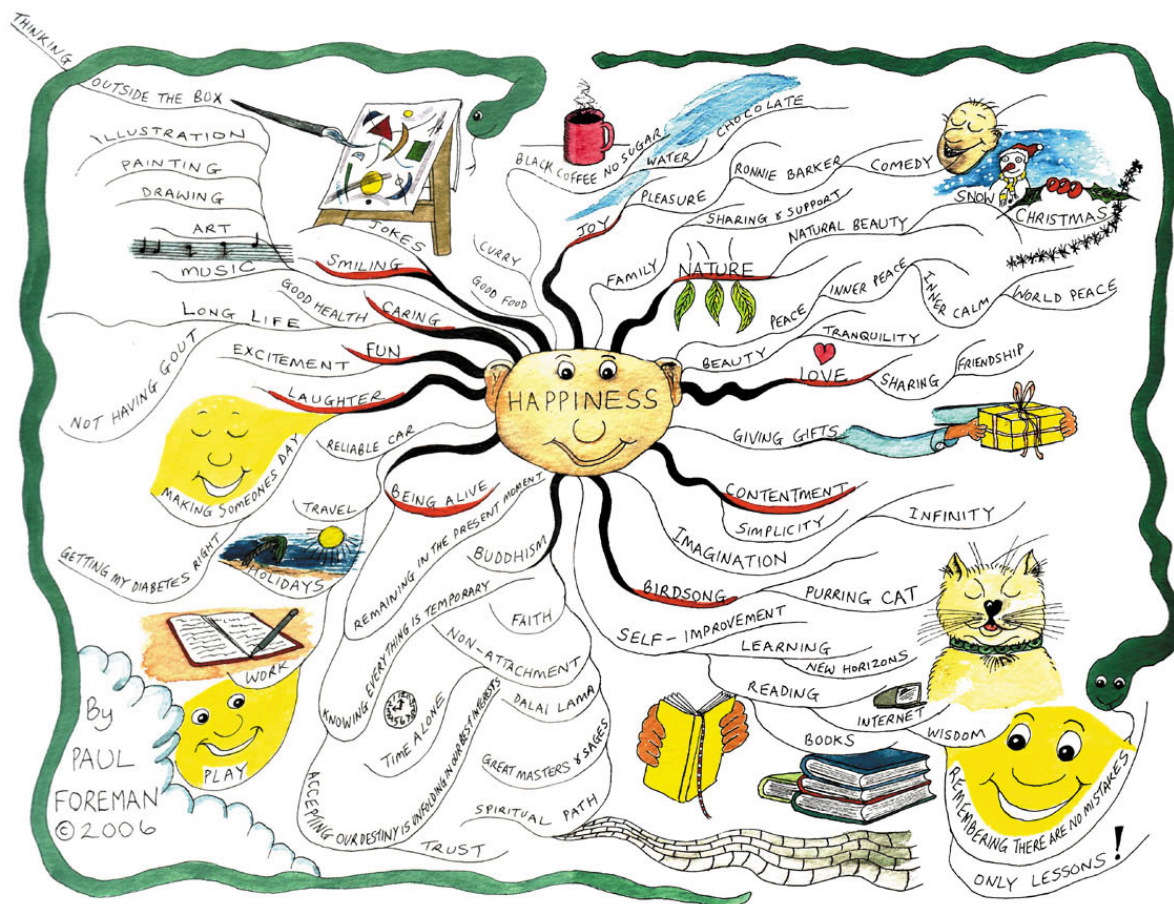


Developing an Index of Human Well-Being *Ecosystem Services in Context of Economic and Social Aspects*



Changing the economic and human well-being foundation for environmental decision-making relating to ecosystems

