

**International Transformational Resilience Coalition**  
Building Human Resilience for Climate Change

**Welcome!**

**Preparing People for Climate Change  
In California**



## Many Thanks to Our Conference Co-Sponsors

- **American Public Health Association**
- **Southern California Public Health Association**
- **Local Government Commission**
- **350 Sacramento**
- **San Diego 350**
- **National Council for Behavioral Health**
- **ACEs Connection Network**
- **Bay Area Center for Regional Disaster Resilience**
- **Interfaith Power and Light**
- **Climate Compassion**
- **Mobilizing Action for Resilient Communities (MARC) Program**
- **The Trauma Resource Institute**
- **Hanna Institute at Hanna Boys Center**
- **Sonoma County ACEs Connection**
- **Tijuana River Nat. Estuarine Research Reserve Coastal Training Program**
- **The Center and Library for the Bible and Social Justice**
- **Willamette University Dept. of Psychology**



## Many Thanks to the Conference Planning Committee

- **Dana Brown**, Southern Cal. Community Manager ACEs Connection Network
- **Elizabeth Ferguson**, Climate Compassion
- **Ruben Cantu**, the Prevention Institute
- **Linda Rudolph**, the Public Health Institute
- **Mary Kelly Persyn**, The Hanna Center
- **Holly White-Wolfe**, Program Analyst, Sonoma County
- **Paula Scalingi**, Bay Area Center for Regional Disaster Resilience
- **Bernadette Austin-Bower**, UC Davis Center for Regional Change
- **Gail Kennedy**, Director of Programs, ACEs Connection Network
- **Dan Woo**, California Department of Public Health
- **Elaine Miller Karas**, The Trauma Resource Institute
- **Jean Stockard**, UO and Board Member, the Resource Innovation Group

## Please Accept Invitation and Join the ITRC Transformational Resilience Network (on ACEs Connection Network Platform)

### Will Offer You the Opportunity To:

- **Meet** people at conference **electronically** and set up **in-person meetings**
- Post conference **highlights**
- Post issues you want to work on and ask conference members to join you
- Continue to **dialogue** and **work with** ITRC members **after the conference**

**Afterward the conference ends we will hold regular conference calls, offer free webinars and other activities. See calendar of events for details.**



Learn Skills and Methods to Launch a Movement to Make California the

# **First Trauma-Informed Human Resilience-Enhancing State in the U.S. for Climate Traumas & Stresses!**

Our focus will be on building “Transformational Resilience” (TR)

TR is a function of interplay between internal and external factors.

# Why Build a Culture of Transformational Resilience?

Because climate change is now the

**Greatest Social Determinant of Health and Wellbeing!**



The Adverse Human  
Reactions to Climate Change



# The Climate Crisis is Unlike Any Modern Society Has Faced!

## **Under BAU Emissions Path or Even Modest Improvements:**

- It will worsen for decades and increasingly intermix fast-growing disasters with ongoing and intense (toxic) stresses offering less & less time for recovery.
- It will aggravate racism & other systemic oppressions, disrupt social support networks & other critical protective systems, & magnify many health inequities
- The resulting harmful psychological and psycho-social-spiritual maladies might be as bad as the physical impacts and could stall efforts to cut emissions and minimize the climate crisis.

# But the Climate Crisis Also Offers The Opportunity for Profound Transformation!

It is a primal truth that, as painful as it can be, adversity is often our greatest impetus for learning, growth, and transformation.



