



Toward a Trans-disciplinary Science of Society

Inter-University Centre, Dubrovnik,
Monday September 1 thru Saturday September 6, 2014 – 9 am to 6 pm daily CET



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Sustainable Societies: Theory and Practice

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Introduction

1. Defining Sustainability, Sustainable Development (SD), Sustainable Business and Sustainable Societies
2. How to assess or measure SD?
3. The Case of Social Progress Index

What is Sustainability?

- Often the term **sustainability** is used as:
 - a substitute of sustainable development (Adams 2006)
 - an intergenerational equity (Ott 2003)
- In fact the sustainability applied in many disciplines means **maintaining a state of a dynamic balance of a system** with its major elements interacting with each others and its relations with the higher system

What is Sustainability?

- **In biological system sustainability is related to securing necessary diversity and reproductive capacity.**
- **For the global environment sustainability means that that Earth basic ecosystems are dynamically balanced and life on the planet is secured.**
- **For human beings, sustainability means the long-term maintaining their carrying capacity that secures their non-declining wealth and reproduction:**
 - **limitation to natural endowments (natural capital) making the foundation for carrying capacity**
 - **securing intergenerational equity (Pezzey & Toman 2002).**

Defining Sustainable Development

- Economists have addressed conceptual problems of sustainable development (SD) with respect to inter-generational equity (Solow, 1974; Hartwick, 1977), by requiring non-declining resource endowment and introducing the “Hartwick rule.”
- The UN World Commission on Environment and Development report defined SD as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, p.43)

Main Stakeholders of SD

- Governments
- Companies
- NGOs
- Academia
- Media
- Citizens
- International Institutions

Defining Sustainable Business

- **Sustainable business (SB) often defined also as green business means an** enterprise that is environmentally friendly – globally and locally-socially responsible and is economically sound
- For that reason SB is also described as an enterprise that strives to meet the **triple bottom line**

Defining Sustainable Business

In popular definition endorsed by IUCN (Adams, Jeanrenaud 2008), the **SB** or **green business** should match the following four criteria (Coon 2009):

- (1) It incorporates principles of sustainability into each of its business decisions.
- (2) It supplies environmentally friendly products or services that replaces demand for non-green products and/or services
- (3) It is greener than traditional competition
- (4) It has made an enduring commitment to environmental principles in its business operations

