



Preparing People on the West Coast for Climate Change

Recommendations for Making Psychological & Psycho-Social-Spiritual Resilience Education and Skills Training for Climate Adversities Universal in California and the Pacific Northwest by 2025

January 8, 2019



About The International Transformational Resilience Coalition (ITRC)

The International Transformational Resilience Coalition (ITRC) is a network of over 350 mental health, trauma treatment, social service, climate and environmental, disaster management, social justice, education, and faith leaders working to build widespread levels of psychological and psycho-social-spiritual resilience for the adversities generated by climate change. A 22-person National Steering Committee oversees the ITRC's activities.¹ The development of this report was overseen by local ITRC steering committees in California and the Pacific Northwest. (Note: the views and opinions expressed in this report are those of the authors and do not necessarily reflect the official policy or position of any agency or organization represented on the ITRC steering committees).

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Preparing People on the West Coast for Climate Change

Recommendations for Making Psychological & Psycho-Social-Spiritual Resilience Education and Skills Training for Climate Adversities Universal in California and the Pacific Northwest by 2025

Overview

From wildfires that destroy entire communities, to extreme storms, heat waves, droughts, and more, the impacts of climate change are already evident across the west coast. The 2018 Special Report by the Intergovernmental Panel on Climate Change and Fourth National Climate Assessment make clear that, even with large reductions in greenhouse gas emissions, these and other climate change-related disasters and toxic stresses will accelerate for decades. It is essential to prepare people for these adversities now by making preventative psychological and psycho-social-spiritual--or what we call transformational--resilience education and skills training universal across the west coast by 2025.

This report offers recommendations for expanding existing and launching new programs that help build human resilience so that within a few short years every adult and child residing in California, Oregon, Washington, Idaho, Montana, and Alaska has the opportunity to learn preventative transformational resilience information and skills. It is the outcome of an exploratory research project completed by the International Transformational Resilience Coalition (ITRC) in the summer of 2018 that inventoried and analyzed the human resilience building initiatives already underway in the west coast, how they could be expanded, and how new ones could be launched. Transformational resilience is a framework for building human resilience, not a specific model. The two key elements include helping people learn age, culturally, and demographically appropriate: a) Presencing--also called self-regulation--skills that enable them to calm their mind, body, and emotions when distressed; and b) Purposing--also called adversity-based growth--skills that enable them to use climate, and other adversities, as transformational catalysts to learn, grow, and find new positive sources of meaning, direction, and hope in their lives.

It has long been assumed that psychological and psycho-social-spiritual maladies could be treated, but not prevented. Research shows this is incorrect. Transformational resilience information and skills can be learned across the lifespan. With climate change generated adversities certain to become more frequent and extreme, just as everyone in our society learns to read and write, transformational resilience education and skills training for adults and youth must become universal. This will enable millions of people think and act in healthy ways even in the unhealthy conditions generated by climate change. It will also help individuals and groups learn how to find meaning, direction, and hope in the midst of accelerating climate adversities. To achieve this goal, this report calls for new local, state, and federal policies to authorize, fund, and expand the human resilience initiatives already underway on the west coast, and launch new ones in K-12 and after-school youth programs, higher education, professional development and workplace-training programs, non-profit and civic education, mental health and social service, climate and environmental, faith and numerous other venues.

The ITRC believes that to reduce the climate crisis to manageable levels, building widespread capacity for transformational resilience must become an equal priority with greenhouse gas reductions and external physical adaptations across the west coast. Because the skills involved with transformational resilience were not developed specifically for climate change, building widespread capacity will also help prevent harmful human reactions to many other types of human-caused traumas such as community violence, and non-climate related natural disasters such as earthquakes.

Preparing People on the West Coast for Climate Change

Executive Summary

From wildfires that destroy entire communities, to extreme storms, heat waves, droughts, and more, the impacts of climate change are already visible along the west coast. The 2018 Special Report by the Intergovernmental Panel on Climate Change and Fourth National Climate Assessment make clear that, even with rapid major reductions in greenhouse gas emissions, these and other climate change-related disasters and toxic stresses will accelerate for decades to come. It is essential to prepare people for these adversities by making preventative psychological and psycho-social-spiritual--or what we call transformational--resilience education and skills-training universal by 2025.

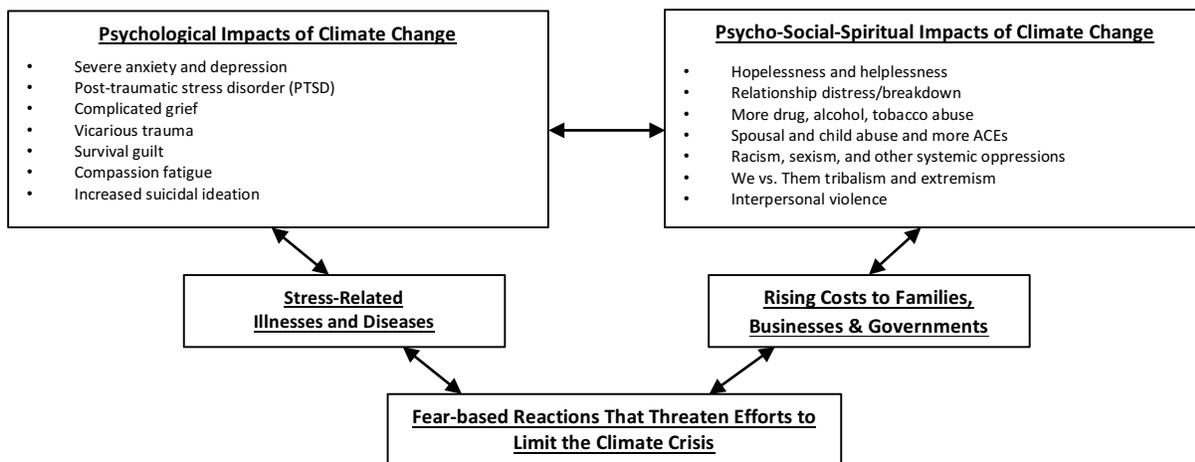
To achieve the goal of rapidly building widespread capacity for transformational resilience, this report offers four major recommendations, each of which includes a number of specific actions. The recommendations resulted from an exploratory research project completed by the International Transformational Resilience Coalition (ITRC) in 2018 that analyzed human resilience building initiatives underway in California, Oregon, Washington, Idaho, Montana, and Alaska.

The Urgent Need to Build Widespread Capacity for Psychological and Psycho-Social-Spiritual Resilience

Trauma and toxic stress are epidemic today. The more frequent and extreme wildfires, droughts, heatwaves, storms, floods, and other disasters associated with rising temperatures are aggravating many of these traumas, and creating countless new psychological difficulties as well. Equally impactful, climate change is generating a rapidly expanding collection of persistent overwhelming (toxic) stresses such as anxieties about the health impacts of wildfire smoke, fears over the injury or loss of loved ones, distress about our children's future, and more. The result is growing harmful psychological and psycho-social-spiritual maladies.

Left unaddressed, as climate change worsens, the detrimental psychological and psycho-social-spiritual reactions will grow far more severe, significantly increase costs, and threaten the safety, health, and wellbeing of children, families, organizations, and communities everywhere.

Further, because traumatized and stressed people often withdraw into a self-protective survival mode, left unaddressed, the harmful human psychological and psycho-social-spiritual reactions to climate impacts also threaten to stall or derail efforts to reduce the climate crisis to manageable levels.



In short, the climate crisis is producing adverse psychological and psycho-social-spiritual harms that activate a vicious cycle that makes it even more difficult to address the climate emergency.

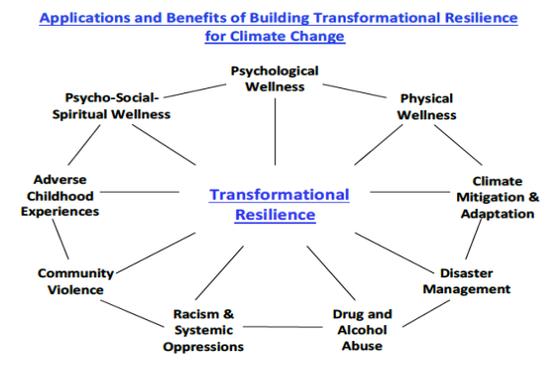
Building Capacity for Transformational Resilience Can Prevent these Impacts and Improve Conditions

It has long been assumed that these types of impacts can be treated, but not prevented. Research shows this is wrong. By launching initiatives to build widespread capacity for transformational resilience in all west coast states, the harmful human reactions to climate change can be prevented, and the climate crisis can become a powerful catalyst for learning, growth, and positive change.