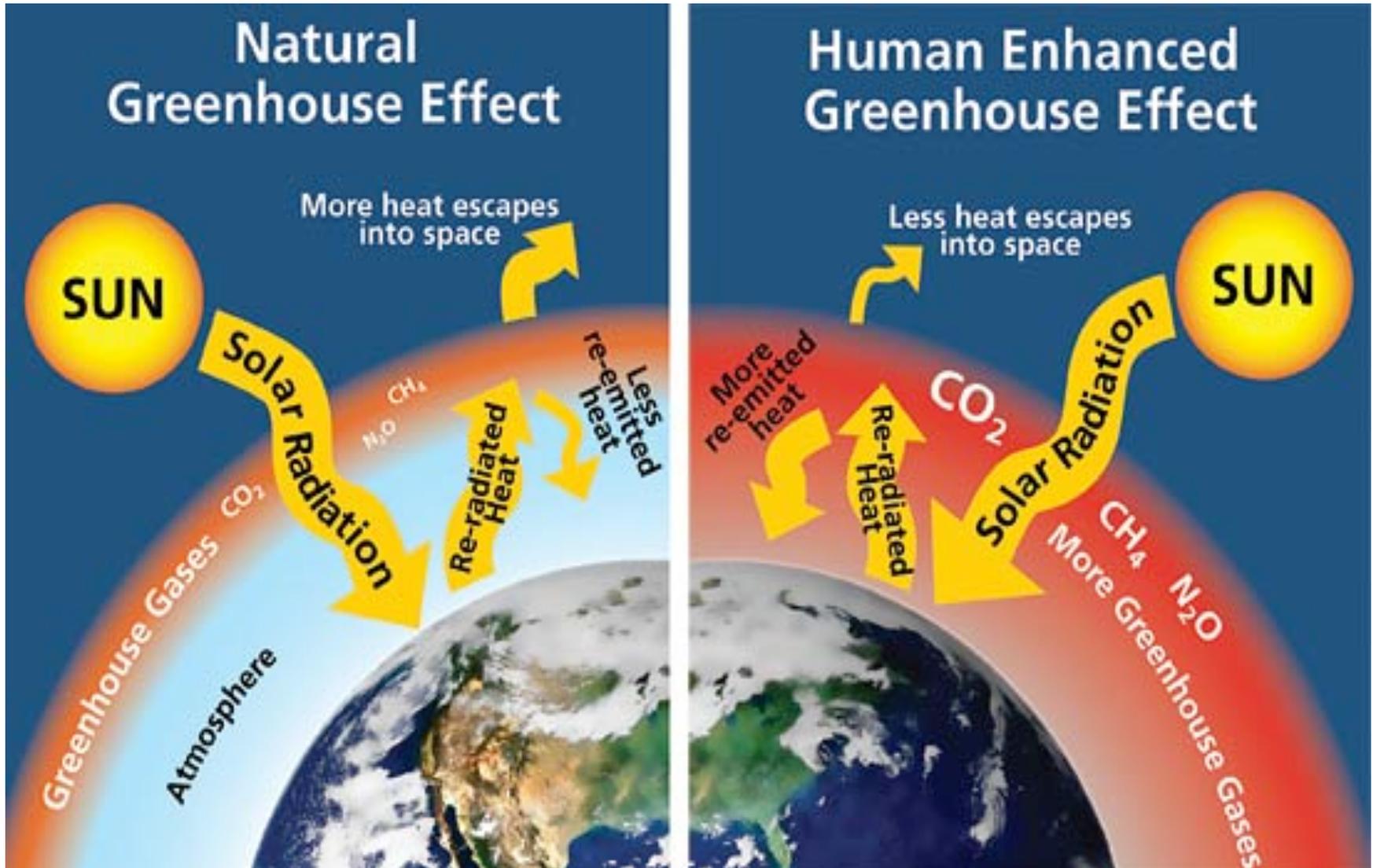


# Imagine the Benefits of a Statewide Preventative Transformational Resilience Movement That Helps:

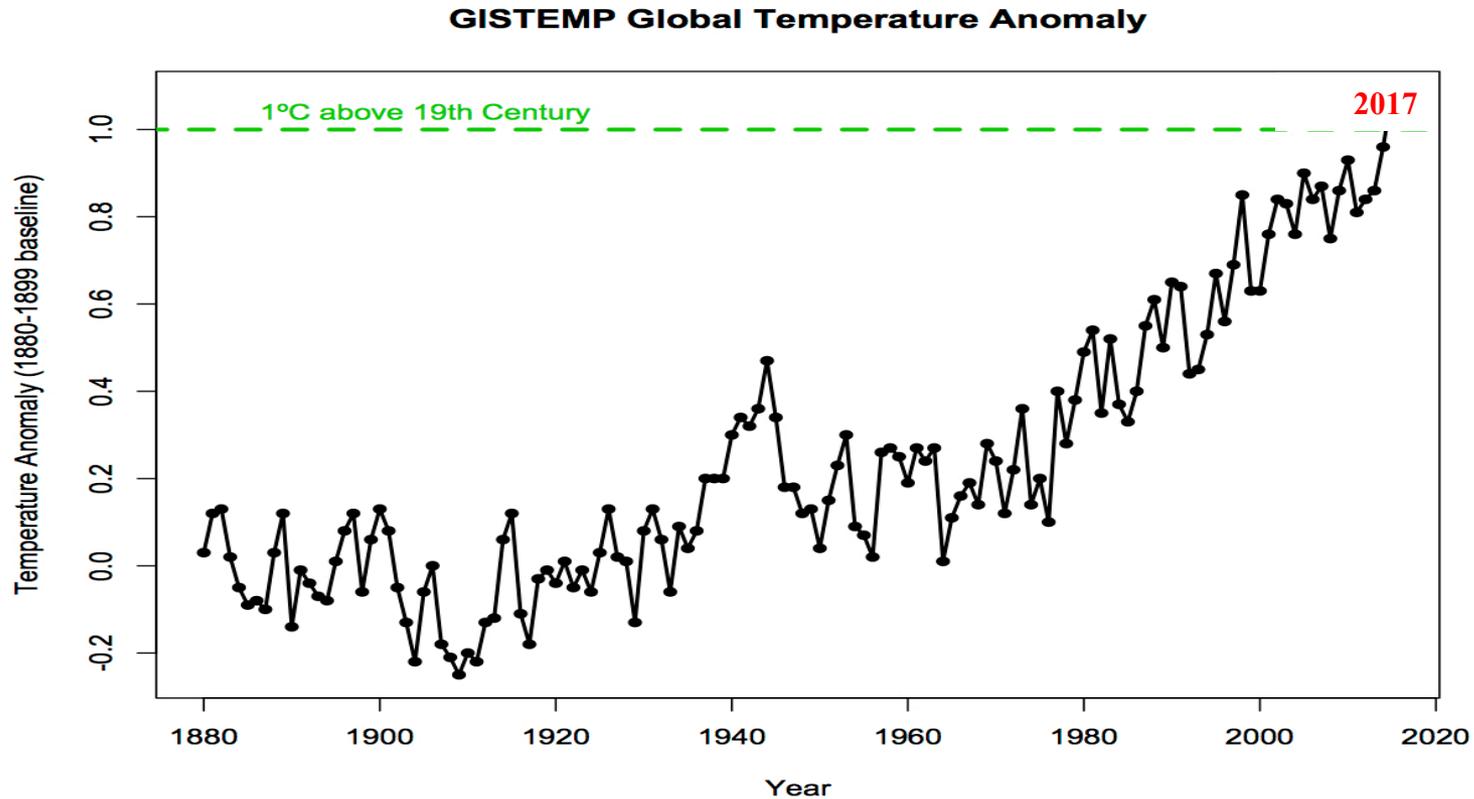
- Everyone become trauma-informed, build on strengths and enhance personal and collective protective factors so they can engage in healthy behaviors even in unhealthy conditions and cope constructively with climate --& other– adversities.
- All leaders learn to promote social narratives, shift cultural norms and practices & make their groups safe, healthy, just and equitable resilience-enhancing entities.
- Everyone learn how to use adversities as transformational catalysts to find new meaning, direction and hope in ways that dramatically increase personal, social, and ecological wellbeing.