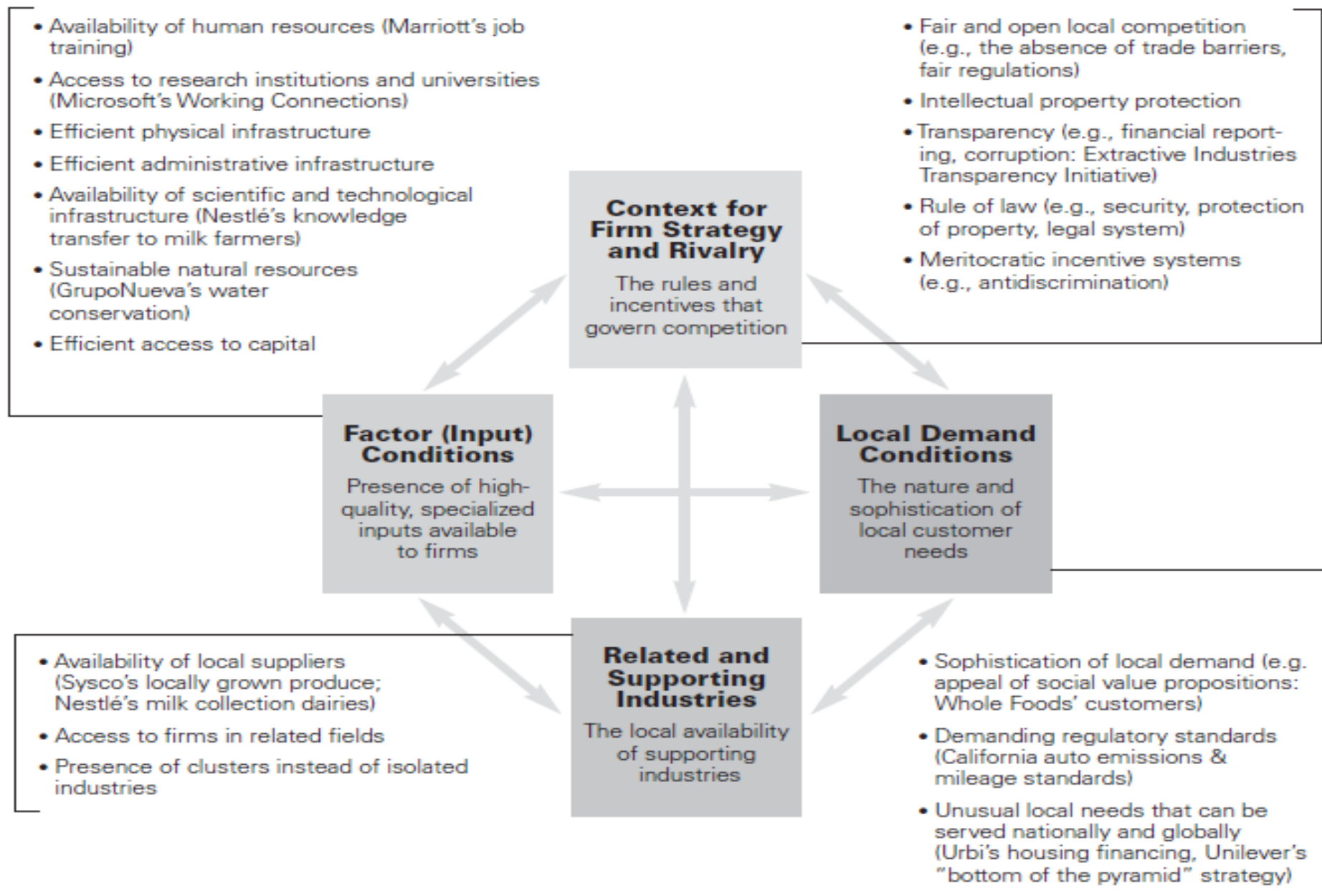
Defining Sustainable Business

- From economic point of view, the SB means an enterprise that maintains its competitive advantage coming from its unique value chain (Porter 2008)
- It requires strategic approach to SB including value chain and diamond of competition (Porter & Kramer 2006)

