

# Integration of Psycho-Social Aspects into Risk Assessment & Management and Decision –Making in a Population Health Approach

Louise Lemyre, Ph.D., FRSC  
School of Psychology, Faculty of Social Sciences  
Director of 'Groupe d'Analyse Psychosociale de la santé', GAP-Santé  
McLaughlin Research Chair on Psychosocial Aspects of Risk and Health  
Center on Governance & Institute of Population Health  
University of Ottawa  
And  
DRDC-CSS Psycho-Social Science Cluster Leader



[www.gapsante.uOttawa.ca](http://www.gapsante.uOttawa.ca)  
[louise.lemyre@uOttawa.ca](mailto:louise.lemyre@uOttawa.ca)



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## Perceptions Matter : ....South Korea...



[http://www.daylife.com/photos/04sw1U0gCvbm/South\\_Korea\\_AND\\_Mad\\_Cow](http://www.daylife.com/photos/04sw1U0gCvbm/South_Korea_AND_Mad_Cow)



<http://news.bbc.co.uk/2/hi/asia-pacific/7432681.stm>



[http://www.daylife.com/photos/01X9W9dewR/South\\_Korea\\_AND\\_Mad\\_Cow](http://www.daylife.com/photos/01X9W9dewR/South_Korea_AND_Mad_Cow)

Lemyre, 2008

Starting from 'An Event' (so-called Physical Reality:E)  
adding  
'the Perception' (so-called Psychosocial Reality: E' )

Expert:

Risk Assessment → Risk Guidelines → Risk Mitigation

Public:

Risk Perception → Risk Acceptability → Risk Behaviours

*Risk Evaluation*

*Risk Tolerance*

*Risk Management*

Lemyre, 2008

$Risk = f ( p(Hazard) , p (Damage) )$

$Hazard = f ( E, E' )$

$Damage = f ( p (mortality + morbidity + psycho-social ripple) )$

Traditional Risk Assessment: emphasis on Hazard,

GAP-Santé: emphasis on Damage/Consequences/Ripples

→ Multi-damage, multi-level, multi-phases

→ time analysis (pre-event, brought-forward analysis)

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## Types of Disasters/ Crises/ Hazards

### Characteristics

- Familiarity
- Maliciousness
- Predictability
- Recurrence
- Warning period
- Preventable
- Magnitude
- Duration
- Effects
- Response

Technological



Terrorism



Natural



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## Expanding Our Focus: A Population Health Interdisciplinary Approach

### Traditional

- Mortality, Morbidity
- Hazard
- Occurrence
- Individual vulnerability
- Response
- Treatment
- Decision-Making

### Population Health

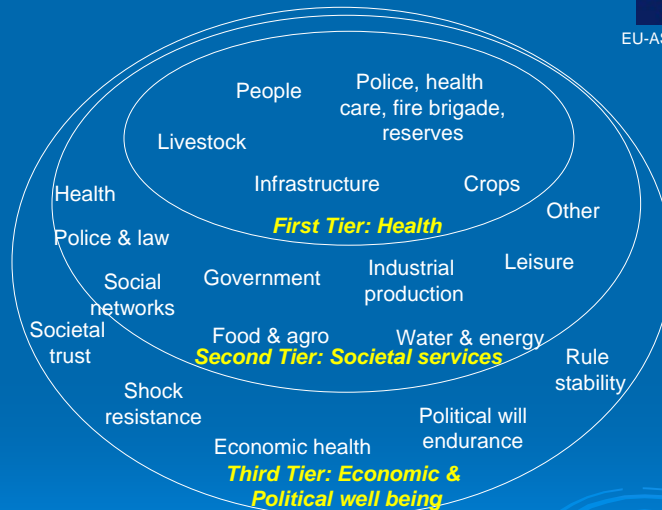
- + Social, Resilience
- + Consequences
- + Continuous Pre&Post
- + Community capacity
- + Preparedness
- + Prevention
- + Shared Governance