# The Greenhouse Effect



# Average Global Surface Temperatures Have Already Risen By 1.8 F (1C) Above Pre-Industrial Levels—2/3 Occurred Since 1975



2014: second warmest on record

2015: warmest ever recorded

2016: warmest ever recorded

2017: ranked 2nd warmest (by NASA) and 3rd warmest (by NOAA)

# Examples of Projected Impacts in California

(Combination of information from US EPA, California Natural Resources Agency Climate Change Assessments and reports to the Governor on California's Climate Adaptation Strategy)

- The Entire State Will Get Warmer:
  - Temperatures in Sacramento–San Joaquin basin are projected to rise by 3.5° to 6°F this century.
  - Temps in San Francisco Region are projected to rise by 2.7°F by mid-century and 3.5 °F to 11°F by end of century.
  - Temps in Los Angeles area are expected to warm by 5°F by mid-century, and higher afterwards.
- Heat waves will become more common and periods of extreme heat will expand -- e.g. extreme heat in the Sacramento--San Joaquin basin is expected to increase from 2 to 4 months long (July-August to June-September).
- Weather patterns will become more variable and extreme, causing more severe winter and spring flooding and longer, drier droughts.
- Sea level is projected to rise by as much as 20 to 55 inches by end of century.



# Sampling of Physical Impacts in California (Varies by Location)

Combination of information from California Natural Resources Agency Climate Change Assessments and reports to the Governor on California's Climate Adaptation Strategy)

- At least a 25% reduction of snowpack by 2050 will reduce water supply and increase water shortages.
- Increased extreme weather will lead to higher winter river flows, runoff and flooding.
- Higher temperatures and changing precipitation patterns will lead to more droughts.
- Risk of wildfires will increase several fold --e.g. by 2020 almost 1/3 of Mendocino Co. is likely to have very high fire risk, and by 2080 high fire risk area might be 3.5 times larger.
- Sea level rise and storm surges will flood many coastal communities and threaten to breach dikes in the Sacramento River Delta and elsewhere.
- Many other statewide and region-specific impacts.

# In Sum More Frequent and Extreme Disasters

**Wildfires**



**Heat Waves**



**Storms**



**Drought**



**River Flooding**



**Coastal Storm Surges**



**And many additional surprise disasters...**

# **More Ongoing and Intense (Toxic) Stresses** **From Seeing, Experiencing, or Worrying About...**

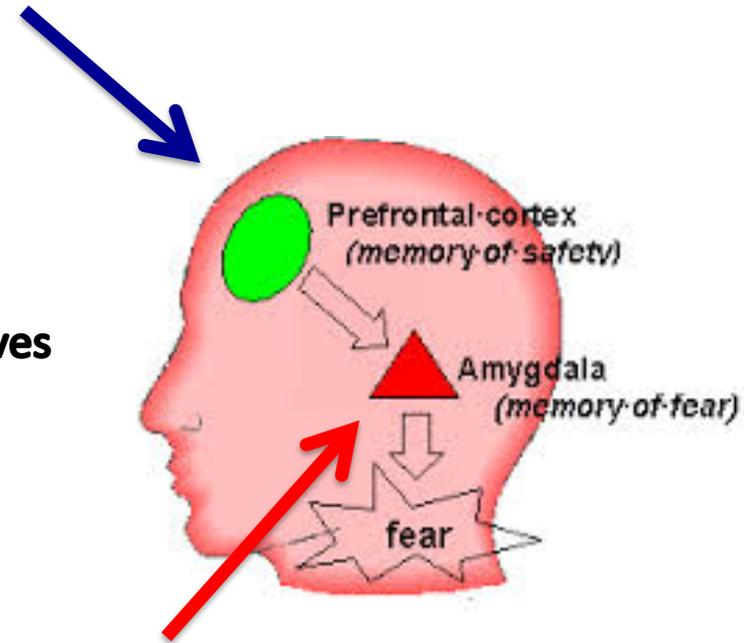


- Our future and our children's future
- Loss of place, community, culture and natural environment
- Disruption of close family and friend social support networks
- Involuntary migration
- Water, food and other resource shortages
- Economic disruptions and job losses
- New illnesses and diseases
- Disaster-triggered crime or violence
- Intensified racism, sexism, and other systemic oppressions
- Many other surprising chronic toxic stresses