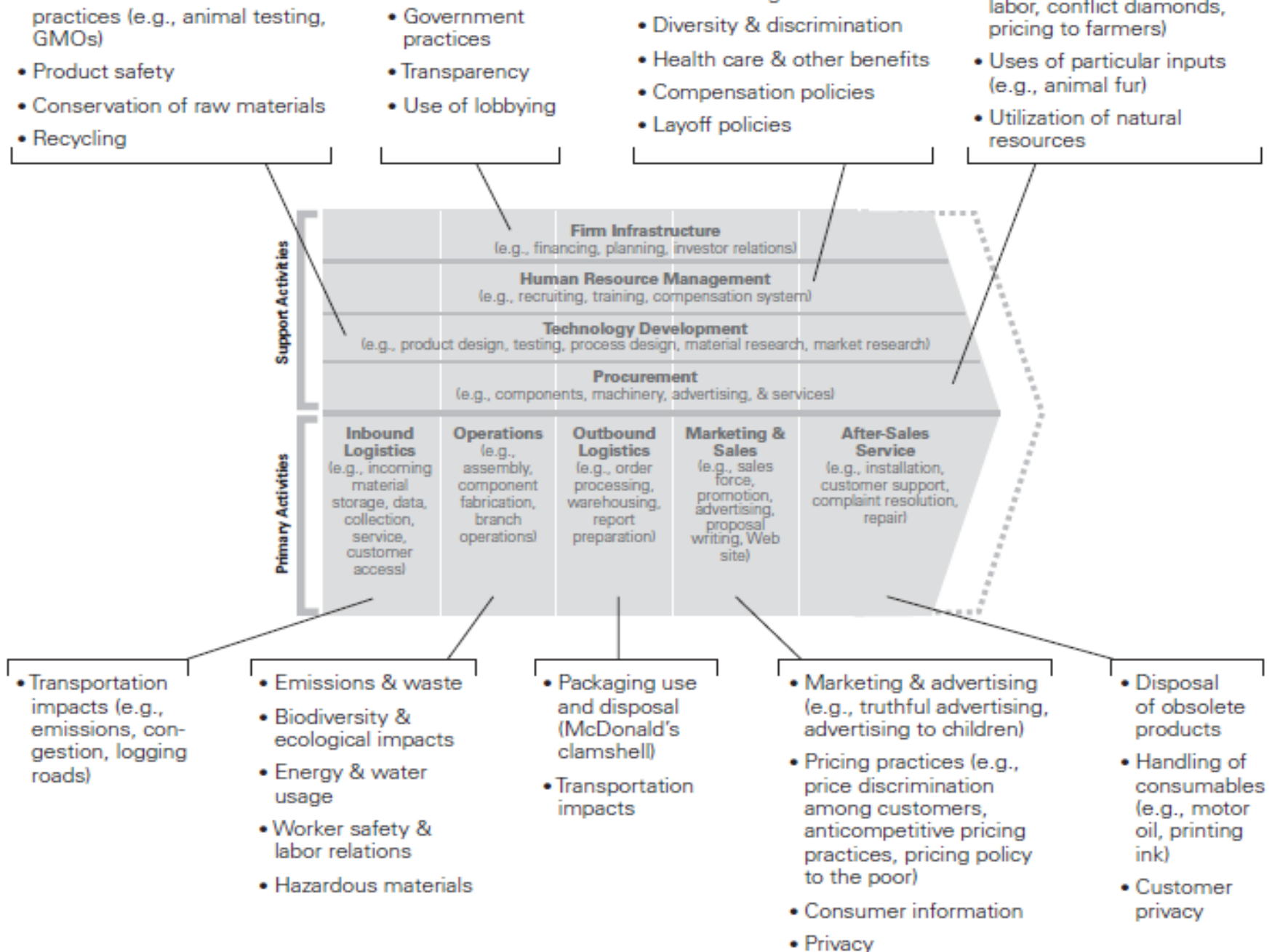
Two Types of Competitive Advantage (M. Porter)