Lemyre, 2008

# Tier model – impact areas in society

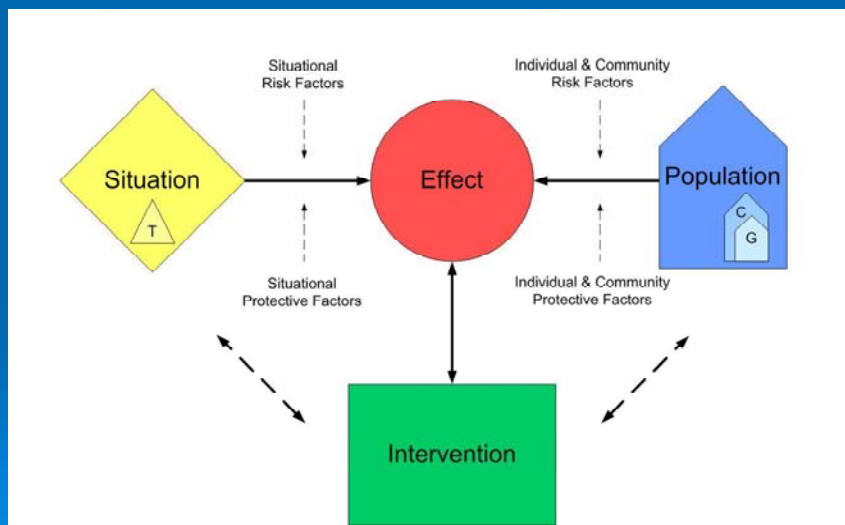


EU-ASSRBCVUL, 2006

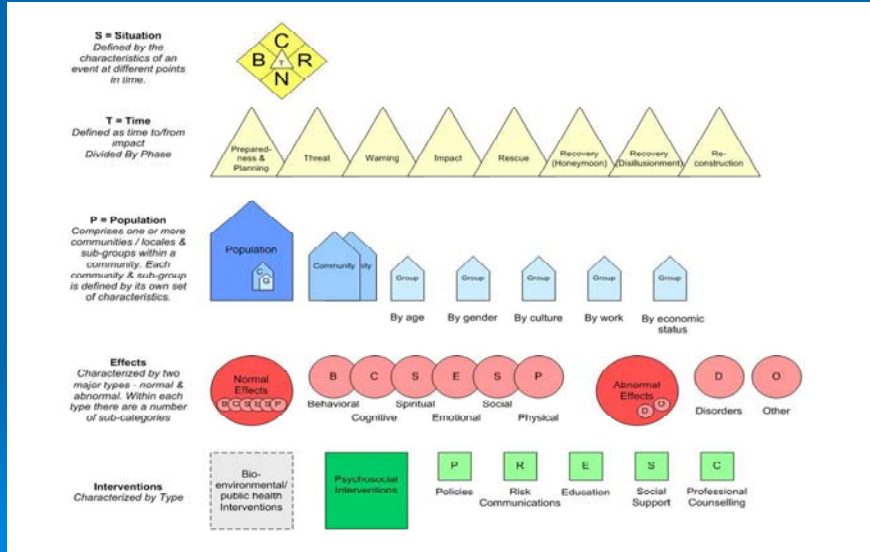


- Tier 1 is direct damage to health (human mortality, casualty, food chain)
  - Tier 2 is damage to services and functions (business continuity, surge, supplies)
  - Tier 3 is damage to economic, political, social fabric (trust, social order, societal vitality)
- Lemyre, 2008