# What Happens When Humans Experience Trauma and Toxic Stress?

## Prefrontal-Cortex: "Executive Center"

- Can direct, but not control, the Fear & Alarm Center.
- Rationally sorts out real & false threats & decides how to respond—but can also prevent discharge of hyperarousal.
- Develops beliefs about the world and self that give our lives meaning and direction



## Amygdala: The "Fear and Alarm Center"

- Fear-based survival reaction occurs automatically when senses threat and release neurochemicals into the body to prepare us to fight, flee, or if overwhelming freeze.
- Works like smoke detector—a false alarm is better than mistake— but can lead to dysregulation.



**“Direct, acute experience with climate change can produce...sudden and severe mental health consequences.”**

*(Mental Health and Our Changing Climate, American Psychological Association 2017)*

# Examples of Psychological Impacts of *Fast Moving* Climate Disasters

Effects depend on the intensity, duration, and level of exposure to the event.

Research shows 20%-50% of people impacted by extreme weather events can experience severe:

- Anxiety
- Depression
- PTSD
- Higher suicide rates
- More

## Examples

- 30% to 50% of Katrina survivors suffered from PTSD, severe depression, anxiety, or hopelessness, and suicides went up substantially.
- 20% of east coast residents after Superstorm Sandy reported PTSD, 33% reported depression, and 46% reported anxiety.



# Examples of Psychological Impacts of *Fast Moving* Climate Disasters

Effects depend on the intensity, duration, and level of exposure to the event.



Elevated levels of PTSD have been found among people impacted by wildfires...

sometimes lasting several years. (APA)

# Examples of Psychological Impacts of Fast Moving Climate Disasters

Effects depend on the intensity, duration, and level of exposure to the event.



Research shows similar psychological effects from flooding with curious increased impacts on children:

- Anxiety
- Depression
- PTSD
- Higher suicides rates
- Increased aggression in children

## Example

In the UK after the 2007 summer floods:

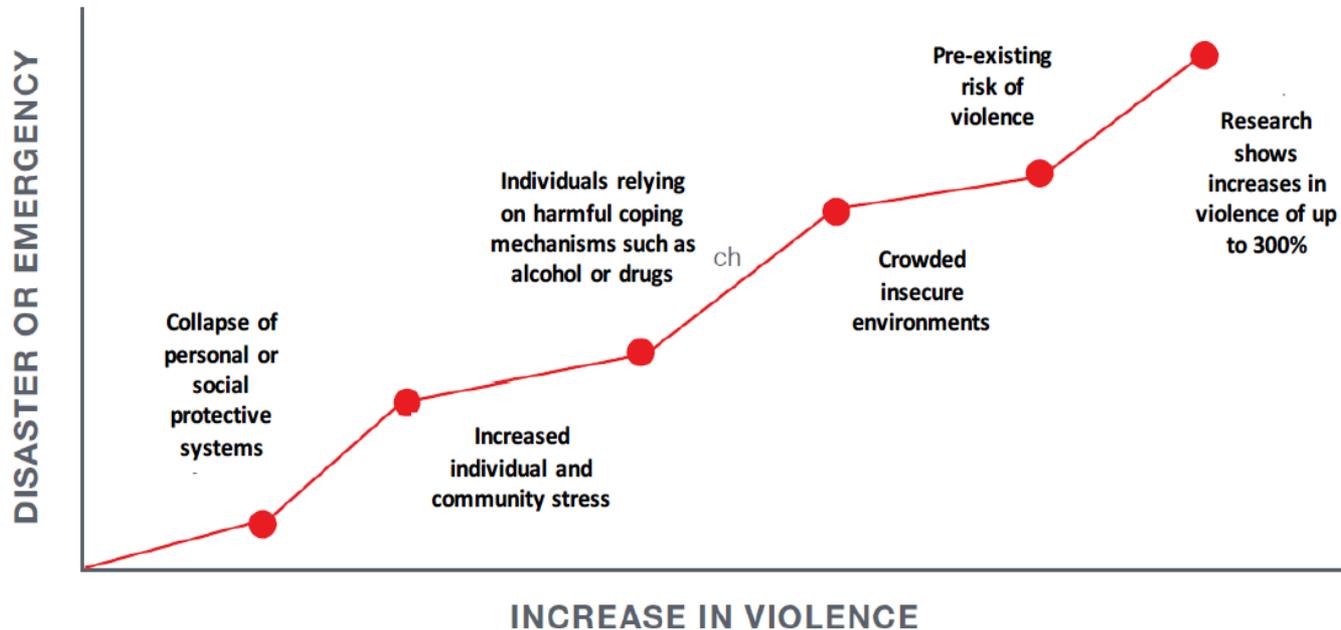
- 75% of the people directly impacted had severe anxiety
- 50% experienced depression
- About 25% suffered from PTSD

# Examples of Psychological Impacts of *Fast Moving* Climate Disasters

## Disasters Can Increase Violence

(Canadian Red Cross)

The risk of violence in emergencies increases by up to 300% due to a combination of shocks at the individual, family, community, and societal levels. The main drivers include:



Adapted From: *Best Practices for Building Resilience and Addressing Interpersonal Violence During and After Disasters*, by Amélie Doyon, Canadian Red Cross, ITRC Conference, Washington, D.C. November 4<sup>th</sup> 2016

# Examples of Psychological Impacts of *Slow Growing* Climate Impacts

Effects depend on the intensity, duration, and level of exposure to the event.