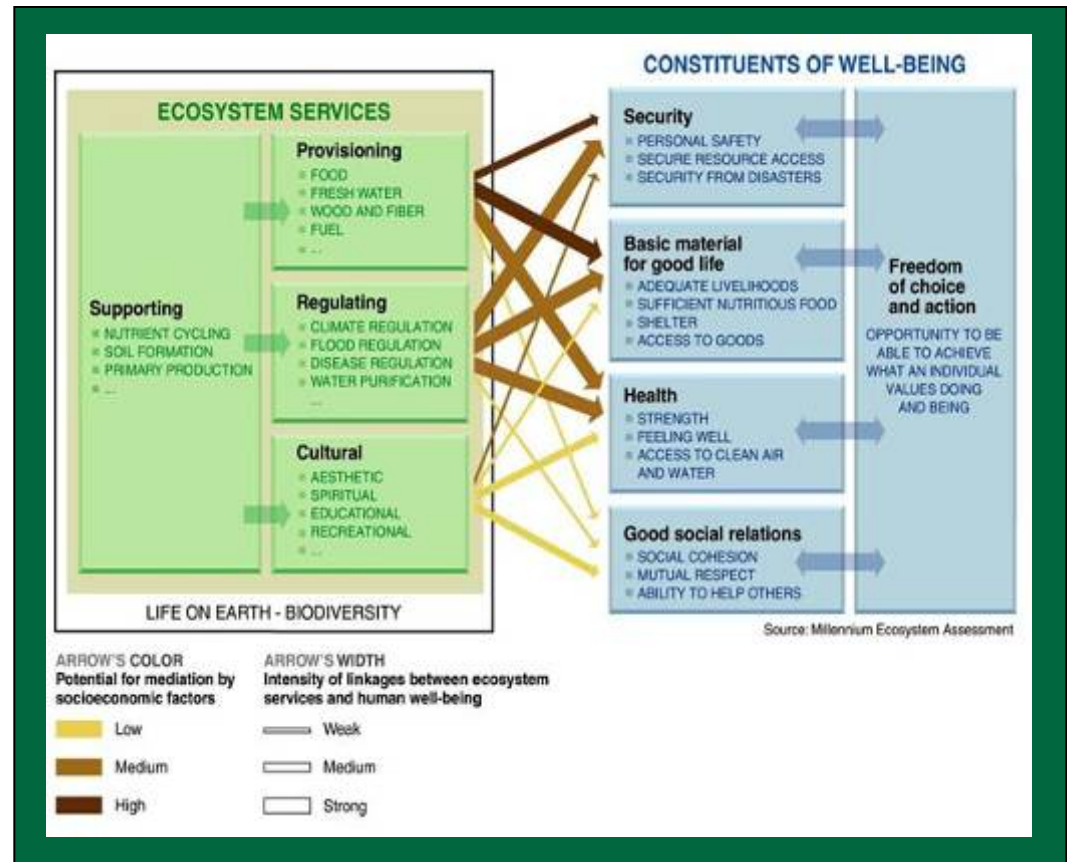
ESRP Vision-

A comprehensive theory and practice for quantifying ecosystem services, their value and their relationship to human well-being, is consistently incorporated into environmental decision making.



What are Ecosystem Services?

We define ecosystem services as the products of ecological functions or processes that directly or indirectly contribute to **human well-being**, or have the potential to do so in the future.



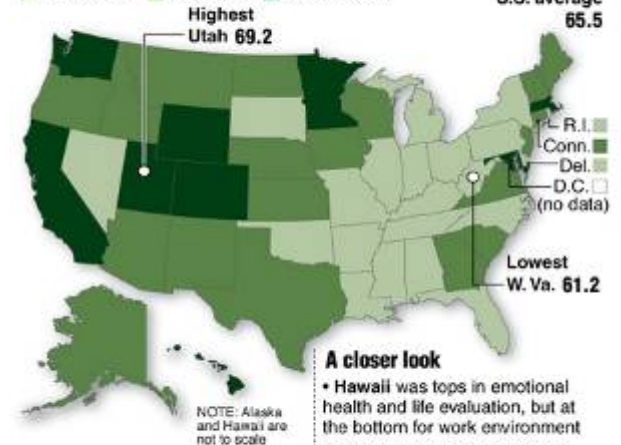
Why Do We Need to Include Well-Being in Ecosystem Services Research?

- Treating humans as part of ecosystems
- Assessing ecological-human relationships demonstrates how humans can benefit from maintaining, restoring and enhancing ecosystem services
- Taking a “What’s in it for me?” approach attempts to address a complex problem with unified support to better the chances of success

Mapping Americans' well-being

State-by-state assessment of U.S. physical, mental and social health:

Below 65.5 65.5-66.9 67 and above U.S. average 65.5

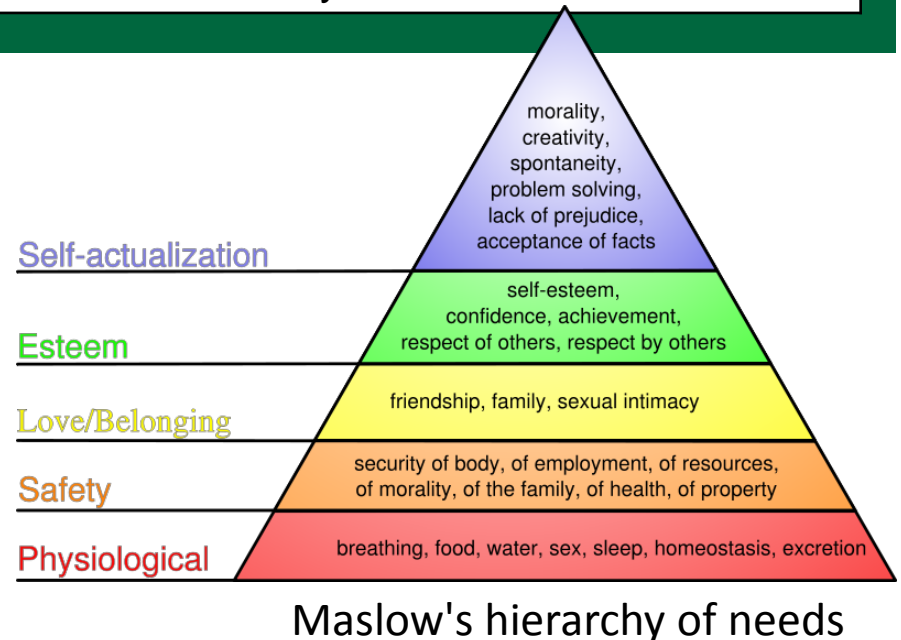
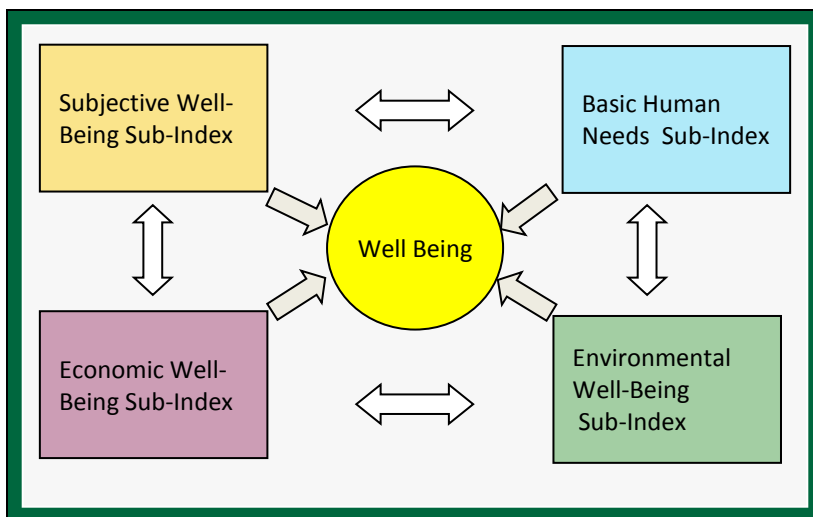