Determinants of Relative Performance
Types of Competitive Advantage



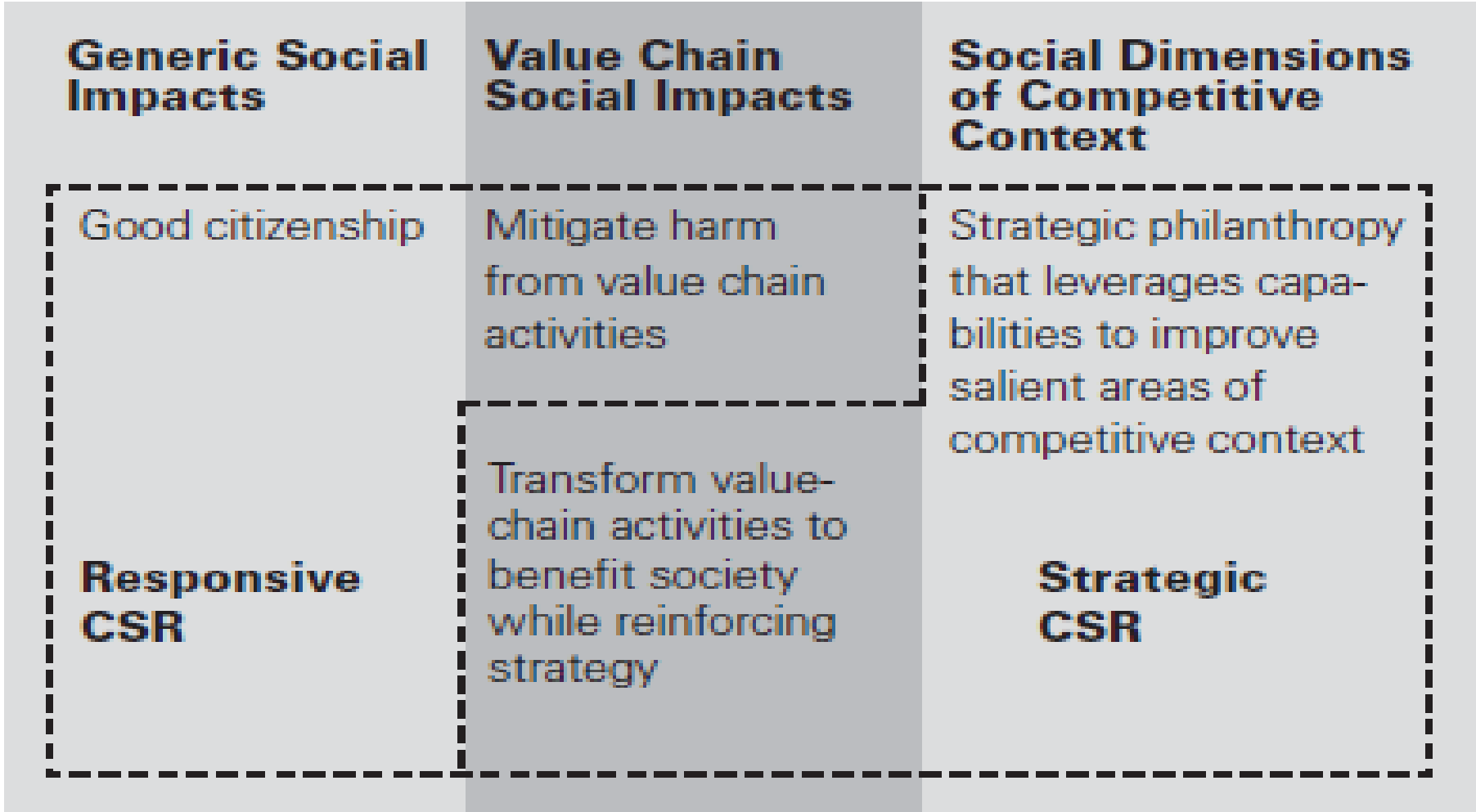


Source: Michael E. Porter, *The Competitive Advantage of Nations*, 1990



Source: Michael E. Porter, *Competitive Advantage: Creating and Sustaining Superior Performance*, 1985

Corporate Involvement in Society: A Strategic Approach



M. Porter & M. Kramer- The Big Idea: Creating Shared Value –HBR 2011



Sustainable Society

A sustainable society is one that ensures the health and vitality of human life and culture *and* nature's capital, for present and future generations. Such a society acts to *stop* the activities that serve to destroy human life and culture and nature's capital, and to encourage those activities that serve to *conserve* what exists, *restore* what has been damaged, and *prevent* future harm (Viederman 1993:34).

Two Basic Approaches to Assess Sustainability

- **Maximizing Wealth vs. Non-Declining Total Capital**
- **Strong, weak and environmental sustainability**
- **Applying John HARTWICK's rule (1977): “constant level of consumption could be maintained perpetually if all the scarcity rents were invested in capital.” after Tietenberg 2008**

Evaluating Sustainable Development: Non-Declining Wealth vs. Non-declining Total Capital

- *Non-declining Wealth:*
 - a. *Non-declining income per capita (mostly GDP –PPP- per capita)*
 - b. *Non-declining genuine (adjusted net) savings (GDS or ANS)*

GDS indicator (Pearce 1994):

$$\bullet \quad \text{GDS} = \text{GDP} - \text{C} - \text{Kmf D} + \text{EdI} - \text{EngD} - \text{MinD} - \text{ForD} - \text{CDD}$$