Transformational resilience is a prevention framework, not a specific method for building resilience. It involves teaching all adults and youth simple age, culturally, and demographically appropriate "Presencing"--or self-regulation--skills that enable them to calm their mind, body, and emotions when distressed so they can think and act in healthy ways even in unhealthy conditions. It also involves helping people learn simple "Purposing"--or adversity-based growth--skills that enable them to use climate (and other) adversities as catalysts to find new sources of meaning, direction, and hope in life. Transformational Resilience can alter hearts, minds, spirits, and lives.

Few professionals in the climate, mental health, physical health, child and family welfare, disaster management, physical resilience, social justice, faith, or other fields seem to grasp the profoundly dangerous implications of leaving the adverse psychological and psycho-social-spiritual impacts of climate change unaddressed. They also fail to understand that building human resilience is not a sign of surrender, nor is it merely about helping people cope with or bounce back from climate adversities. Giving every adult and child the opportunity to learn transformational resilience information and skills can actually help them increase their sense of wellbeing above pre-impact conditions, while motivating them to engage in activities that assist other people or the natural environment.

Further, few professionals in these fields seem to realize that building widespread capacity for Transformational Resilience will complement their work and make it more likely they can achieve their goals. Indeed, enhancing the capacity for Transformational Resilience is a cross-cutting issue that will generate benefits well-beyond preventing adverse human reactions to climate impacts.



Research Findings

Our analysis of west coast human resilience building initiatives found many well-established programs, with more in development. They range from programs working to prevent adverse childhood adversities (ACEs), to those responding to low school graduation rates, and some focused on reducing community violence. Most of the existing human resilience building programs are located in urban areas and target specific populations, such as children and parents, and/or focus on certain types of traumas, such as ACEs. Most teach a limited set of resilience skills focused on addressing specific problems.

We also found, however, that few resilience programs exist for adults without children, populations with special needs, lower economic individuals, or rural communities. In addition, we found few programs focused on a broad set of resilience skills that can help people respond constructively to a wide range of adversities. And, we found few programs that explicitly include social equity or ecological sustainability in their goals, methods, or outcomes.

As a result of our research, we estimate that, at best, 5 percent of west coast residents are currently engage in some type of initiative that helps build their capacity for resilience to adversities.

At the same time, our research found significant interest in expanding efforts to build human resilience. We believe that it is essential to enact policies that authorize, support, and fund these programs so that by 2025 every adult and youth residing in the west coast learns transformational resilience information & skills. This will provide a vital--yet currently missing--third element of responses to the climate crisis that complements and enhances efforts to reduce emissions and adapt external physical systems. Building widespread capacity for transformational resilience will also help people respond constructively to many non climate-related traumas and toxic stresses present in society today.

Below is a summary of the recommendations for achieving that goal.

Summary of Recommendations for Making Transformational Resilience Education and Skills Training Universal

I. Enact Policies with the Goal that by 2025 Every Adult and Youth Residing in West Coast States Has the Opportunity to Learn Transformational Resilience Skills

- a. Enact local, state, and federal policies that authorize and support public, non-profit, civic, and private transformational resilience education and training programs.
- b. Establish local, state & federal funding streams to support programs to build transformational resilience.

II. Strengthen and Expand Existing Transformational Resilience Building Initiatives

- a. Institute online and in-person mechanisms to increasing communication, collaboration, and coordination among resilience, mental health, public health, climate change, and other programs already in operation.
- b. Provide secure sources of funding to support and help expand existing programs.

III. Establish New Transformational Resilience Initiatives Throughout the West Coast

- a. Institute public education initiatives in each state to inform non-profit, private and public sector leaders about the urgent need and many benefits of building transformational resilience.
- b. Develop cross-sector networks of climate, mental health, physical health, education, disaster management, social justice, faith, business, and other professionals to help them understand how building widespread capacity for transformational resilience will increase their capacity to achieve their goals.
- c. Organize transformational resilience "Coordinating Councils" in each community composed of local leaders representing a diverse range of organizations and constituencies who collaborate to support and help expand existing programs and launch new grass-roots initiatives to build human resilience.
- d. Establish human resilience building programs with the specific goals of meeting the needs of lower income individuals, populations with special situations or needs, and rural communities.
- e. Employ Transformational Resilience Officers (TROs) in every state and large city with the mission of supporting and expanding initiatives to build psychological and psycho-social-spiritual resilience who coordinate their efforts with the Chief Resilience Officers that already exist in some communities and states focused on building external physical resilience.

IV. Build Professional Capacity Within Existing and New Transformational Resilience Initiatives:

- a. Ensure that all human resilience initiatives are constructed with a social justice and equity lens.
- b. Ensure that all human resilience initiatives include an explicit focus on how engaging in actions that assist other people or help heal the planet can increase personal and social wellbeing.
- c. Provide resources and technical assistance so that all human resilience programs continually measure, evaluate, and improve their effectiveness.

Preparing People on the West Coast for Climate Change

Recommendations for Making Psychological & Psycho-Social-Spiritual Resilience Education and Skills Training for Climate Adversities Universal in California and the Pacific Northwest by 2025

I. The Urgent Need to Prepare People for Climate Impacts by Building Transformational Resilience

In October 2018 the Intergovernmental Panel on Climate Change (IPCC) warned that society has less than 12 years to prevent uncontrollable climate change, which will generate unending disasters and toxic stresses for humanity.² The Fourth National Climate Assessment released in November of 2018 reinforced the IPCC's warning, and described many of the impacts warming temperatures are already having in the U.S., including the adverse effects on mental health.³ Even if society successfully prevents temperatures from rising above the 2.7 degrees Fahrenheit threshold that activates runaway climate disruption, we can expect more frequent and extreme disasters and persistent overwhelming (toxic) toxic stresses to accelerate for decades to come.

The adversities generated by rising temperatures are already aggravating many of the traumatic stressors experienced by millions of people, such as poverty, financial struggles, economic inequality, racism, sexism and other forms of systemic oppression, fear of violence, and much more. As climate change worsens, the accelerating impacts will add many new and surprising stressors as well.

<u>Climate Change Generated More Frequent and Extreme Disasters</u>
<ul style="list-style-type: none">• Hurricanes and windstorms• Rain events• Snowstorms• Wildfires and wildfire smoke emergencies• Heat waves• Droughts• Air quality emergencies• Major mud and debris slides• River flooding• Sea level rise and coastal flooding• Larger storm surges and coastal damage• Ocean acidification• Many other unexpected disasters

Research has found that the psychological impacts of climate adversities can include, but are not limited to, severe anxiety, depression, PTSD, complicated grief, vicarious trauma, increased suicidal ideation, compassion fatigue, and more.⁴ For example, 20 percent of east coast residents impacted by Superstorm Sandy reported PTSD, 33 percent reported depression, and 46 percent reported anxiety.⁵ In the UK after the 2007 summer floods, 75 percent of the people directly impacted experienced severe anxiety, 50 percent reported depression, and about 25 percent suffered from PTSD.⁶ Similar impacts have been found within people impacted by wildfires, prolonged droughts,

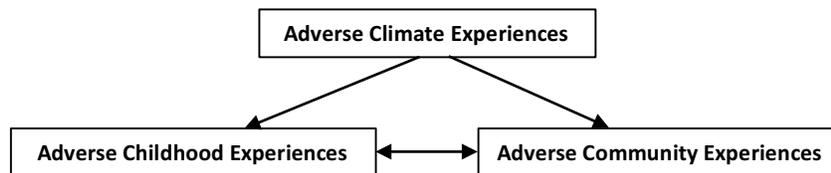
heatwaves, and other disasters.⁷ The American Psychological Association said in 2017 that hopelessness and helplessness are growing due to the “unrelenting day-by-day despair” of directly experiencing, seeing, or worrying about climate change.⁸

<u>Climate Change Generated Toxic Stresses Caused by Experiencing, Seeing, or Worrying About...</u>
<ul style="list-style-type: none">• Our future and our children's future• Loss of place, community, culture, and natural environment• Disruption of close family and friend social support networks• Involuntary migration due to loss of residence• Water, food, and other resource shortages• Economic disruptions and job losses• New illnesses and diseases• Disaster-triggered crime or violence• Intensified racism, sexism, and other systemic oppressions• Many other unexpected chronic toxic stresses

Psycho-social-spiritual maladies, which address the interplay between individual psychological and social wellbeing, including hopelessness and helplessness, drug and alcohol abuse, child and spousal abuse, interpersonal aggression, crime and violence, will also accelerate due to warming temperatures.⁹ Research has found, for instance, that the same factors and conditions that affect mental health are also strongly linked to violence.¹⁰ Hotter temperatures alone tend to increase assaults, robberies, burglaries, larceny, and vehicle theft.¹¹ The Canadian Red Cross found that the risk of violence can increase by up to 300 percent after a disaster depending on which protective factors are undermined.¹²

Added to these difficulties is that, as the damages caused by rising temperatures accelerate, many people will increasingly struggle to heal their own personal, family, or community trauma while also struggling to heal the planet's climate and ecological systems that make life possible.