© 2009 MCT
Source: Gallup-Healthways Well-Being Index, based on telephone interview with more than 350,000 U.S. adults as part of Gallup Pof Daily tracking in 2008; participants asked to rank responses on scale of 1-10 margin of error: +/- 1 percentage point Graphic: Pat Carr

GDP only loosely reflects the nation’s state of well-being...throw in physical, mental and social health, and you get a different story. So what role does the environment play?

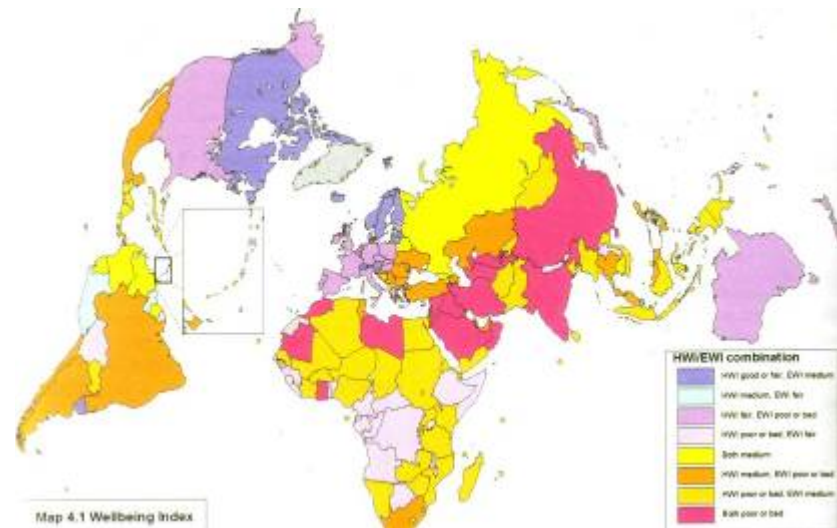
What are the major elements of well-being?

ELEMENT	DESCRIPTION
Basic Needs	Fulfillment of basic human needs, as defined by Maslow's hierarchy of needs (ex. Food, Shelter, Basic Health)
Economic well-being	Well being obtained from financial stability
Subjective well-being	Affective evaluation of life ability and mental functioning
Environmental well-being	Well being obtained from a healthy natural environment