Research shows droughts can produce a similar range of mental health problems and increase substance abuse

## Examples

- Studies in Australia found that family dysfunction, depression, anxiety, hopelessness and suicide rose in mist of drought.
- In US droughts of the 1980s, male farmers and ranchers in Wisconsin, Minnesota, North Dakota, South Dakota, and Montana demonstrated rates of suicide twice the national rate.
- Many studies have found that alcohol & drug abuse rise in droughts.

# Examples of *Psycho-Social-Spiritual* Impacts of Climate Change

Effects depend on the intensity, duration, and level of exposure to the event.

Research shows hotter temperatures *alone* tend to increase:

- Substance abuse
- Domestic violence
- Assaults
- Robbery and burglary
- Higher suicides rates
- Interpersonal aggression
- Violence

## Examples

- One study looked at 30 years of monthly crime and weather data for 2997 U.S. counties and found that as temperatures warmed so did aggravated assaults, simple assaults, robberies, burglaries, larceny and vehicle theft.
- Research in Europe also linked hotter weather to higher crime rates.



# Hopelessness is a Slow Growing *Psycho-Social-Spiritual* Climate Impact

Research shows growing hopelessness and helplessness due to the “unrelenting day-by-day despair” of climate change

(APA)

Examples

- Prolonged drought, insidious impacts like food shortages, rising sea levels, and the gradual loss of natural environments are:  
**“causing some of the most resounding chronic psychological consequences.”**
- Mental health problems can also be triggered indirectly from:  
**“Watching the slow and seemingly irrevocable impacts of climate change unfold, and worrying about the future for oneself, children, and later generations.”**



# Climate Change is a “Multiplier of Injustice”

Quote by Jacqui Patterson, Director of the NAACP Environmental and Climate Justice Program  
and ITRC Steering Committee Member



- Indigenous communities, people of color, immigrants, low income populations and other frontline communities often experience climate impacts first and the hardest.
- The impacts are often aggravated by unjust and inequitable norms, practices, and policies that exist before impacts, and are intensified during, and afterwards.



# Climate Change Can Aggravate Health Inequities

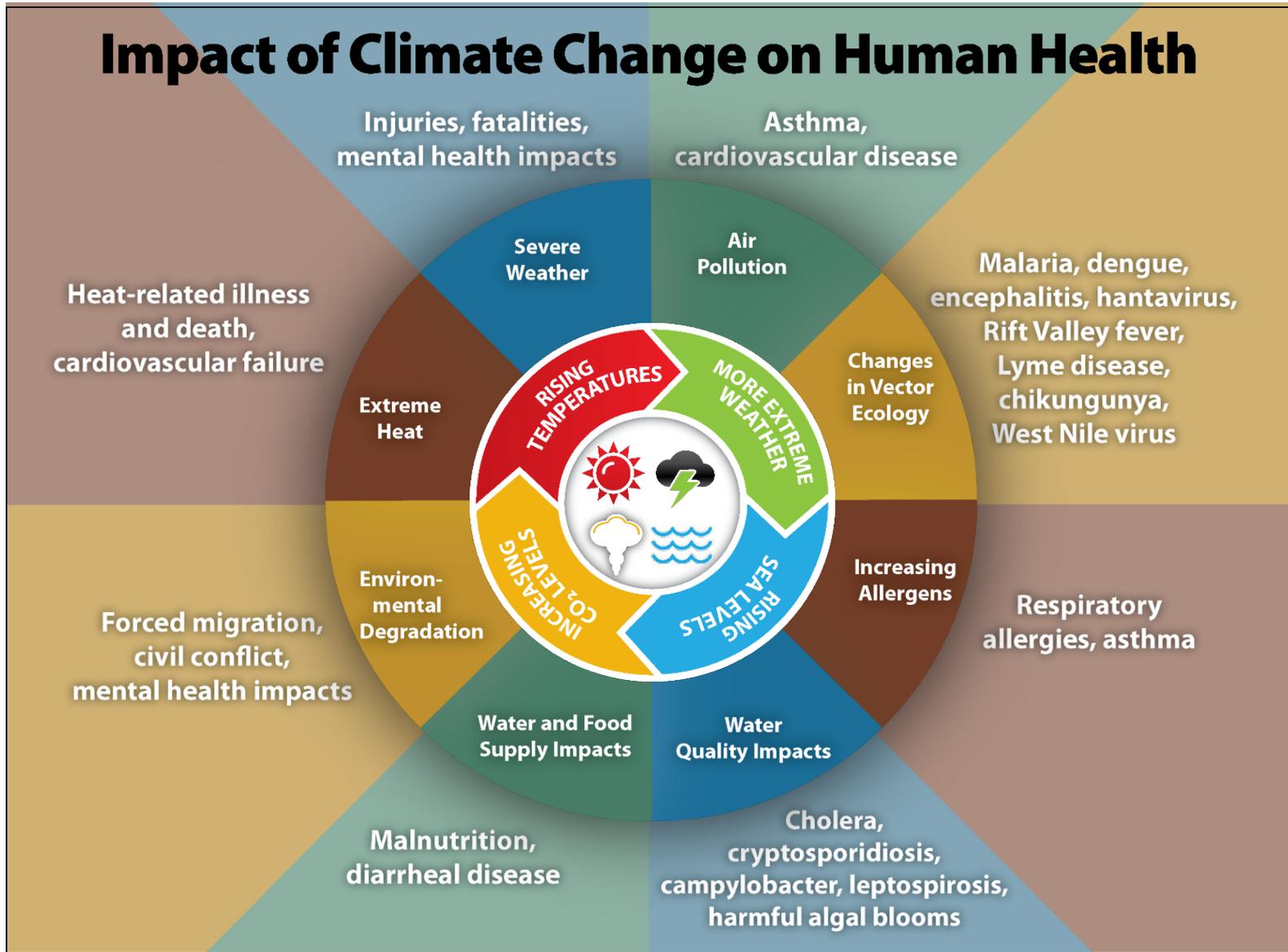
Health inequalities are **socially determined**, **avoidable**, and **unjust** differences in people's health across the **population** and **between specific groups**.