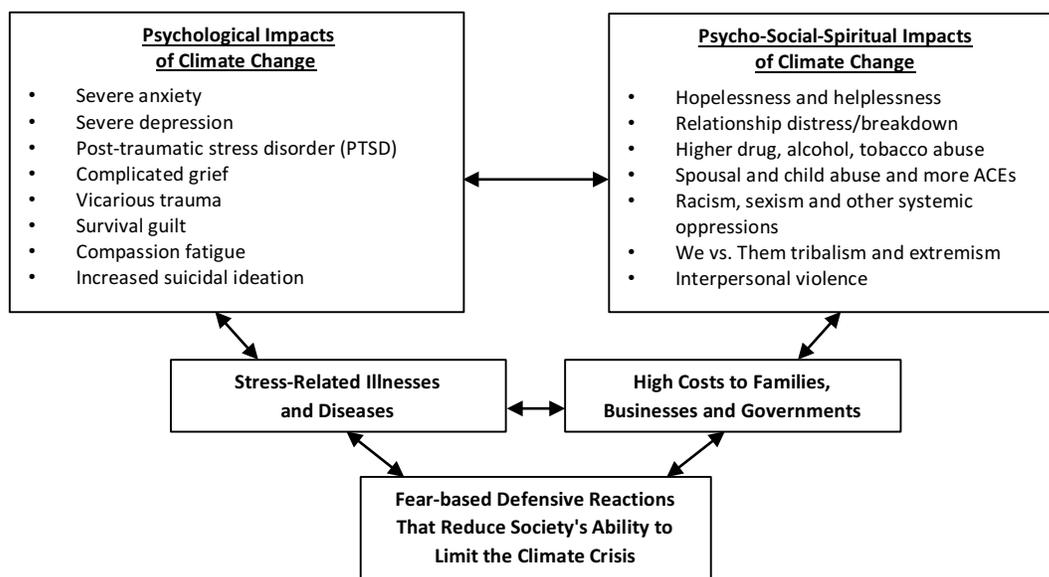
One way to think about the interacting harmful personal and social impacts of climate change is that "ACEs generate more ACEs, which produce even more ACEs": Adverse Climate Experiences (ACEs) harm individuals, families, and communities, while multiplying both Adverse Childhood Experiences (ACEs) including child abuse and neglect and family dysfunction, and Adverse Community Experiences (ACEs) such as discrimination, institutional racism, structural oppression, and community violence.¹³



However, the harmful psychological and psycho-social-spiritual impacts of climate change go beyond this by negatively affecting physical health. Research has found that persistent stress can aggravate or increase the risks of heart disease, diabetes, gastrointestinal problems, Alzheimer's disease, some cancers, asthma, accelerated aging, premature deaths, and other illnesses and diseases.¹⁴

In addition, the adverse human reactions to climate impacts will significantly increase economic costs. For instance, workers traumatized by climate disasters will experience declining income if they are less productive when they return to work. Businesses with traumatized employees will often see reduced output and profits. Families will incur added costs from health care or counseling services. Many children living with traumatized parents or other caregivers will experience one or more Adverse Childhood Experiences (ACEs), which can affect their mental and physical health, employability, and earnings throughout their lifetime. Communities affected by collective traumas will see an erosion of the social capital, including the trust and cooperation that are essential for effective governance.¹⁵

Further, left unaddressed, because fearful people tend to retreat into a self-protective survival mode that leaves them uninterested in external issues like reducing greenhouse gasses, the harmful human psychological and psycho-social-spiritual reactions to climate impacts are likely to trigger a vicious cycle that threatens to stall or derail efforts to reduce the climate crisis to manageable levels.



II. The Climate Crisis Also Offers the Possibility of Profound Transformation and Positive Change

It has long been assumed that psychological and psycho-social-spiritual traumas can be treated, but not prevented. Ample research, however, indicates this is incorrect. Resilience skills can be learned throughout the lifespan, and people with enhanced resilience skills have much greater capacity to respond to adversities without harming themselves, others, or the natural environment. Good resilience skills also enable people to find new sources of meaning, direction, and hope in life in ways that often move them to assist others and/or help heal the planet as a way to help themselves.¹⁶

This underscores that, just as everyone in our society learns to read and write, preventative transformational resilience education and skills training should, by 2025, become universal in all west coast states (and elsewhere in the U.S. and globally). Transformational resilience is a prevention framework, not a specific resilience building model. It involves two types of skills. These include:

Presencing Skills (also called Self-Regulation)

Presencing skills help people calm their body, mind, and emotions when distressed. We call them Presencing skills because they help people focus on what is occurring within and around them in the present moment rather than allowing their mind to continually ruminate about events in the past or future, which is often what keeps people dysregulated. Age, demographically, and culturally appropriate Presencing skills help people notice, correct, and prevent harmful reactions by their nervous system to adversities that can lead then to harm themselves, others, or the natural environment. As previously stated, Presencing skills can also be learned and strengthened throughout the lifespan, from childhood through senior years. These qualities make them the foundation for thinking and acting in healthy ways even in the unhealthy conditions produced by rising global temperatures.

The box below summarizes the suite of Presencing (self-regulation) skills we searched for in our research of west coast human resilience programs.

- | <u>Presencing (Self-Regulation) Skills</u> |
|---|
| <ul style="list-style-type: none">• Basic information about the neurobiology of trauma and toxic stress: how fear activates biophysical reactions that can affect the mind, body, emotions, and behaviors.• Simple body, breath, or thought-based skills to regulate the nervous system and calm mind and body when distressed.• Methods and tools to build and maintain relationships with family and friends who can offer emotional support and practical assistance in the midst of distress when needed.• Practical skills to become aware of thought patterns that aggravate distress such as catastrophizing, blaming, or overgeneralizing in the midst of adversity. |

Research has found multiple benefits from Presencing skills. For example, they help people inhibit harmful impulses and behaviors, see their surroundings and themselves more clearly, and make wiser and more skillful decisions, all of which increases their capacity to respond to adversities in constructive ways.

Purposing Skills (also called Adversity-Based or Post-Traumatic Growth)

Presencing skills are necessary, but not sufficient, to prevent harmful psychological and psycho-social-spiritual reactions to climate impacts. That's because the ability to regulate the nervous system and calm the mind, body, and emotions does not guarantee that people will live a principled, vital, or

meaningful life in the midst of rising climate adversities. To respond constructively to the ongoing psychological and psycho-social-spiritual impacts of climate change people will also need what we call Purposing skills. They help people develop some type of meaning from their experience and gain useful lessons about life as a way to find hope in what otherwise seems like a dire situation. Purposing skills build on Nietzsche's observation that, "People who have a why to live can withstand nearly any how."