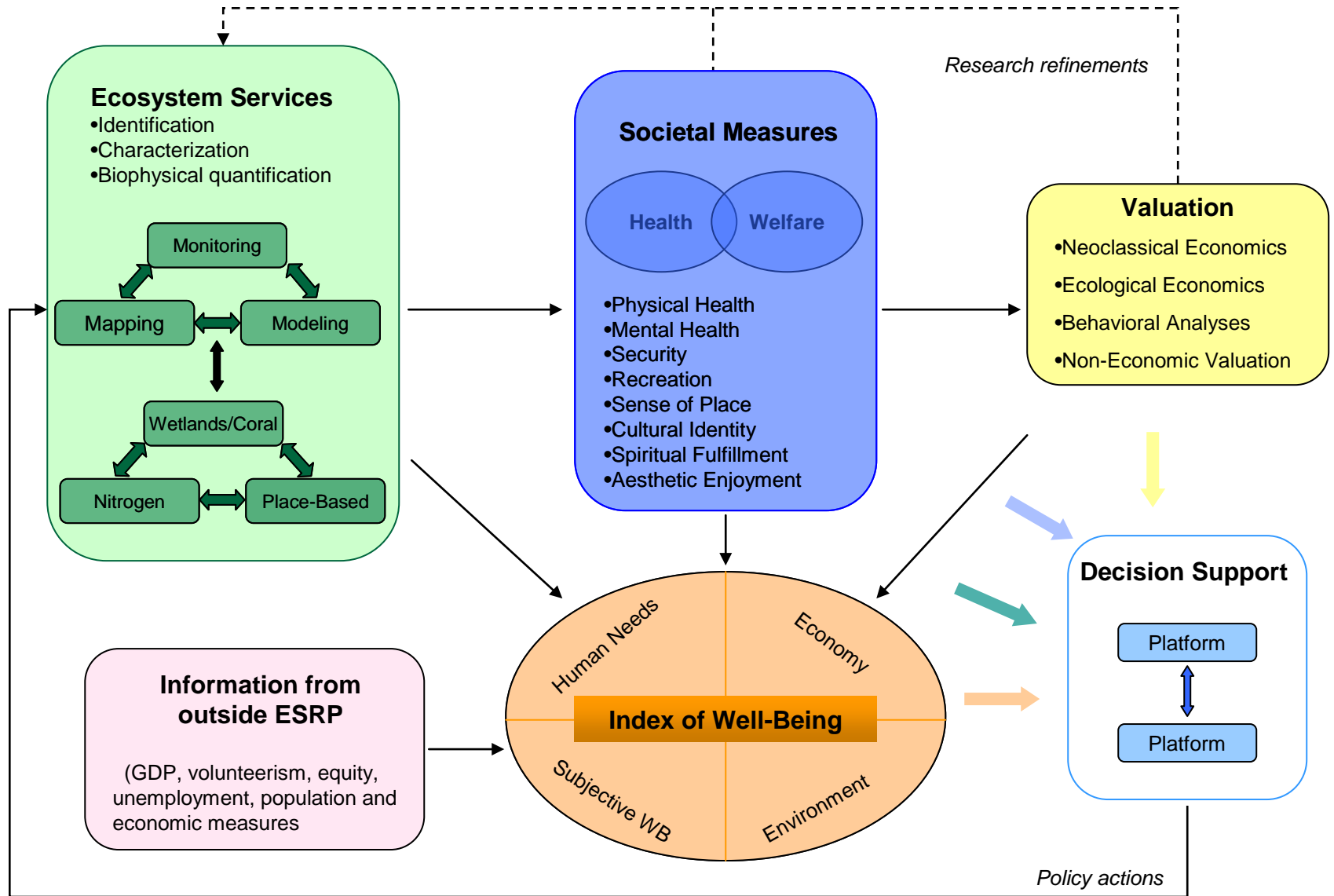
Well-Being Indices: Scale and Measures

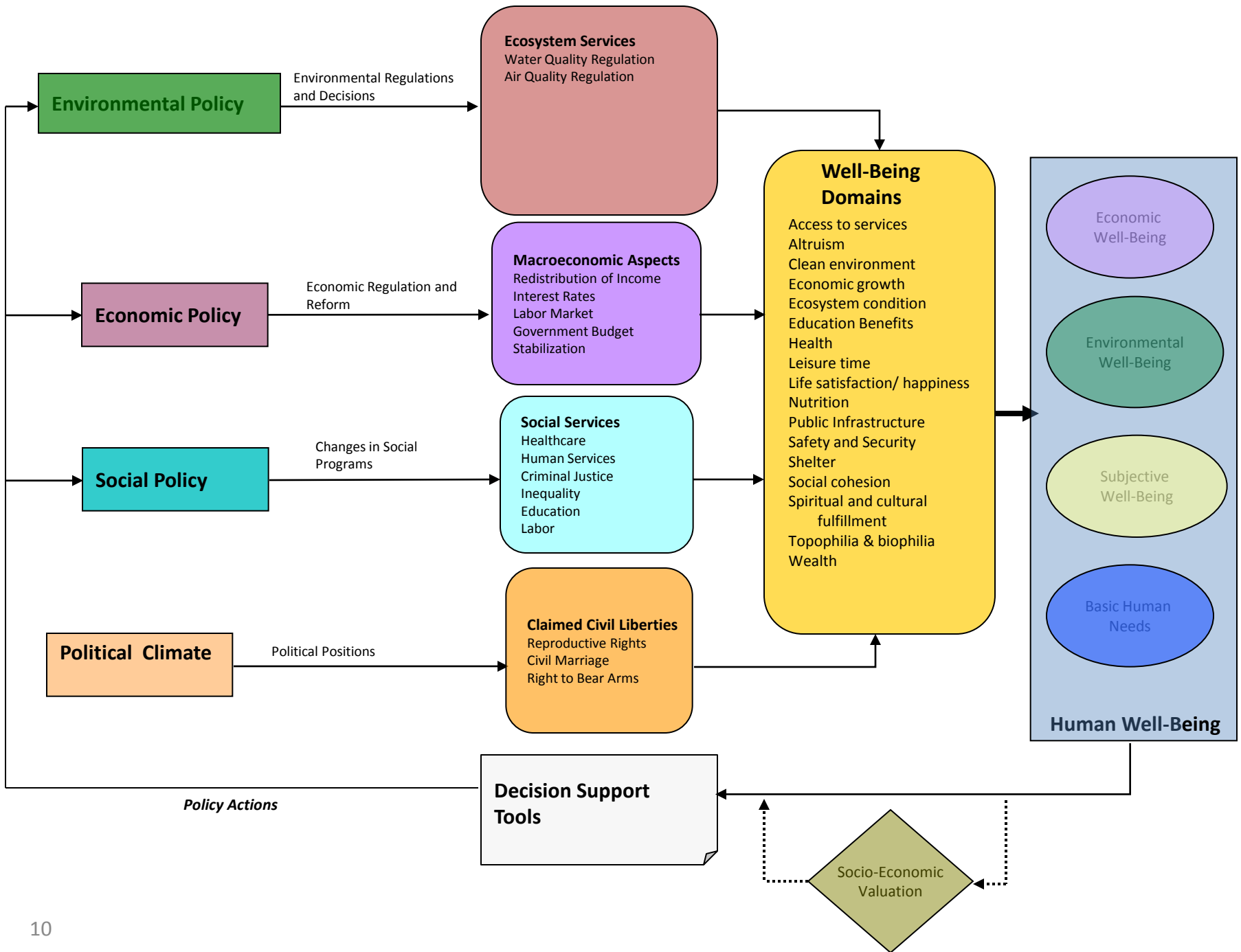
- 19 Well-Being Measures
 - 16 National, composite measures (Canada, U.S. EU countries, Bhutan)
 - 2 regional (Nova Scotia, Hong Kong)
 - 1 state (KY)
 - 1 local (New Zealand cities; comprehensive list of indicators)
- 133 Domains
- 760 Indicators