They **disadvantage people** and limit their chance to **live longer, healthier lives**.

## Some Examples of Health Inequities Include:

- Living in locations where disasters are most likely to occur
- Poor air or water quality
- Poor quality housing and transportation access
- Lack of employment opportunities and sufficient income
- Poor early childhood development and education
- Lack of access to healthy foods
- Lack of access to, or extremely costly, health care services
- Lack of sufficient protection from crime and violence
- Lack of protection against institutionalized racism and discrimination

# Impact of Climate Change on Human Health



Fearful people often retreat into a self-protective survival mode that leaves them uninterested in external issues like emission cuts



Left unaddressed, the adverse human reactions to climate impacts threaten to stall efforts to minimize the climate crisis!

# What is Trauma?

## The Loss of Our Sense of “Self”

Trauma results from sudden and shocking—or persistent overwhelming—event(s) that make us acutely aware of our inherent vulnerability and mortality ...



and threaten our deeply held and often unconscious assumptions that the world is comprehensible, manageable, and meaningful, which undermines our sense of self.

# Climate Disasters & Toxic Stresses Can Produce Both...



## Individual Trauma



## Collective Trauma

**Both can cause people to  
harm themselves, others, and the natural environment**

# Summary of Risks If Left Unaddressed

## Stress Reaction From Release of Cortisol & Adrenaline

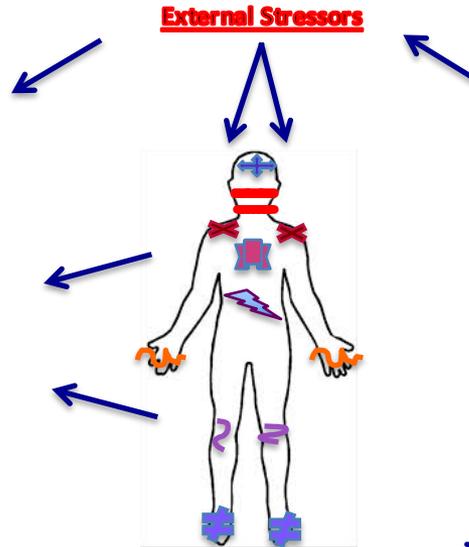
- Physical Reaction:  
Increased blood pressure, pulse rate, difficult breathing, cold sweats, muscle tension, aches & pains, sleep disorders
- Mental Reaction:  
Excessive fear, worry, guilt, lost trust, shattered assumptions and lost meaning

If not discharged, what began as adaptive reactions can become harmful



## Maladaptive Coping

- Self-numbing via legal or illegal substance, food, tobacco abuse
- Seeking relief via diversions like overworking
- Seeking relief by inflicting our distress on others via aggression or violence
- Dissociation, denial, reenactment
- Less ability to cope, problem solve, and enhance wellbeing



## Group/Social Breakdown

(Trauma-Organized Orgs & Communities)

- Distrust, despair, meaninglessness
- Low empathy and compassion
- More authoritarianism and extremism
- 'We vs. Them' polarization
- Acting out: aggression, violence, crime
- Less ability to cope, problem solve, and enhance wellbeing

If many people experience these reactions



If It Continues



## All Encompassing Personal Breakdown

- Physical health problems (e.g. cancer, heart)
- Psycho-emotion problems (e.g. anxiety, depression)
- Spiritual problems (e.g. hopelessness)
- Cognitive problems (e.g. memory loss)
- Behavioral problems (aggression or withdrawal)
- Less ability to cope, problem solve, and enhance wellbeing

**A Whole New Way of Thinking Is Needed  
To Respond to a 3-7<sup>0</sup> F or More Temp Rise!**



**Rethinking**

# A Whole New Way of Thinking is Needed to Respond to a 2C Temp Rise

## Disaster mental health programs—while vital--will increasingly be:

- Overwhelmed (most are already fragile)
- Stop Gaps because most are short term and only seek to stabilize people during and immediately after disasters
- Inadequate because they do not help people cope with persistent and intensifying (toxic) climate stresses.