The box below summarizes the suite of Purposing skills we searched for in our research:

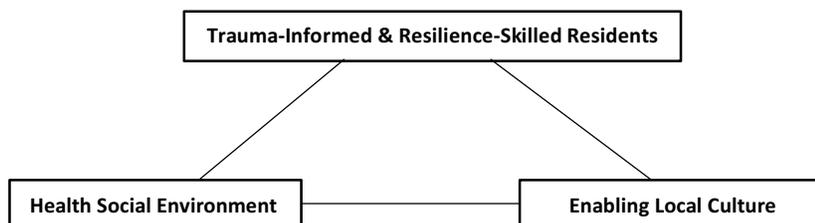
- Purposing (Adversity-Based Growth) Skills**
- Simple skills that help people turn toward and learn from adversities, rather than denying or ignoring them, grieve, and develop new meaning and insights into the world and self.
 - Basic methods that help people envision their ideal response and the values they want to live by in the midst of climate and related adversities.
 - Tools that help people increase their sense of self-esteem by assisting other people, and/or caring for animals, and/or helping to heal the natural environment and climate.
 - Skills and methods to find and maintain realistic yet vitally important sources of hope in difficult circumstances.

Research has found that Purposing skills often motivate people to engage in something greater than themselves, such as assisting other people, caring for animals, or helping to heal the natural environment. Almost as a side-benefit, they increase their own sense of wellbeing. Some of the results include a more hopeful and positive attitude, better mental health, better physical health, extended life-expectancy, and greater capacity to deal with future adversities.¹⁷

Applications of Presencing and Purposing Skills Within Communities

Our review of community-based human resilience building initiatives found many similar qualities. Even when they are predominantly focused on building resilience within specific populations (e.g. children and families) or for certain types of traumas (e.g. ACEs), they seek to ensure that as many residents as possible--especially local leaders--become trauma-informed (i.e. learn how trauma and toxic stress can affect the body, mind, emotions, and behaviors) and learn age, culturally, and demographically appropriate Presencing and Purposing resilience skills. They also seek to create a healthy social environment by connecting groups and organizations to work together to build resilience and offering opportunities for residents to meet and engage with each other. And, they promote cultural norms and practices that foster safe, healthy, equitable, just, and resilient thinking and behaviors.

The Three Core Elements of Community-Based Transformational Resilience Initiatives



III. Building the Capacity for Transformational Resilience *Before* Crisis Occurs is Essential

The urgent need and many benefits of building widespread capacity for transformational resilience has not been thoroughly acknowledged by climate, mental health, public health, disaster management, physical resilience, and many other professionals. Mirroring the belief that psychological and psycho-social-spiritual maladies can be treated but not prevented, to the extent that it has been recognized the primary focus has been on Disaster Mental Health and Psychological First Aid. These programs assist people after they experience disasters and are very important because as global temperatures rise, millions of people will be traumatized by climate impacts.

However, people who have learned transformational resilience skills before disaster strikes will experience far fewer psychological troubles, and recover more quickly when they do occur, than those that have not. In addition, as climate disasters become more frequent and extreme, many disaster mental health programs will be overwhelmed by the sheer number of people affected by the adversities. These programs are also typically short-term interventions aimed at stabilizing people during and immediately after a disaster. Few are structured to help people deal with the long-term psychological and psycho-social-spiritual effects of disasters, many of which often appear and/or persist for years after the event occurred.

Equally important, disaster mental health and psychological first aid programs cannot assist the millions of people affected by the mounting assortment of toxic stresses resulting from rising temperatures that are not associated with acute disasters.

Building capacity for transformational resilience before disasters occur is the only solution that can prevent widespread harmful human psychological and psycho-social-spiritual reactions to climate impacts.

Transformational Resilience Skills Can Also Help With Non-Climate Related Adversities

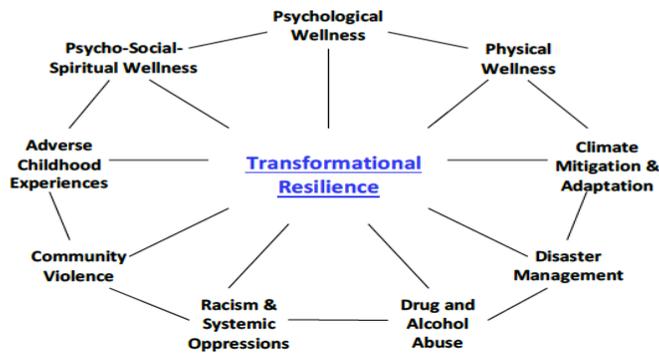
Research has found that people with good Presenting and Purposing resilience skills are healthier psychologically and physically.¹⁸ They also tend to be more pro-social, which can move them to become actively engaged in rebuilding their communities in more economically, socially, and ecologically just, equitable, and sustainable ways.¹⁹ This underscores that building the capacity for transformational resilience is not about surrendering to the inevitability of runaway climate change. Nor is it merely about helping people cope with or bounce back from climate adversities to previous conditions, which is what resilience means to many people. Transformational resilience skills often motivate people to use adversities of many types as catalysts to engage in actions that help improve personal, social, and environmental conditions substantially *above* current levels. This is why it is so important to give all adults and youth on the west coast (nationally and globally) the opportunity to build their capacity for transformation resilience.

In addition to climate impacts, building widespread capacity for transformational resilience can help people respond constructively to a wide-range of human-made disasters, such as terrorists acts and school shootings, as well as non-climate related natural disasters, such as earthquakes.

Further, professionals in fields ranging from climate mitigation and adaptation, to mental health, physical health, disaster management, community violence, education, faith and spirituality will find that building widespread capacity for transformational resilience complements their work and increases the likelihood that they can achieve their goals.

Indeed, transformational resilience is a cross-cutting issue that will generate benefits well-beyond preventing adverse human reactions to climate impacts. It can catalyze profound learning and growth that changes hearts, minds, spirits, and behaviors.²⁰

Applications and Benefits of Building Transformational Resilience for Climate Change



IV. The Roots of the Harmful Human Reactions: The Neurobiology of Trauma and Toxic Stress²¹

The adverse human psychological and psycho-social-spiritual reactions to rising temperatures are not the result of mental defects or moral failings. They are natural human reactions to fear. When humans sense a threat, their amygdala, which can be considered the centerpiece of the brain's "Fear and Alarm Center," automatically triggers the release of the neurochemicals adrenaline and cortisol into the body in order to prepare us to fight back or flee the scene. Our built-in fight-flight reaction is often described as the "stress response." The flush of these neurochemicals causes the heart rate to increase, breathing to quicken, muscles to tighten, and blood pressure to rise to mobilize all our resources for self-defense. If the flush of chemicals is too overwhelming, it can cause people to freeze and become immobile. The mobilization can also sideline the pre-frontal cortex, which can be considered the brain's "Executive Center," in order to divert all of our energy and resources into self-protection. This is why grasping multiple issues and complex decision-making can be very difficult when one is severely stressed.

Fight-flight is a beneficial natural adaption to real and perceived threats. Our ability to mobilize our resources for self-defense in this way is one of the reasons humans have become such a dominant species on the planet. However, it can become unhealthy when people remain in a continual state of hyper-arousal because they don't understand how their brain's "Fear and Alarm Center" activates fight, flight, or freeze reactions, and lack skills to calm their mind, body, and emotions when distressed.

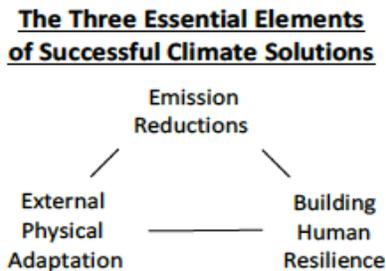
Some people try to self-anesthetize themselves to their distress by abusing drugs, alcohol, or tobacco, overeating, or becoming hyperactive. Others withdraw and isolate themselves from the world. Still others turn their distress on other people and become aggressive or violent. And many people in our society engage in excessive material consumption as a form of "retail therapy," or knowingly or unknowingly harm the natural environment and climate in other ways. These harmful reactions can be aggravated by the social narratives that dominate a group or community that promote unhealthy, aggressive, or we-versus-them thinking and behaviors.

The information and skills involved in building capacity for transformational resilience are specifically designed to help people notice when they are dysregulated by the release of neurochemicals into their bloodstream, calm their mind, body, and emotions, and use adversities of any type as catalysts to learn, grow, and find new positive sources of meaning, direction, and hope in their lives.