Index	Source	Scale	Economic	Basic Needs	Environmental	Subjective Well-Being
The Economists Intelligence Unit's Quality of Life Index	EIU	National	X	X		
Australian Unity Wellbeing Index	Cummins et al. 2003	National	X	X	X	
Human Development Index	UNDP 1990 -2008	National	X	X		
Quality of Life Index for developed countries	Diener 1995	National	X	X	(X)	X
The Well Being of Nations	Prescott Allen 2001	National	X	X	X	
Sustainable Society Index	Kerk and Manuel 2008	National	X	X	X	
Hong Kong Quality of Life Index	Chinese University of Hong Kong Centre for QOL 2008	Regional	X	X	X	X
Well-being in EU countries multidimensional index of sustainability	Distaso 2007	National	X	X	X	
National Well being Index-Life Satisfaction	Vemuri and Costanza 2006	National	X	X	X	(X)
Child and Youlth Well Being Index	Land, Lamb and Mustillo 2001	National	X	X		
Canadian Index of Well-Being	Institute of Wellbeing 2009	National	X	X	X	
Happy Planet Index	New Economics Foundation 2007	National		X	X	X
Index of Child Well-Being in Europe	Bradshaw and Richardson 2009	National	X	X		X
Index of Social Health	Miringoff and Miringoff 1999	National	X	X		
American Demographics Index of Well-Being	Kacapyr 1996	National	X	X		
Gallup Healthways Well-Being Index	2008 Gallup	National		X		X
The State of the Commonwealth Index	Watts 2004	State	X	X	X	
QOL 2007 in Twelve of New Zealand's Cities	Kath Jamieson 2007	Local	X	X	X	X
Nova Scotia 2008 GPI	GPI Atlantic	Regional	X	X	X	
Gross National Happiness	The Centre for Bhutan Studies 2008	National	X	X	X	X

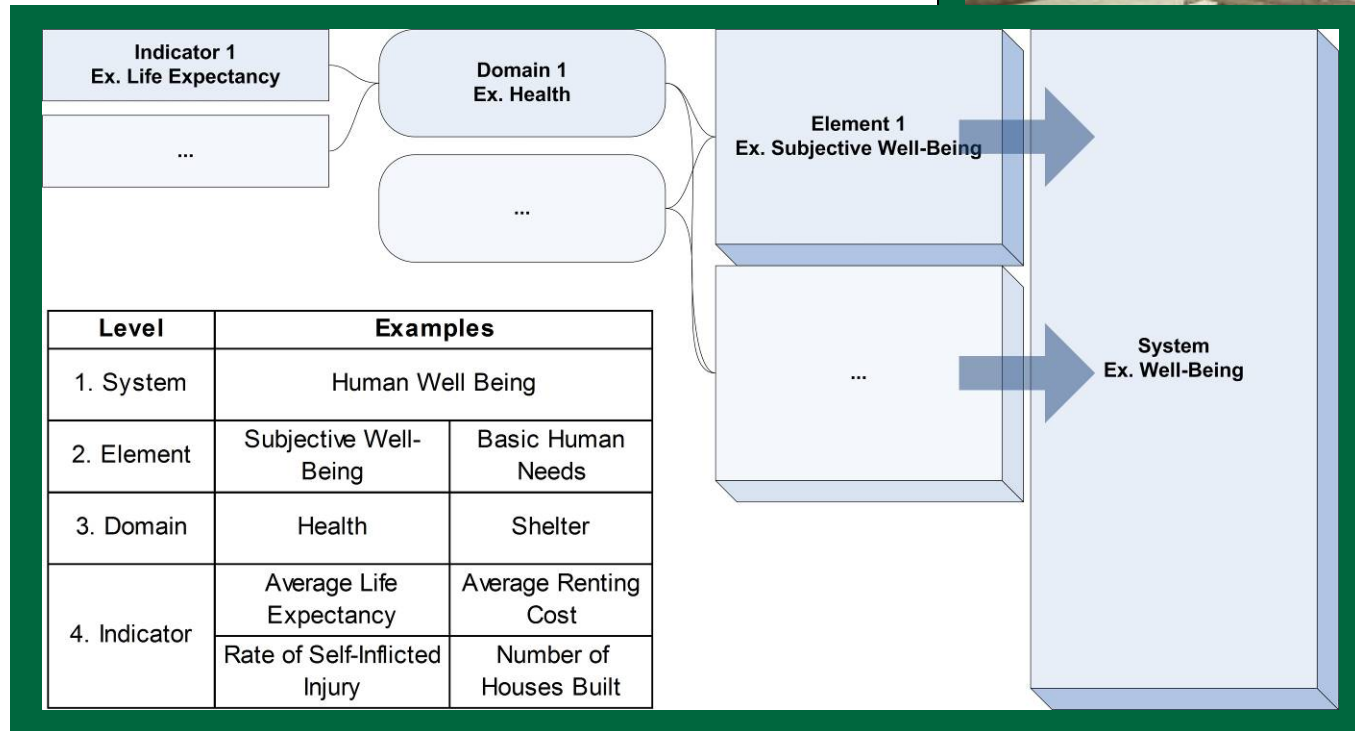
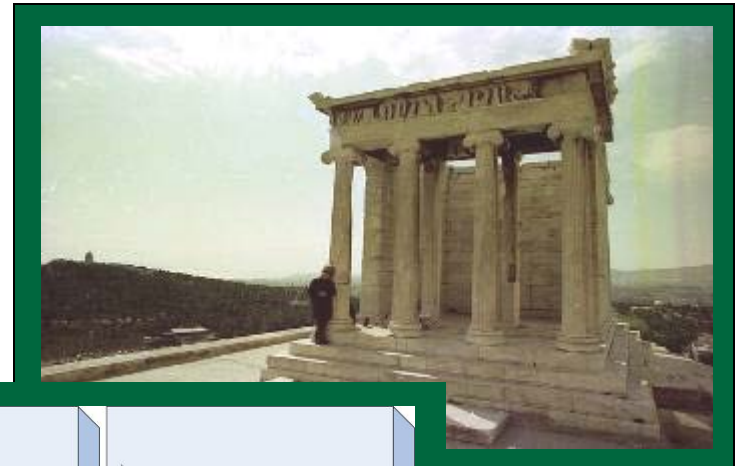
ESRP Characterization of Human Well-Being