The Adverse Human  
Reactions to Climate Impacts

# A Whole New Way of Thinking Is Needed to Respond to a 2C Temp Rise

Many direct service programs—while vital--  
will be increasingly inadequate because they are:

- Siloed into mental health, physical health, social programs
- Not designed to address 2-5 co-occurring mental health and psycho-social-spiritual problems simultaneously
- Not able to assist all of the people affected.



The Adverse Human  
Reactions to Climate Impacts

# A Whole New Way of Thinking Is Needed to Respond to a 2C Temp Rise

Traditional approaches to risk and vulnerability analysis will be also increasingly inadequate because they tend to...

- Focus on visible easily quantifiable things like buildings and infrastructure and ignore the human dimensions of resilience.
- Seek to eliminate weaknesses (which can seem endless) rather than build on strengths & enhance protective factors.

(Twigg, 2004, IFRC 2012)



The Adverse Human  
Reactions to Climate Impacts

# A Whole New Way of Thinking Is Needed to Respond to a 2C Temp Rise

Traditional concepts of “resilience” will also be inadequate because...  
it will be impossible to “bounce back” to pre-crisis conditions....



The Adverse Human  
Reactions to Climate Impacts

**And many people *don't want this!***

Traumatized and stressed people want to be able to  
**think & act in healthy ways** even in unhealthy conditions  
and **increase** their sense of wellbeing **above previous levels!**

# A Whole New Way of Thinking is Needed to Respond to a 2C Temp Rise

## Resilience vs. Preparedness



## RAND Corp. Assessment

**Traditional Disaster Preparedness  
Programs Have Not Worked  
Well Enough**



## What To Do?

### **Two Wolves: A Cherokee Parable**

# Prevention Before Harmful Reactions Occur Is Key!

## **And Prevention Works!**

- ACEs prevention
- Smoking prevention
- Minimum drinking age laws
- HIV infections
- Childhood immunizations
- Motorcycle and bicycle helmet laws
- Child seat and safety belt use
- Many More Examples!

**A major statewide prevention movement can**

**Build a Culture of Transformational Resilience!**



# Phases Commonly Seen in Disasters



# Transformational Resilience is *Essential* for Climate Change

(A version of post-traumatic growth)

**The ability to constructively cope with climate and other adversities and use them as catalysts to learn, grow, and increase personal, social, and ecological wellbeing substantially above pre-crisis levels.**

From *Transformational Resilience*, B. Doppelt  
(Greenleaf Publishing 2016)

# Key Elements of Helping *Individuals* Build Their Capacity for Transformational Resilience

Age, culturally, and demographically appropriate:

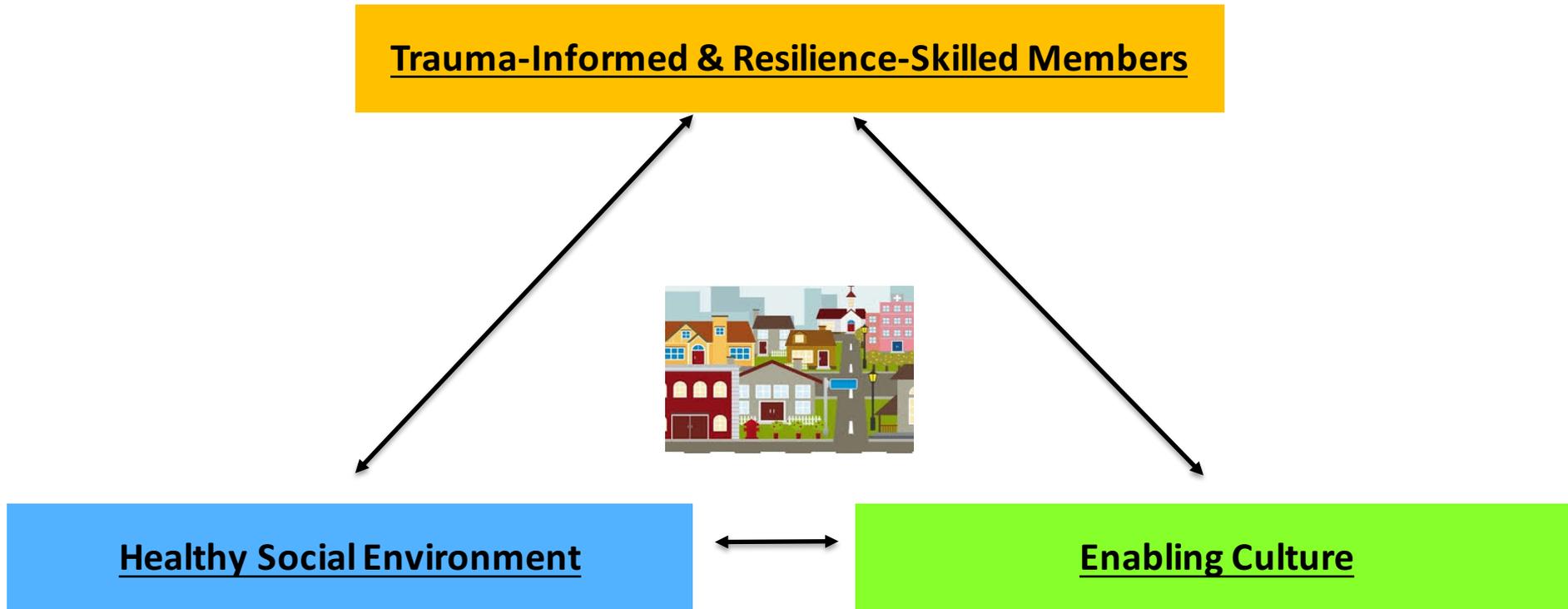
## “Presencing Skills”