V. Building Widespread Capacity for Transformational Resilience Is as Important Today as Emission Reductions and Adapting External Physical Factors

Rapidly slashing greenhouse gas emissions must today be a top priority for all governments, communities, businesses, and residents. It is also vital to prepare society's physical infrastructure and

other external systems to withstand and adapt to the impacts of rising temperatures. Even if these efforts are successful, however, the impacts of climate change will accelerate for decades. Building widespread capacity for Transformational Resilience must therefore become an equal priority--the third pillar-- of any successful response to the climate crisis.



VI. The ITRC Assessment of Human Resilience Building Initiatives in California and the PNW

The urgent need and many benefits of building widespread capacity for transformational resilience led the ITRC to organize steering committees in California and the Pacific Northwest (representing Oregon, Washington, Alaska, Idaho, and Montana) composed of people involved with some aspect of resilience.²² The committees seek to ensure that by 2025 every adult and youth has the opportunity to obtain information and learn skills that build their capacity for Transformational Resilience.

A first step was to gather baseline data about the human resilience building programs already underway. Working under the direction of ITRC staff and the two steering committees during the summer of 2018, graduate students from universities in Oregon, Washington, and California inventoried and analyzed the existing human resilience building initiatives to determine who they serve, the type of resilience information and skills they provide, and other information.²³

To develop the assessment, we sought to locate resilience building initiatives that teach some version of one or more of the skills previously described. We anticipated that resilience building initiatives would use different words and phrases to describe their goals and programs. We therefore identified potential programs from recommendations provided by ITRC steering committee members and via city-by-city google searches of programs that used resilience-related words and phrases. Resilience programs were also identified by people the researchers interacted with during their research and by recommendations from ACEs Connection staff and others.

After a potential resilience building initiative was identified, researchers reviewed their website (if one existed) to confirm that it potentially met our criteria. If it did, the program was sent an email introducing the ITRC, explaining the research project, and requesting that they fill out the survey found at the link provided in the email.²⁴ If a program did not complete the resilience survey within two weeks after receiving the initial email, a follow up email was sent. If the program had not completed the resilience survey two weeks later, a third email reminder was sent.

Response Numbers

In total, 284 programs along the west coast were identified as potentially meeting one or more of our criteria for initiatives that build human resilience. This included 106 in California and 178 in Oregon, Washington, Idaho, Montana, and Alaska. All of the programs were sent emails asking them to complete the resilience survey. Although a great deal of research was involved in identifying the resilience programs, we undoubtedly missed some either because no ITRC steering committee member

was familiar with them, the words or phrases they used on their websites to describe their program did not match our list, they did not have a website, or because we simply failed to identify it.

Of the 284 programs we contacted, 46 (16%) completed the resilience program survey. This included 18 from California, 12 from Oregon, 12 from Washington, 2 from Alaska, 1 from Idaho, and 1 from Montana. Some of the suspected reasons for a modest reply rate include: few programs knew about the ITRC before receiving the email and thus might be hesitant to engage; many programs have limited staff or are run by volunteers that have little time to fill out surveys; some programs might not have had sufficient data to complete the survey; the research was done in the summer when people are on vacation; or other reasons.

The information provided by the 46 organizations in the survey offers the most definitive data on the human resilience building initiatives underway in west coast states. The researchers obtained additional information about existing resilience initiatives by reviewing the websites of the 238 programs that were sent emails but did not complete the survey, and from communications with people involved with resilience building initiatives. However, websites were not uniform and it was sometimes difficult to interpret what we found in a standardized way. Some programs we identified had no website.

The findings and recommendations described below are therefore based on a mixture of analysis of data provided in the resilience program survey, our qualitative interpretation of information obtained from websites of non-respondents, and information received via email and phone interviews that took place during the research. There are limitations to this approach, such as the possibility that we did not sufficiently assess key issues or have over- or under stated certain points. However, we tried our best to develop the following findings and make recommendations in a fair and credible manner.

VII. Findings from the Assessment of West Coast Human Resilience Building Programs

- *A number of well-established human resilience building initiatives exist in California and the Pacific Northwest, with most organized in response to specific crisis in the community.*

The primary focus of many of the established programs is building resilience to prevent childhood trauma, such as the *Community Resilience Initiative* of Walla Walla, Washington, *Southern Oregon Success* of the Rogue River Valley or Oregon, the statewide *Alaska Resilience Initiative*, the Hanna Institute's *Resilient Sonoma* in northern California, and *A Window Between Worlds* in southern California. Other programs, such as the *Resilience Network of the Gorge* in Oregon/Washington, and *Restorative Resources* in northern California, were launched at least in part to address low graduation rates and/or school violence (the Gorge program has expanded to community-wide implementation through the involvement of service organizations). Still others, such as *East San Jose PEACE Partnership*, seek to prevent community violence. The *Alaska Resilience Initiative* is a prime example of a program that emphasizes broad cultural inclusion. Few of the resilience programs we identified were organized to help people learn information and skills that can prevent harmful psychological or psycho-social-spiritual reactions to multiple types of adversities. However, it is important to note that this is merely an initial inventory of the human resilience programs underway in west coast states. As previously stated, there are undoubtedly many other programs that we did not identify. We hope this inventory continues to grow so that over time a more comprehensive list of resilience programs emerges.
- *A number of human resilience programs are new or in the early stage of development.*

These include initiatives such as the *Building Community Resilience* collaborative in Oregon organized by Trillium Family Services that seeks to build resilience for Adverse Childhood Experiences (ACES), *South Coast Together* that primarily focuses on ACEs along the southern Oregon coast, and the *Sonoma County Resilience Training Program* that seeks to help people affected by wildfires. Again, it is important to note that our study is merely an initial inventory of resilience programs. There are undoubtedly many other newly launched initiatives or programs in the planning stage that we did not identify.
- *Some programs that build human resilience use words and terms to describe their work that differ from those used in psychology and behavioral health-focused resilience building initiatives.*

Following from the above, as previously noted, we identified a number of programs that help adults or youth learn skills that build their capacity to respond constructively to adversities that do not use the word "resilience" or other terms commonly used in the psychology and behavioral health fields to describe their activities. There are undoubtedly many additional similar programs that we did not identify. This suggests that the field is much larger and more diverse than our initial inventory ascertained.
- *Different types of resilience skills are used to assist individuals and groups in different phases of adversities and in different helping professions.*

It has long been known that people go through different phases when they experience disasters, and different types of resilience skills are helpful in each of the phases. For example, Presencing skills are typically very important to help people calm their body, mind, and emotions in the midst of, and immediately after a major disaster. Purposing skills become very important to help people move out of long periods of distress back toward healthy functioning. Our research found a number of resilience programs that offer skills appropriate for people in the different phases of disasters. In addition, people that assist others before, during, and after

disasters, such as resilience educators, first responders, and disaster mental health workers also benefit from the use of different types of resilience skills. We found a few organizations that offer resilience skills appropriate to people in each of the different types of helping professions.

- *The majority of the resilience building initiatives we identified are located in or near larger metropolitan areas.*

We found relatively few resilience programs outside of major cities and even fewer in rural areas. It is possible that initiatives exist in these areas but do not employ the terms or phrases we used in our search. It is also possible that some programs do not have a website. However, we also found that few funding sources exist in rural communities to support such programs.
- *Few of the resilience programs we identified are tailored to the specific needs of adults without children, people with lower incomes, LGBTQ+ individuals, people with disabilities (both physical and developmental), or the homeless.*

This suggests that large populations of people with special needs or circumstances do not have easy access to resilience building information and tools.
- *Few of the resilience programs we identified use a social equity and justice lens to shape their programs.*

Although many psychological and psycho-social-spiritual maladies are caused or aggravated by poverty, historic or ongoing racism, sexism, or other systemic oppressions, we found few programs specifically focus on, or that emphasize building resilience for these types of adversities.
- *Most of the resilience programs we identified teach some type of Presencing skills, only a few teach the neurobiology of trauma and toxic stress, even fewer teach some type of Purposing skills, and we found no program that included all of these elements in their curriculum.*

This suggests that, although all of the basic elements of Transformational Resilience are being taught by different programs, few of them structured their offerings to help people learn the complete set of skills needed to respond constructively to a wide range of adversities, including those associated with climate change.
- *Many of the resilience programs that teach some type of Presencing skills are mindfulness-based or yoga classes that some lower income individuals, people of color, or other populations might not see as demographically, culturally, or religiously appropriate for them.*

During the research we learned that some people believe mindfulness programs have eastern religious connotation that are not appropriate for them. Although exceptions exist, we also found that many meditation and yoga programs tend to attract mid- to higher income people.
- *Few resilience programs explicitly state that they seek to build human resilience for climate change.*

One exception is the *Mycelium Youth Network* in Oakland, CA, that works with youth. Another is the new *Sonoma County Resilience Training Program* that seeks to help people affected by wildfires. *Transition Berkeley* is primarily focused on external issues such as permaculture, but also includes a focus on "inner transition." Psychological and psycho-social-spiritual support programs that address some aspect of climate impacts are otherwise limited to Disaster Mental Health or Psychological First Aid programs that seek to stabilize people during and after disasters.