Index of Well-Being Framework 4 Pillar Structure

- Basic human needs
- Environment
- Economy
- Subjective Well-being



DOMAIN	DESCRIPTION
Access to services	Access to health care, food stamps, public transportation, etc.
Altruism	Deliberate pursuit of the interest or welfare of others
Clean environment	Low risk of human exposure to environmental contamination (clean water, air and land)
Economic growth	Production of goods and services, trade and job diversity
Ecosystem condition	Healthy, functioning ecosystems
Education benefits	Returns from informal and formal educational investments
Health	Physical and psychological health
Leisure time	Time spent outside work and essential activities
Life satisfaction/ happiness	Degree to which an individual judges the overall quality of life
Nutrition	Caloric intake
Public Infrastructure	Technical structures that support society (bridges, roads, water supplies, power grid etc)
Safety and Security	Freedom from harm, both personal and national
Shelter	Availability of housing
Social cohesion	Bonds that tie people together in society (ex. Civic participation, size of social network)
Spiritual and cultural fulfillment	Opportunity to achieve spiritual goals; liberal arts exposure
Topophilia & biophilia	Love of place and connection to nature
Wealth	Abundance of valuable resources or material possessions (personal and national wealth)



Societal Well-being

Economic Well-being

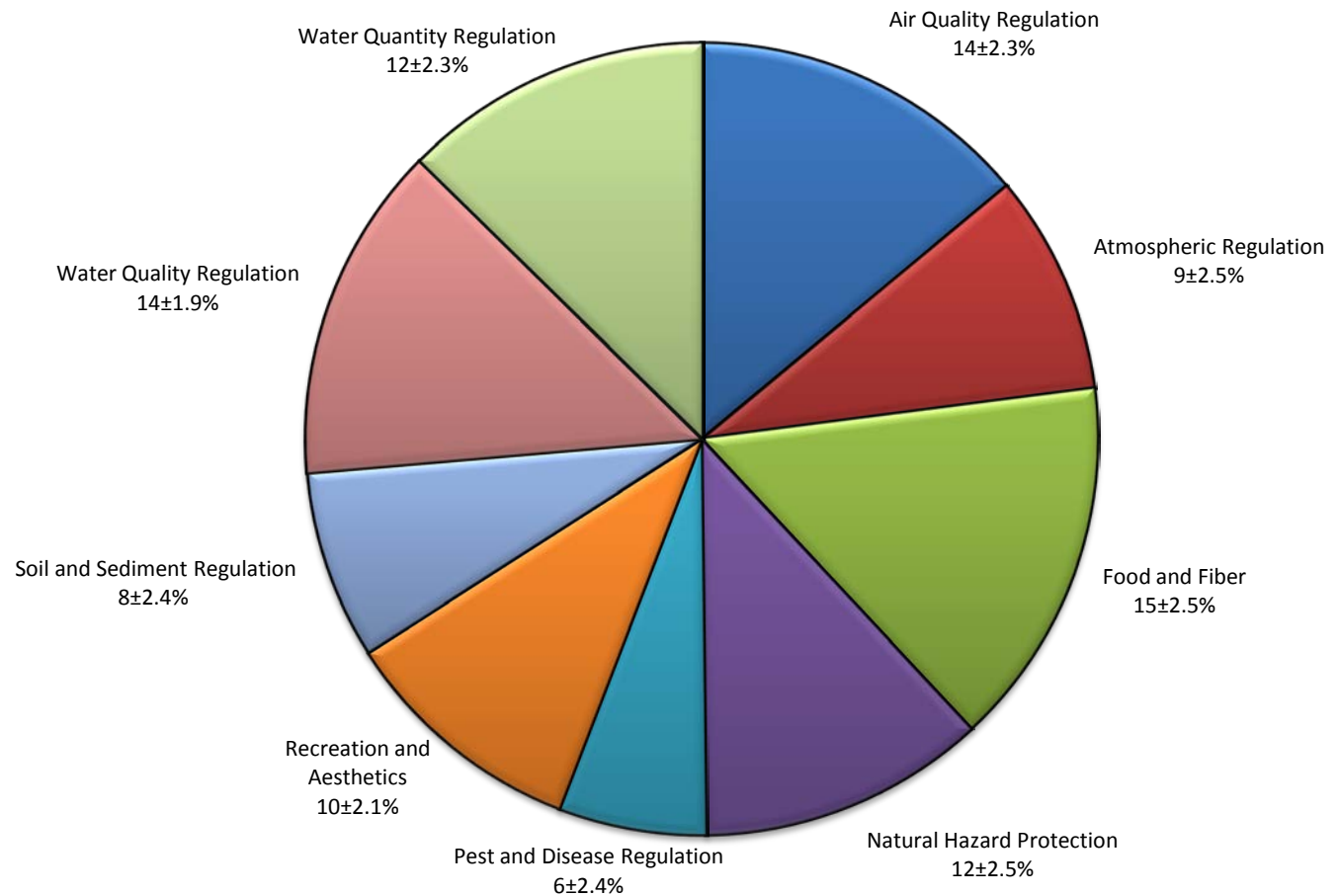
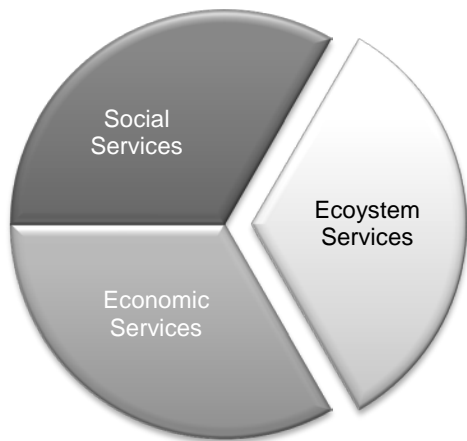
Environmental Well-being