# The Psychosocial Risk Assessment & Management (P-RAM) Framework

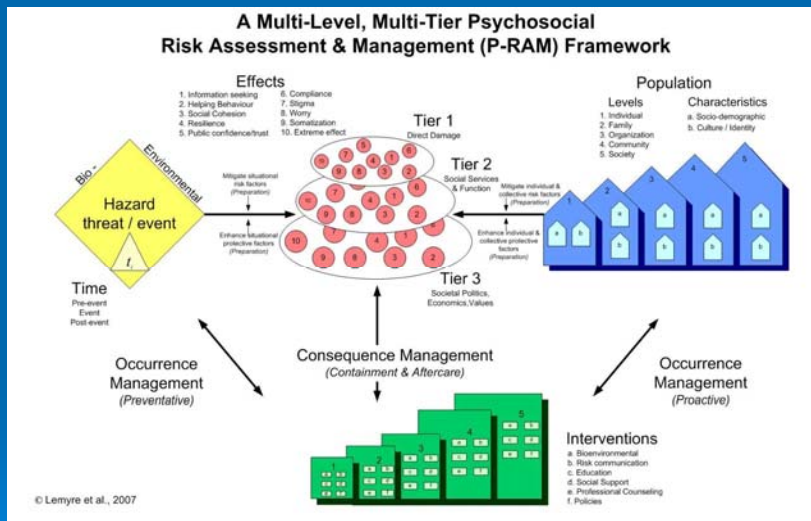


# Elements of the P-RAM Framework



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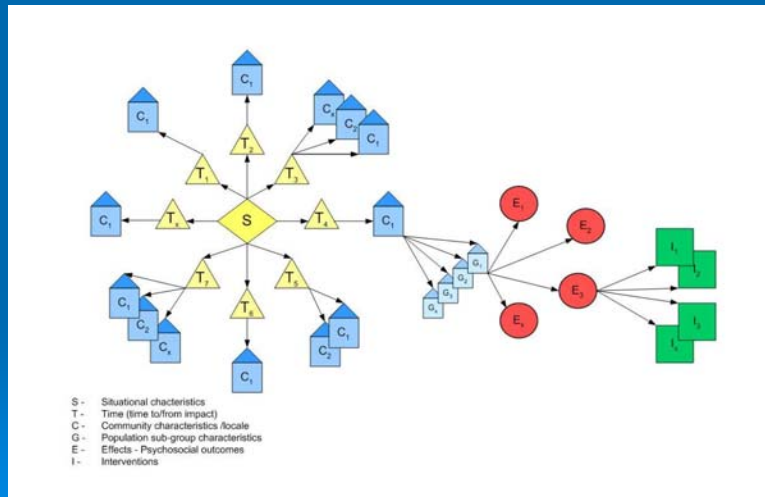
## Version 2.2... Multi-Tier Multi-level



Policy characterization by Function, Tier, by level, by time

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## Relationships Among Elements of the P-RAM Framework



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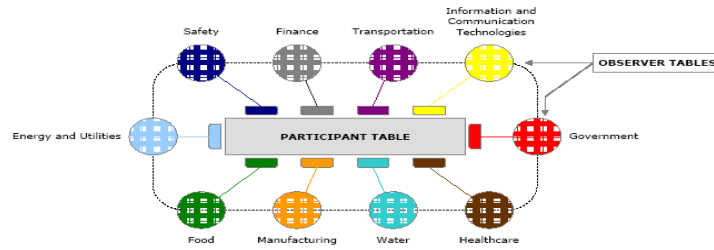
## Basis

- -synthesis of evidence-based psych literature
  - Less panic, more resilience, purposeful dcs
- - national surveys of risks and appraisals
  - Social risks, biotics, sense of mastery
- - interviews and focus groups
- - experiments
- - observation of simulation / exercises
  - Pandemic planning, Olympic2010

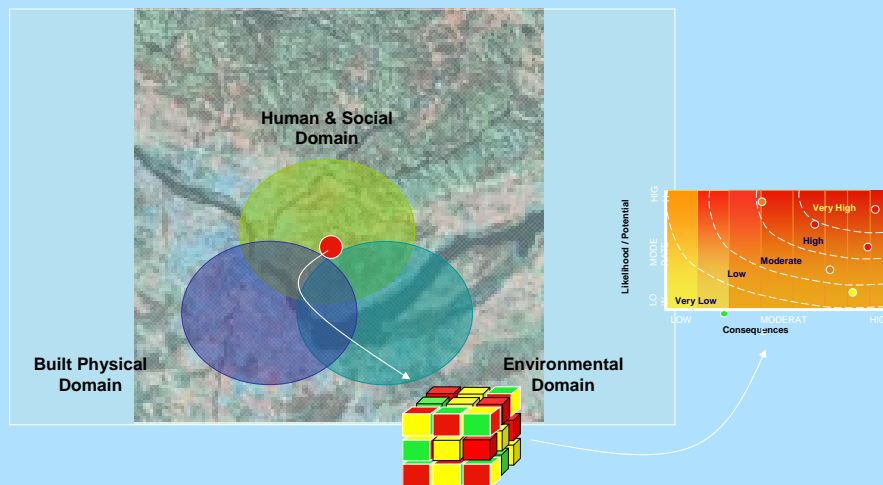
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## In Vivo simulation