- *Few climate or environmental organizations focus on building human resilience for climate impacts.*
The limited number of climate and environmental organizations that seem to address some aspect of human resilience tend to focus primarily on self-care skills for their staff or volunteers. We found no climate or environmental organization that helps non-activists, neighborhoods, or communities build psychological or psycho-social-spiritual resilience for climate impacts.
- *Major silos exist among programs focused on building human resilience, and those focused on mental and behavior health, the physical health impacts of climate change, reducing greenhouse gas emissions, and adapting external systems for warming temperatures.*
One reason appears to be a lack of awareness of how building psychological and psycho-social-spiritual resilience for climate impacts can complement and enhance the work of mental and behavioral health, physical health, climate mitigation, and climate adaptation professionals. Equally important, funding streams for each of these fields are heavily siloed, which limits holistic thinking and deters collaboration across issues, disciplines, and organizations.
- *A variety of funding sources are used to start and maintain resilience programs.*
Some, but not all, of the resilience programs we identified use federal or state level funding to help launch and/or support their efforts. Others obtained grants from philanthropic foundations. Many other programs were organized without these resources by committed individuals and groups who initially participated as volunteers or received permission from organizations they worked for to devote time to organize the program. The program then grew through a mixture of us donations, grants, and additional volunteer efforts.
- *A limited number of the programs that completed the resilience survey said they regularly measure and evaluate the effectiveness of their programming.*
Those that do measure effectiveness said they typically use self-reporting mechanisms, which could provide an incomplete or inaccurate picture of outcomes.
- *In sum, although it is difficult to determine with specificity, even with the number of programs already underway, our best estimate is that 5 percent or less of adults and youth in west coast states are currently involved with initiatives that help build their capacity for psychological and psycho-social-spiritual resilience.*
This number is based on a qualitative comparison of the number of people served by the resilience programs we identified with the total population of the communities where they are located. We cannot definitively say why participation appears so limited. However, it is likely due to a combination of factors including: limited awareness of the programs; that the majority of programs focus on specific populations and types of traumas (e.g. children, families, and ACEs) rather than helping anyone build their resilience for any type of adversity; the distance, difficulties, time, and/or financial costs involved with transportation to and from the program; the perception among some people that the programs are not age, demographically, or culturally appropriate for them; or other reasons. Furthermore, people might otherwise be engaged in activities not explicitly described as resilience building but that nevertheless enhance their capacity to respond constructively to adversities (e.g., faith-based programs).

- *Through communications with practitioners during our research we found that, if sufficient resources and other types of support were available, many of the existing human resilience programs might consider expanding to assist additional populations and/or include other types of resilience information and skills.*
- *Similarly, communications with a number of programs suggests that many new human resilience building programs could be launched if effective policies and funding streams were established.*

VIII. Recommendations for Making Transformational Resilience Education and Skills Training Universal Across the West Coast by 2025

I. Enact Policies with the Goal that by 2025 Every Adult and Youth Residing in West Coast States Has the Opportunity to Learn Transformational Resilience Skills

a. Enact Local, State, and Federal Policies to Authorize and Support Transformational Resilience Education and Training Programs.

Just as everyone in our society has the opportunity to learn how to read and write, every adult and child should have the opportunity to learn simple age, culturally, and demographically appropriate transformational resilience skills. This will be essential to prevent harmful psychological and psycho-social-spiritual reactions to the impacts of climate change. It will also offer numerous other personal, social, economic, and social benefits. Although human resilience initiatives can grow organically from the bottom up, local, state, and federal policies are essential to authorize and support the growth of such programs to ensure that by 2025 everyone on the west coast has access to them. Policies such as California Mental Health Wellness Act of 2013, the federal Mental Health First Aid Act of 2015, and others can be used as models for new policies. Rather than placing primary responsibility on mental health or social service programs, all new policies should require cross-sector collaboration. They should also require the inclusion of the Presencing and Purposing skills that are necessary to build psychological and psycho-social-spiritual resilience for the accelerating long-term effects of climate change.

b. Establish Funding Streams for Transformational Resilience Initiatives.

Stable sources of funding are essential to expand transformational resilience programs throughout the west coast to reach the entire population. Local, state, and federal funding programs should be established to achieve this goal. This can be accomplished by expanding funding streams that already exist for climate solutions, mental health, community violence, education, and other funding programs to allow them to fund human resilience building initiatives. New funding mechanisms should also be established. To support the development of new funding streams, philanthropic funders should be informed about the urgent need and many benefits of building human resilience. They should also be asked to take special care when developing funding programs to ensure that they promote holistic cross-sector thinking and collaboration and avoid narrow siloed programs.

II. Strengthen and Expand Existing Human Resilience Building Initiatives

a. Institute Mechanisms to Increase Communication and Collaboration Among Already Established Human Resilience Programs and Others in Related Fields.

Building the public's capacity to respond constructively to climate disasters and toxic stresses will require the leadership of people already engaged in building psychological and psycho-social-spiritual resilience. Except for people working on ACEs, however, our research found that many professionals involved with building human resilience, mental and behavioral health, social service, physical health, social justice, faith, and related fields are often unaware of others in their area working on similar issues. It should be a priority to connect and foster communications among these existing leaders through online and in-person forums or other mechanisms to enable them to describe their work, problem solve, share resources, improve and expand existing programs, and establish new ones.

b. Establish Secure Funding Streams to Support Existing Human Resilience Programs.

As described in I(b) above, secure sources of funding are needed to help stabilize and expand established human resilience building initiatives.

III. Establish New Human Resilience Building Initiatives Throughout the West Coast

a. *Educate Decision Makers and the Public About the Urgency and Multiple Benefits of Building Widespread Capacity for Transformational Resilience.*

Many individuals, including those in leadership roles in public, private, and non-profit organizations, do not seem to understand the urgency and many benefits of building transformational resilience. As our research found, to the extent that people are aware of them, most believe resilience programs are primarily appropriate for populations that have experienced specific types of traumas, such as children and parents affected by ACEs. Few people seem to have been exposed to theory or research suggesting that all adults and youth, no matter what their age or background, can use resilience skills to respond constructively to any type of adversities and use them as catalysts for learning, growth, and positive change. A major education campaign is needed to alter these misperceptions. The educational initiative should apprise leaders from many sectors and organizations about the urgent need, methods, and multiple benefits of proactively launching preventative transformational resilience initiatives across the west coast for climate related--and other--adversities.

b. *Develop Cross-Sector City, County, and Regional Networks to Overcome Programmatic and Funding Siloes and Establish Diverse Involvement in Building Transformational Resilience.*

Programmatic and funding siloes and other obstacles limit many professionals working on mental and behavioral health, climate solutions, public health, public safety, physical resilience, disaster management, education, social justice, faith, and other fields from seeing the linkages between their work and building psychological and psycho-social-spiritual--or transformational--resilience. To overcome this problem, cross-sector networks should be organized to bring professionals from multiple fields and organizations together at the city, county, and regional levels to learn how the growing adverse human reactions to climate impacts will adversely affect their work, and how building widespread capacity for transformational resilience can enhance their endeavors. At a minimum, local human resilience building initiatives should become connected with mental and behavioral health programs that are often run by County governments to explore possible synergies. Equally important, connecting organizations involved in all of the fields described above can spur holistic thinking and innovation that increases their efficiency, effectiveness, and impacts.

c. *Organize Transformational Resilience "Coordinating Councils" in Each Community (or neighborhood) to Support and Expanding Grass-Roots Human Resilience Building Initiatives.*

Following from the above, building widespread capacity for transformational resilience is not merely the responsibility of mental health and social service professionals. It is a multi-faceted cross-sector issue that will requires the active involvement of professionals from numerous fields including, but not limited to: Climate mitigation and adaptation programs, K-12, college, and adult education; child and family health programs; faith-based organizations; health care professions; senior citizen programs; groups focused on racial, social, and climate equity and justice; community planners, disaster planning and response professionals; police and security officer; business leaders; civic leaders; elected officials; mental health and other social service providers, and others. Transformational resilience "Coordinating Councils" should be organized in communities (and /or neighborhoods) to bring these individuals and organizations together to support and help expand existing human resilience programs and develop new ones so that by 2025 resilience initiatives are available to all adults and youth in their area. This is a modification of U.N. Inter-Agency Standing Committee (IASC) Guidelines on Mental Health and Psychosocial Support in Emergencies which calls for the creation of local coordinating groups. The ITRC believes coordination councils are needed in every community to plan and institute preventative transformational resilience programs before disasters occurs, not afterwards. In locations where similar

coordinating bodies already exist (e.g., trauma-informed care councils) they should consider expanding their focus to additional populations and/or teaching a wider range of resilience skills that can help people with climate impacts.