High
↑
↓
Low

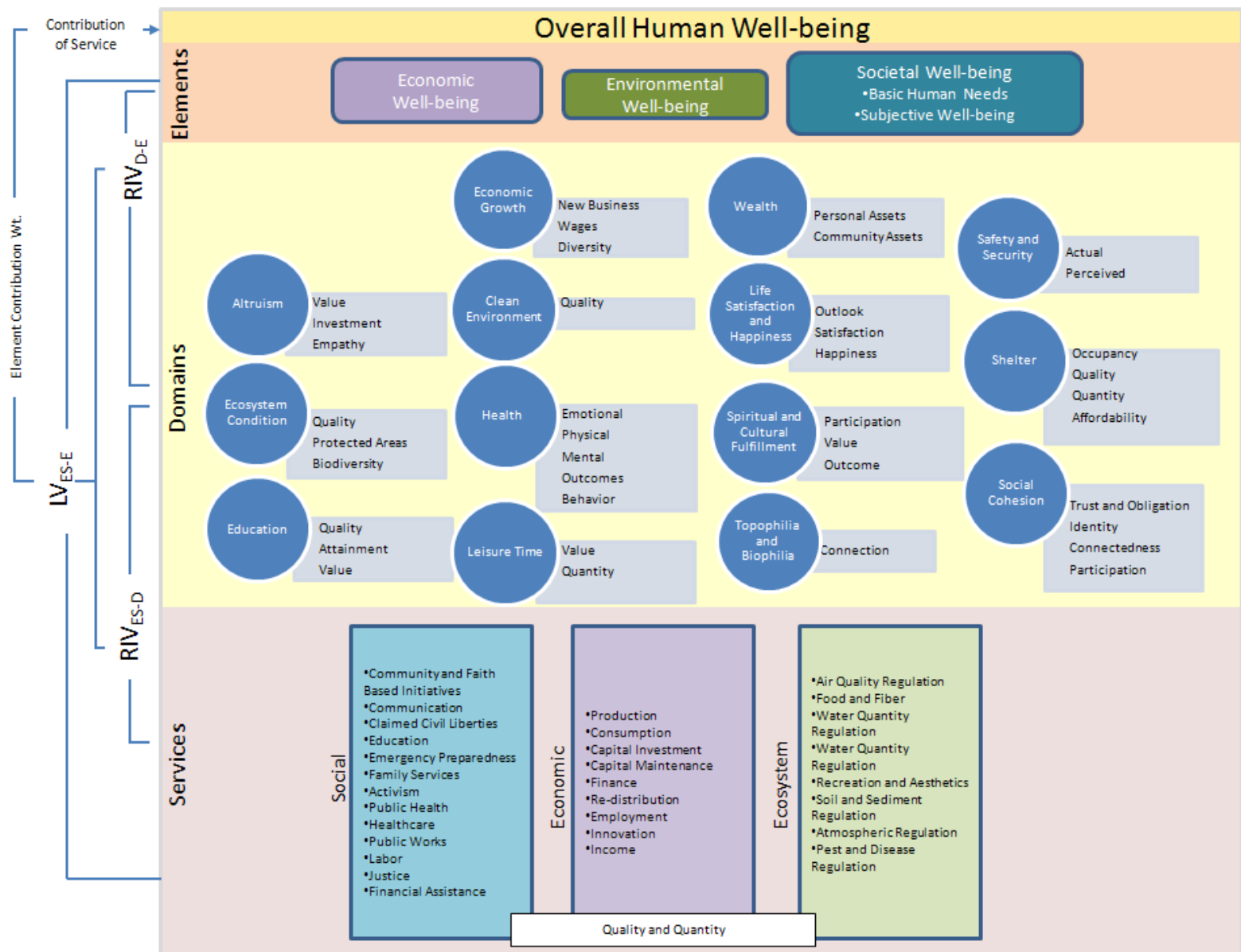


Perceived Contribution of Domains to Overall Well-being



Estimated contribution of individual ecosystem services to overall well-being based on the relative importance values*

****In context of ecosystem services module only***



Index: Altruism

Index Type: Well-being Domain

Description: Altruism is the actions taken by persons, without compensation or incentive, that are intended to improve well-being. There are three indicators that comprise the index of altruism; they are investment, value, and empathy. Investment in altruism is captured in the form of either monetary donations or personal time volunteered. Value is the monetary value assigned to volunteer work performed in the United States. Empathy is the number of persons who are concerned for others that are less fortunate.

Indicator: Investment

Sources(s):

Metric Variable: WP108

Source: Gallup citation

Source Question or Measurement: Have you donated money?

Years Available: 2009

Smallest Geospatial Level Available: County

Composite or Single Metric: Composite

Metric Variable: WP109

Source: Gallup citation

Source Question or Measurement: Have you volunteered your time in the past month?

Years Available: 2009

Smallest Geospatial Level Available: County

Composite or Single Metric: Composite

Calculation Methods: For each variable separately calculate responses by county.

Combination Methods (for Composite Metrics Only): Combined average percentage of positive responses by county.

Benchmarks: Good=, Moderate=, Poor=

Indicator: Empathy

Sources(s):

Metric Variable: EMPATHY1

Source: Davis, James Allan and Smith, Tom W.: *General Social Surveys, 1972-2008*. [machine-readable data file]. Principal Investigator, James A. Davis; Director and Co-Principal Investigator, Tom W. Smith; Co-Principal Investigator, Peter V. Marsden, NORC ed. Chicago: National Opinion Research Center, producer, 2005; Storrs, CT: The Roper Center for Public Opinion Research, University of Connecticut, distributor. 1 data file (53,043 logical records) and 1 codebook (2,656 pp).