### APPENDIX A: LAYOUT



With DRDC- CSS (Defence R&D Centre for Security Science)  
and the Clusters (CBRNE- F)<sup>P-S</sup>  
Mapping Risks and Risk Elements Across Domains



From Goudreau et al. DRDC, 2008

# Threat Scenarios Vignettes

Threat Scenario  
Identification



From Goudreau et al. DRDC,2008

## Relative Technical Feasibility Matrix

Score	Material / Agent	Equipment to Manufacture & Deliver	Technical Expertise	Knowledge
9 8	material readily available	no specialized equipment	low level	readily available
7 6 5	material easily produced	standard laboratory and dissemination equipment	bachelor degree or technical school level	standard open literature
4 3 2	material difficult to produce	some specialized equipment	advanced technical training	specialized scientific literature or declassified military documents
1 0	material very difficult to produce or acquire	custom designed / manufactured equipment	advanced specialized technical training	closely held military information

From Goudreau et al. DRDC,2008

**High** 28 – 36  
**Medium** 19 – 27  
**Low** 9 – 18  
**Very low** 0 – 8



## Impact Matrix

	Dead/ Injured	Scale of Response	Disruption and/or Replacement of Capability and or Capacity (facilities, environmental, health, food supply, security)	Economic loss (\$CDN)
9 8	10,000+ / 100,000+ [8 = 5,000 / 50,000]	International	Extensive international disruption; Restoration / recovery on the order of decades	\$1,000 B [8 = \$200 B]
7 6 5	[7 = 2,000 / 20,000] 1,000 / 10,000 [5 = 500 / 5,000]	National	Extensive national disruption; Restoration / recovery on the order of years	[7 = \$50 B] \$10 B [5 = \$2 B]
4 3 2	[4 = 200 / 2,000] 100 / 1,000 [2 = 50 / 500]	Provincial	moderate – Provincial disruption; Restoration / recovery on the order of months	[4 = \$500 M] \$100 M [2 = \$20 M]
1 0	[1 = 20 / 200] 10 / 100 or fewer	Local	Minimal impact on capability or capacity, ; Restoration / recovery on the order of days	[1 = \$5 M] \$1 M

From Goudreau et al. DRDC,2008

<b>Catastrophic</b>	<b>28 – 36</b>
<b>Critical</b>	<b>19 – 27</b>
<b>Moderate</b>	<b>9 – 18</b>
<b>Low</b>	<b>0 – 8</b>

## Vulnerability Matrix Factors (Impact vs. Relative Technical Feasibility)

Impact	Relative Technical Feasibility			
	High	Medium	Low	Very Low
<b>Catastrophic</b>	Extreme	Extreme	High	Moderate
<b>Critical</b>	Extreme	High	High	Low
<b>Moderate</b>	High	Moderate	Moderate	Low
<b>Low</b>	Moderate	Low	Low	Low

From Goudreau et al. DRDC,2008

## Risk Assessment Matrix

(factors Vulnerability and Intelligence Judgement to establish a risk prioritization rating)

Vulnerability	Intelligence Judgement			
	Severe	Substantial	Moderate	Low
Extreme	Immediate	Immediate	High	Emerging
High	Immediate	High	High	Discretionary
Moderate	High	Emerging	Emerging	Discretionary
Low	Emerging	Discretionary	Discretionary	Discretionary

From Goudreau et al. DRDC,2008

## Capability Analysis & Investment Strategy on Event Chronology

### Security



### Safety

Seven phases of a security / safety event ranging from -3 to +3 in time.

**DRDC CSS Adopts an "All-Hazards" Approach**

From Goudreau et al. DRDC,2008