Many of the resilience building initiatives we identified grew out of the concerns and engagement of committed local residents. The methods used by programs that have followed this path can be helpful to local transformational resilience coordinating councils. Most began with a small group of interested people who served as the initial planning team. This group developed an initial vision of what they wanted to achieve and a strategy for achieving it. They then created a slogan and talking points to make the case for the initiative that would resonate with their community. The core team then began to educate community members, and especially including key public, private, and non-profit leaders, about their vision, proposed methods, and the benefits of success. Short presentations, meetings over coffee and tea, opinion editorials and letters to the editor in the local paper, social media posts, and other means were used for this purpose. Outside speakers were often brought in to explain the benefits of building resilience to community members and sometimes offer initial workshops. By informing and engaging the public, with a special emphasis on respected senior community leaders, people became engaged, interest and momentum grew, and a formal steering committee composed of a diverse set of community leaders was eventually organized to support the growth of new resilience programs (or the expansion of existing programs). The Community Resilience Initiative in Walla Walla Washington came up with the acronym they call KISS, to describe this capacity building process. It emphasizes the importance of Knowledge, Insight, and Strategies to build the Structures that creates the foundation support needed for success in launching grassroots resilience programs.

An important element of any grassroots resilience building initiative should be an analysis of the social narratives and cultural norms that dominate neighborhoods and communities. The goal should be to determine which narratives promote unhealthy, unsafe, unjust, inequitable, ecologically harmful, or other non-resilient thinking and behaviors. The resilience coordinating council can then use multiple methods to consistently speak out and promote social narratives that foster safe, healthy, equitable, just, ecologically sustainable and resilient thinking and behaviors.

d. Ensure That Human Resilience Building Initiatives Are Made Available to Immigrants, Individuals with Special Circumstances or Needs, and Rural Communities.

Age, culturally, and demographically appropriate information, skills, and tools are required to help different populations build their capacity for transformational resilience. Special emphasis should be made to ensure that human resilience programs are designed to address the needs of immigrants, lower income individuals, adults without children, LGBTQ+ individuals, people with disabilities (both physical and developmental), the homeless, and other populations with special circumstances or needs.

Rural communities are uniquely affected by climate disasters and toxic stresses. Many are also experiencing high poverty rates and other economic difficulties. A major emphasis should therefore be placed on enacting policies and establishing funding streams to launch and support transformational resilience initiatives in rural areas.

These programs should not be required to use the type of psychologically-based words or terms included in this assessment to describe their goals or methods. To the contrary, they should use words and phrases that resonate with and are appropriate for the populations they serve.

e. Establish Transformational Resilience Officers in Every State and Large City to Lead Efforts to Support and Expand Initiatives to Build Human Psychological and Psycho-Social-Spiritual Resilience.

Due to the pioneering work of the Rockefeller Foundation, many large cities in California, Oregon, and Washington State now have Chief Resilience Officers (CROs). The State of Oregon also has a Chief Resilience Officer, and the Lt. Governor serves in a somewhat similar position in Washington.

These programs all almost exclusively focus on building resilience for external "physical, social, or economic shocks and stresses."²⁵ None to our knowledge include, as a central focus, building the resilience of people for the psychological and psycho-social-spiritual traumas and toxic stresses generated by climate or any other type of disaster. As previously discussed, the failure to address the human dimensions of resilience threatens to undermine efforts to build resilience within other external physical factors. To address this gap, Transformational Resilience Officers (TROs) should be hired in every community and state in the west coast with the responsibility of supporting existing programs and helping to establish new ones so that by 2025 every adult and youth has the opportunity to learn Transformational Resilience skills. The TROs should work closely with the CROs focused on external physical resilience to ensure that resilience is addressed holistically with the human dimensions fully addressed.

IV. Build Professional Capacity Within Existing and New Human Resilience Initiatives:

a. Ensure that All Transformational Resilience Programs Include a Social Equity and Justice Lens.

Climate change is a multiplier of injustice and the impacts of climate change are not equally distributed. Indigenous communities, people of color, immigrants, low income populations, LGBTQ+ individuals, people with disabilities, people experiencing homelessness, and other marginalized communities will often experience climate impacts earlier and more significantly than others, have few resources to protect their residences and neighborhoods from disasters, and have few resources to rebuild and recover afterwards. Climate change related hardships will often be aggravated by unjust and inequitable norms, practices, and policies that existed before the disaster, and are often intensified during and after it occurs. Both existing and new resilience programs should therefore ensure that they approach their work through the lens of social equity and justice.

b. Ensure That All Transformational Resilience Initiatives Include an Explicit Focus on Motivating People to Engage in Activities Help Heal the Planet as a Way to Heal the Self and Others.

As climate change worsens, more and more people will struggle with how to heal their own personal, family, or community traumas, while also dealing with the traumas caused by the breakdown of the earth's life-supporting climate and ecological systems. People with good capacity for Transformational Resilience often become more pro-social and choose to increase their own sense of wellbeing by engaging in activities help the natural environment. For example, they find that spending time outdoors in forests and green spaces, caring for animals, and/or helping to restore forests, wetlands, and other ecological systems that sequester carbon and support biodiversity are powerful ways to heal themselves. These venues can become even more powerful sources of healing when people join others in the activities. All Transformational Resilience programs should emphasize active engagement with others in activities that help heal the planet as a way to heal the self.

c. Provide Resources So That All Human Resilience Programs Continually Measure, Evaluate, and Improve Their Effectiveness.

Evaluating program effectiveness is essential to understand what works and what doesn't, to guide innovation, and to continually improve human resilience programs. Program effectiveness data is also often important to receive funding. Ongoing measurement and evaluation of program effectiveness should therefore become an integral piece of all efforts to expand existing and establish new human resilience building initiatives. Researchers from academic institutions, the non-profit and private sectors might be able to help develop and refine evaluation instruments.

Conclusion

Many of the harmful human psychological and psycho-social-spiritual reactions to rising global temperatures can be prevented if people learn age, culturally, and demographically appropriate transformational resilience skills before they are impacted by climate disasters. Even when people have not learned Presencing or Purposing skills prior to a disaster, many will benefit by learning and practicing the skills during and after climate disasters. And, everyone will benefit by learning transformational resilience skills that help them respond constructively to the chronic toxic stresses generated by climate change that are not directly associated with acute disasters.

In addition, because trauma survivors often must find some type of meaning from their experiences and learn useful lessons about life in order to find hope in what otherwise seems like impossible situations, transformational resilience skills can be powerful catalysts to learn, grow, and decide to increase their own sense of well-being by assisting others or helping to heal the planet.

Further, by learning transformational resilience many people will be able to respond much more constructively to personal, family, economic, social, political, and other types of traumas and toxic stresses, as well as to non-climate related natural disasters such as earthquakes.

The ITRC California and Pacific Northwest Steering Committees believe it should now become a top priority of local, state, regional, and federal authorities to enact policies, funding programs, and support services to ensure that by 2025 all adults and youth in west coast states have the opportunity to learn age, demographically, and culturally appropriate information and skills that enhance their capacity for transformational resilience.