- Self-regulation
- Social supports
- Self-efficacy

## “Purposing Skills”

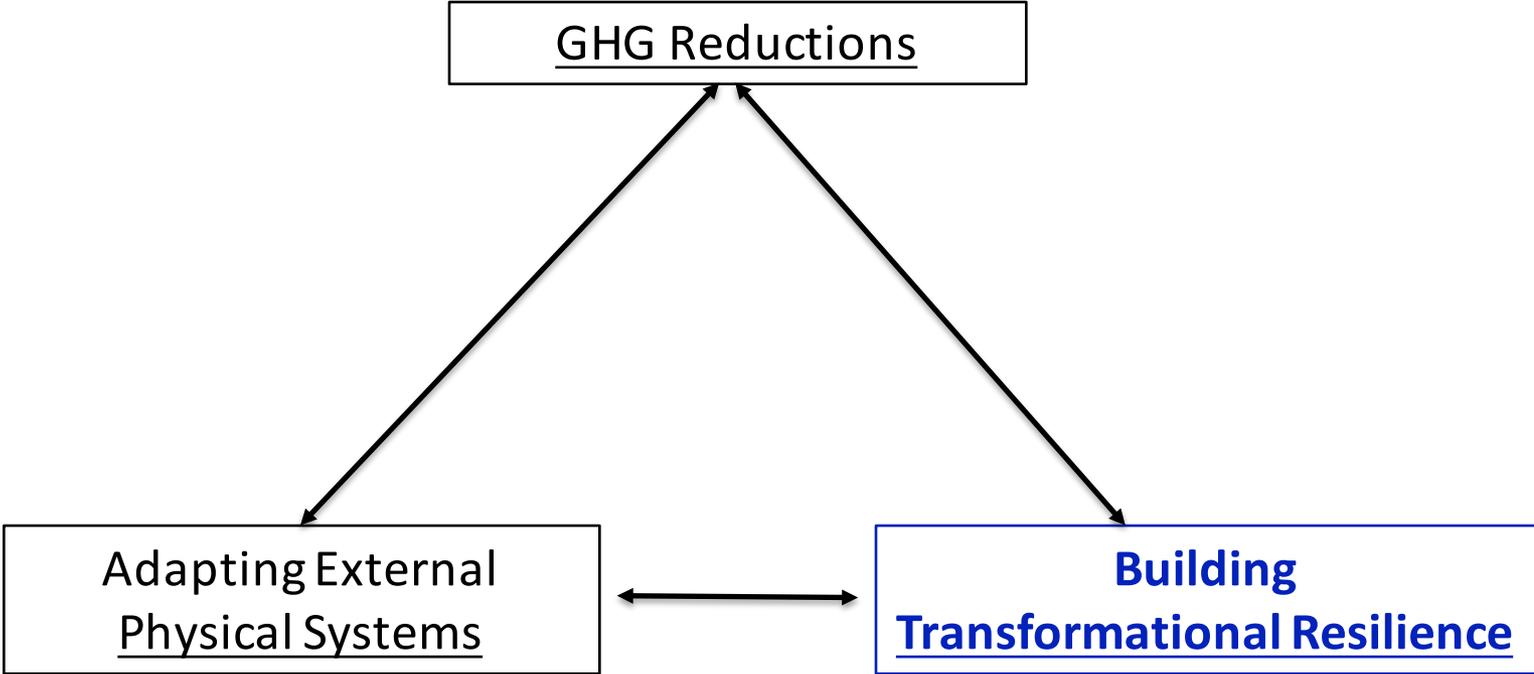
- Meaning making
- Values-based action
- Harvesting hope

# The Three Pillars of Transformational Resilience in Organizations and Communities



See ITRCLibrary on the website for research basis of this model.

# Climate Solutions Must Focus on Building Transformational Resilience!



**Building a Statewide Culture of  
Transformational Resilience *Is Possible!***

**“The ideas of one generation become the  
instincts of the next.”**

**— D.H. Lawrence**



**Let's make California the  
First Trauma-Informed Human  
Resilience-Enhancing State in the  
U.S. for Climate Traumas & Stresses!**