusion.</i> Sources: Constat & Barret, 2013; State of Victoria, 2015; Price-Robertson & Knight, 2012; Almedom, 2004; Barrett & Carter, 2012; Norris et al., 2008; UNDP, 2013; IFRC, 214; Lerch, 2017; Sonnentag, 2015; Kulig et al., 2010; Buikstra et al., 2010; Ross et al., 2010; Pfefferbaum et al., 2015; NRC, 2012	Copes with stress	Understand stress and supporting roles of government, community, family Assist people suffering from displacement Inter-generational interaction/reduced isolation	# of people reached through education and awareness # of projects providing housing/shelter # of projects facilitating inter-generational interaction
	Promotes wellness	Understand initial conditions and wellbeing dynamics Address special needs of individuals and groups Regularly refine community's identity	# of people reached through education and awareness Recognizes special needs of individuals and groups (e.g. minority status, health issues, mobility, and socioeconomic status) (Y/N) Encourages community to regularly revisit and refine what the community's identity is (Y/N)
	Well supported	Access to support services Raise awareness of at-risk individuals Sense of fairness and shared effort	# of projects supporting/providing support services Identifies at-risk individuals (Y/N) Promotes fairness and sharing within community; btw stakeholders (Y/N)
	Sense of belonging	Inclusion/reduced marginalization Intercultural, inter-religious and intra religious engagement and understanding Connection and caring	Celebrates diversity and privileges voices from traditionally disempowered or dissenting groups (Y/N) Facilitates exchange between communities; emphasis on shared values (Y/N) Fosters support, hope, and nurturance (Y/N)
	Food security/sovereignty	Access to food/reduced hunger Diverse/nutritious diet Cultural preferences met	# of projects providing food access (i.e. food procurement) # of projects aimed at reducing malnutrition (i.e. community health and nutrition programs) Considers food preferences, allergies, etc. (Y/N)

ECONOMIC SECURITY <i>Support diverse economies, equity, and equality as mechanisms for improving living standards and reducing vulnerabilities.</i> Sources: Canadian Centre for Community Renewal, 2000; Kretzmann & McKnight, 1993; State of Victoria, 2015; Frankenberger et al., 2012; Ross et al., 2010; Magis, 2010; UNDP, 2013; IFRC, 2014; Lerch 2017; Sonnentag, 2015; Committee on Measures of Community Resilience, 2015; Marschke & Berkes, 2006; Kulig et al., 2010; Norris et al., 2008; Pfefferbaum et al., 2015; NRC 2012	Assets	Housing Community Resources Social cohesion and trust	# of projects aimed at improving temporary/permanent housing availability, affordability, etc. # projects oriented toward building/maintaining community resources (i.e. community gardens, recreation centers, etc.) Exhibits openness and transparency; in alignment with shared values (Y/N)
	Financial Resources	Livelihood Financial support services Savings	# of projects aimed at growing/improving livelihood assets (i.e. income, livestock, crops, land access) Types of financial/funding services provided (i.e. grants, scholarships, etc.) Helps individuals to accumulate savings (Y/N)
	Equity/Equality	Reduction in poverty Equal opportunity Shared responsibility; reciprocity	# of projects aimed at improving quality of life # of projects that address pathways/barriers to opportunity Engages multiple stakeholders in problem solving (Y/N)
	Autonomy	Influence social and economic change Career advancement Flexibility	# of participants that identify as change agents # of projects that provide pathways for career advancement (Y/N) Increases livelihood options (Y/N)
	Fosters worth	Meaningful life; satisfaction Happiness Fosters positive outlook	# of reflections that express fulfillment and purpose # of reflections that share moments of happiness, laughter, and generosity # of reflections that express positive outlook, future expectations

PARTNERSHIPS <i>Build partnerships across communities, sectors, and scales to foster interaction, communication, connection, and cooperation between diverse stakeholders.</i> Sources: Agrawal & Gibson, 1999; Pfefferbaum et al., 2015; Gunderson & Holling, 2002; Frankenberger, 2013; UNDP, 2013; State of Victoria, 2015; Price-Robertson & Knight, 2012; Chapin et al, 2009; and Committee on Measures of Community Resilience, 2015	Researchers, Academics & Think Tanks	NA	# of faculty # of students # of departments/faculties # of academic institutions
	Community Organizations	NA	# of partners # of organization types (i.e. purpose)
	Businesses	NA	# of partners # of business types (i.e. sectors)
	Philanthropic Foundations	NA	# of partners # of grants awarded # of types of projects funded
	Service Providers	NA	# of partners # of service types (i.e. food assistance)
	Governments	NA	# of partners # of partners in local government # of partners in provincial government # of partners in federal government