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- ¹ The list of ITRC National Steering Committee members can be found at: <http://www.theresourceinnovationgroup.org/intl-tr-coalition>
- ² Intergovernmental Panel on Climate Change (October 6, 2018). *Global Warming of 1.5 C: A Special Report*; See also Earth's Future: an AGU100 Journal. *On the time evolution of climate sensitivity and future warming* (Philip Goodwin, September 2018).
- ³ Fourth National Climate Assessment. USGCRP, 2018: *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA. doi: 10.7930/NCA4.2018.
- ⁴ See, for example: Lamond, J.E., et al. (2015) An exploration of factors affecting the long term psychological impacts and deterioration of mental health in flooded households. *Environmental research*, 140; Swim J. et al. Psychology and global climate change: addressing a multifaceted phenomenon and set of challenges. A report by the American Psychological Association's task force on the interface between psychology and global climate change. Washington: American Psychological Association; 2009; Vins, H.J., et al. (2015) The mental health outcomes of drought: a systematic review and causal process diagram. *International Journal of Environmental Research and Public Health*, 12 (10); Overstreet, S.A., et al. (2010) A school-based assessment of secondary stressors and adolescent mental health 18 months post-Katrina. *Journal of School Psychology*, 48(5); Bourque F. and Cunsolo W. Climate change: the next challenge for public mental health? *International Review of Psychiatry*. 2014;26(4); Doherty TJ and Clayton S. The psychological impacts of global climate change. *American Psychological Association*. 2011;66(4):265. 22; Clayton S. et al, Beyond storms & droughts: the psychological impacts of climate change. Washington, D.C: American Psychological Association and EcoAmerica; 2014; Kessler RC. et al. Trends in mental illness and suicidality after Hurricane Katrina. *Molecular Psychiatry*. 2008;13(4); Berry HL. et al., Climate change and mental health: a causal pathways framework. *International Journal of Public Health*. 2010;55(2); RJ, Ursano RJ. et al., Exposure to hurricane-related stressors and mental illness after Hurricane Katrina. *Archives of General Psychiatry*. 2007;64(12); O'Brien LV. et al., Drought as a mental health exposure. *Environmental Research*. 2014;131:181–7. Additional research can be found in the ITRC library at: <http://www.theresourceinnovationgroup.org/intl-tr-coalition>
- ⁵ See, for example: Neria Y. and Shultz JM. Mental health effects of Hurricane Sandy: characteristics, potential aftermath, and response. *JAMA*. 2012;308(24):2571–2.
- ⁶ See for example: Paranjothy, S., et al. (2011). Psychosocial impact of the summer 2007 floods in England. *BMC Public Health*, 11(145). DOI: 10.1186/1471-2458-11-145; Reacher, M., et al. (2004). Health impacts of flooding in Lewes: A comparison of reported gastrointestinal and other illness and mental health in flooded and non-flooded households.
- ⁷ See, for example the ample research on all of these impacts described in: Doppelt, B. (2016) *Transformational Resilience*, Greenleaf Publishing, and the research included in the ITRC Library found at <http://www.theresourceinnovationgroup.org/intl-tr-coalition>
- ⁸ American Psychological Association (2017). *Mental Health and Our Changing Climate: Impacts, Implications, and Guidance* .
- ⁹ See for example: Clayton, S. et al. (2017): *Mental Health and Our Changing Climate: Impacts, Implications, and Guidance*. American Psychological Association and ecoAmerica, North CS, and Pfefferbaum B. Mental health response to community disasters: a systematic review. *JAMA*. 2013;310(5):507–18; Gamble, J., & Hess, J. (2012). Temperature and violent crime in Dallas, Texas: Relationships and implications of climate change. *Western Journal of Emergency Medicine*, 13(3); Bulbena, A., et al. (2006). Psychiatric effects of heat waves. *Psychiatric Services*, 57, 1519; Poumadere, M., et al. (2005). The 2003 heat wave in France: Dangerous climate change here and now. *Risk Analysis*, 25; Anderson, C.A. (2001). Heat and violence. *Current Directions in Psychological Science*, 10(1); Rotton, J., & Cohn, E.G. (2003). Global warming and U.S. crime rates: An application of routine activity theory. *Environment and Behavior*, 35(6); Mares, D.M and Moffett, K.W. (2016) Climate Change and interpersonal violence: a "global" estimate and regional inequities. *Climate Change*, 135 (2); the other research cited in Doppelt, B. (2016) *Transformational Resilience*, Greenleaf Publishing; and the other research included in the ITRC Library found at <http://www.theresourceinnovationgroup.org/intl-tr-coalition>
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- ¹² Canadian Red Cross (2012), *Predictable, Preventable: Best Practices for Addressing Interpersonal and Self-Directed Violence During and After Disasters*.
- ¹³ Many thanks to Elaine Miller Karas, Executive Director of the Trauma Resource Institute and core member of the ITRC National and California steering committees, and to Jane Stevens, founder of the ACEs Connection Network and an ITRC National steering committee member, and Gail Kennedy, Community Lead with the ACEs Connection Network and an ITRC California steering committee member for developing this concept and graphic.
- ¹⁴ "Stress and health." *Cambridge Handbook of Psychology, Health and Medicine*. Cambridge: Cambridge University Press, 2007.
- ¹⁵ Special thanks to Ernie Niemi, Principal with Natural Resource Economics Inc. and an advisor to the ITRC National Steering Committee, for providing this information.
- ¹⁶ See, for example: Ramsay T. and Manderson L. Resilience, spirituality and posttraumatic growth: reshaping the effects of climate change. In: Weissbecker, editor. *Climate change and human well-being*. New York: Springer; 2011; Lowe, S.R. et al. (2015) Psychological resilience after Hurricane Sandy: The influence of individual and community level factors on mental health after a large-scale natural disaster. *Plos One*, 10(5); and the other research cited in Doppelt, B. (2016) *Transformational Resilience*, Greenleaf Publishing.
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foundations and empirical evidence. *Psychological Inquiry*, 15; and the other research cited in Doppelt, B. (2016) *Transformational Resilience*, Greenleaf Publishing.

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¹⁹ See, for example: Srivastava, K. (2011). *Positive mental health and its relationship with resilience*. *Industrial Psychology Journal* 20(2); Keyes CLM. *Promoting and protecting mental health as flourishing*. *American Psychologist* 2007; 62; Anthony D. *Pathways linking positive emotion and health in later life*. *Current Directions in Psychological Science* 2010 ;19 (6); and the ample research on all of these issues described in: Doppelt, B. (2016) *Transformational Resilience*, Greenleaf Publishing; and the research included in the ITRC Library found at <http://www.theresourceinnovationgroup.org/intl-tr-coalition>

²⁰ See, for example: Zak, P. (2012). *The Moral Molecule: The Source of Love and Prosperity*. Dutton Books; Unvas-Moberg K. *Oxytocin may mediate the benefits of positive social interactions and emotions*. *Psychoendocrinology* 1998; 23(8); and the ample research on these qualities described in: Doppelt, B. (2016) *Transformational Resilience*, Greenleaf Publishing; and the research included in the ITRC Library found at <http://www.theresourceinnovationgroup.org/intl-tr-coalition>

²¹ This is a brief summary of the neuroscience of trauma and toxic stress. There are numerous studies describing the process. See, for example, Pittman, C. (2015) *Rewire Your Anxious Brain: How to Use the Neuroscience of Fear to End Anxiety, Panic, and Worry*. New Harbinger Publications; Sapolsky, R. (2017) *Behave: The Biology of Humans at our Best and Worst*. Penguin Books; the ample research on this issue described in: Doppelt, B. (2016) *Transformational Resilience*, Greenleaf Publishing; and the books and research included in the ITRC Library found at <http://www.theresourceinnovationgroup.org/intl-tr-coalition>

²² The list of California and Pacific Northwest steering committee members is provided in cover sheet of this report.

²³ The graduate student researchers were: Naomi Duran, University of California Davis, and Adam Petitt, University of Oregon, who researched resilience building programs in California; and Zoe Alley, Oregon State University and Arielle Simmons, Evergreen State University in Washington State who researched resilience building programs in Pacific Northwest states.

²⁴ The Resilience Survey can be found here on the ITRC website: <http://www.theresourceinnovationgroup.org/>

²⁵ The Rockefeller Foundation 100 Resilient Cities Program: <https://www.rockefellerfoundation.org/our-work/initiatives/100-resilient-cities/>