Source Question or Measurement: Tender, concerned feelings towards others who are less fortunate.

Years Available: 2002, 2004

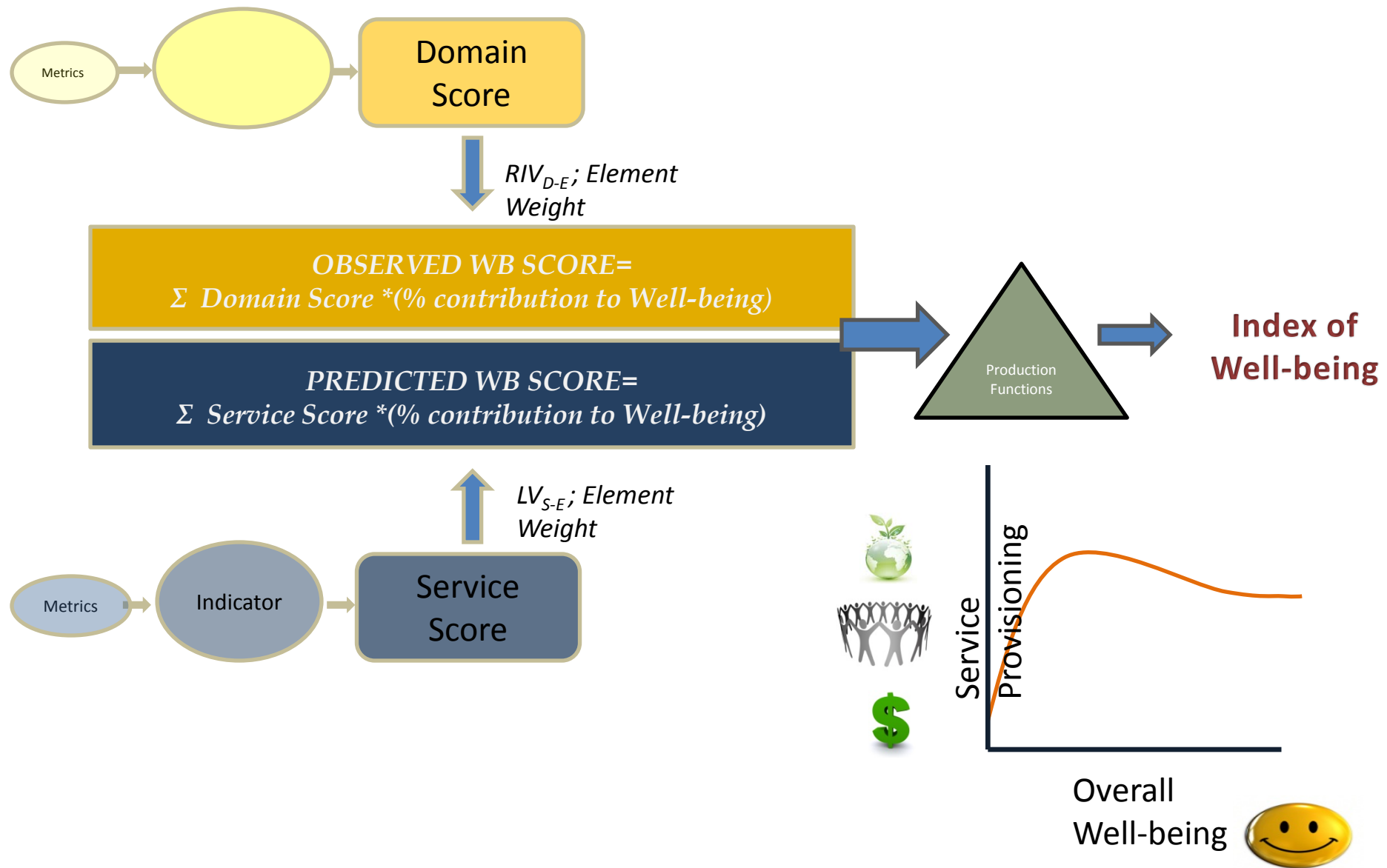
Smallest Geospatial Level Available: Region

Composite or Single Metric: Single

Calculation Methods: Percentage of positive responses (people who claimed to feel empathetic feelings) by region.

Combination Methods (for Composite Metrics Only): N/A

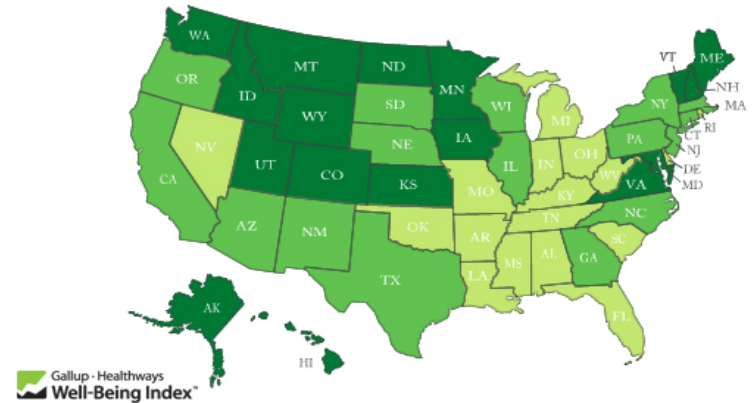
Benchmarks: Good=, Moderate=, Poor=





Well-Being

■ Higher range ■ Midrange ■ Lower range



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