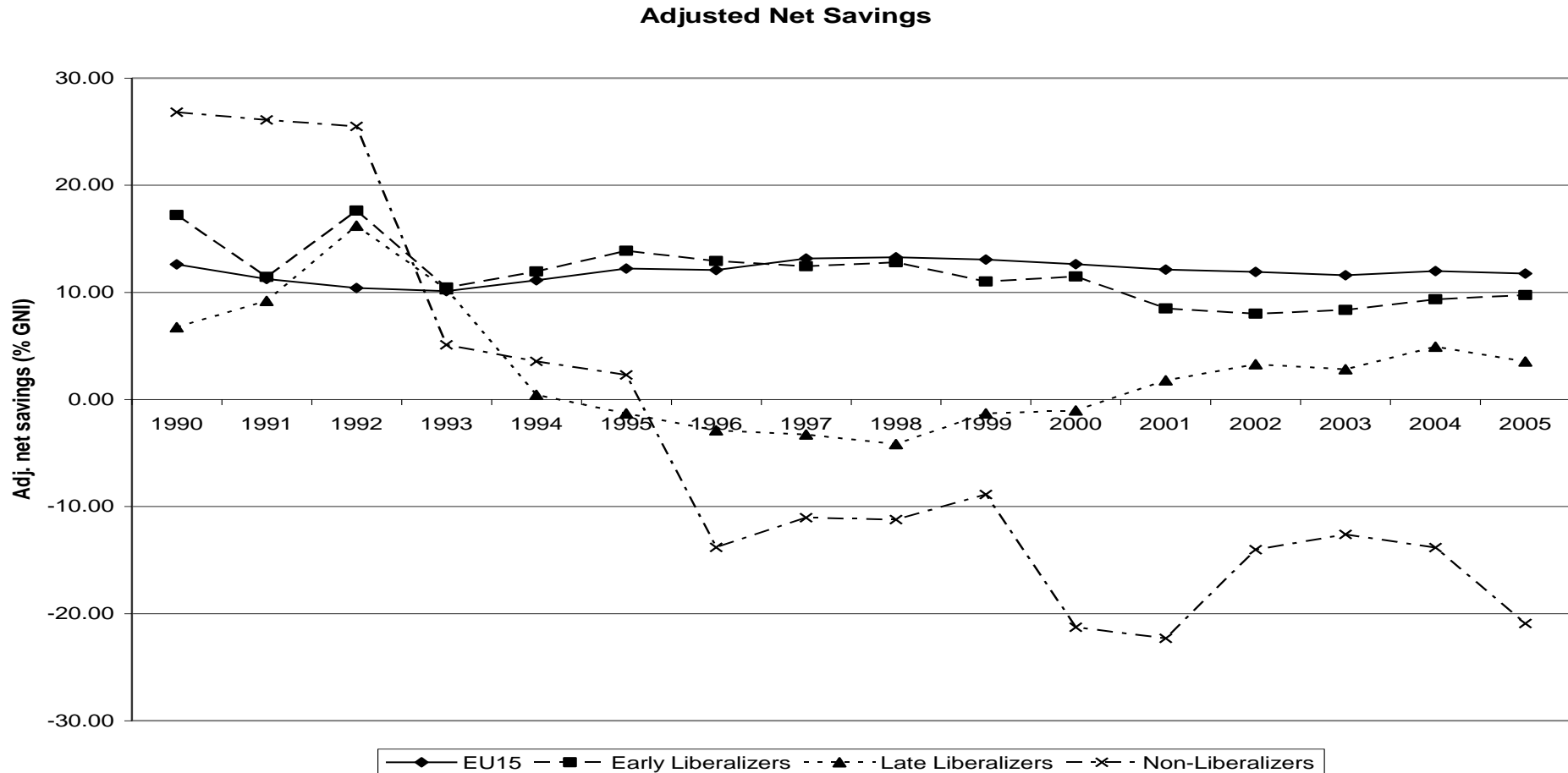
Where:

- GDS genuine domestic savings
- GDP gross domestic product
- C annual consumption
- Kmf D capital fixed depreciation
- Ed I education expenditure (investment in human capital)
- EngD energy resource depletion (depreciation of natural capital)
- MinD mineral resource depletion (depreciation of natural capital)
- ForD forest depletion (depreciation of natural capital)
- CDD damage to the environment due to carbon dioxide emission (depreciation of natural capital)

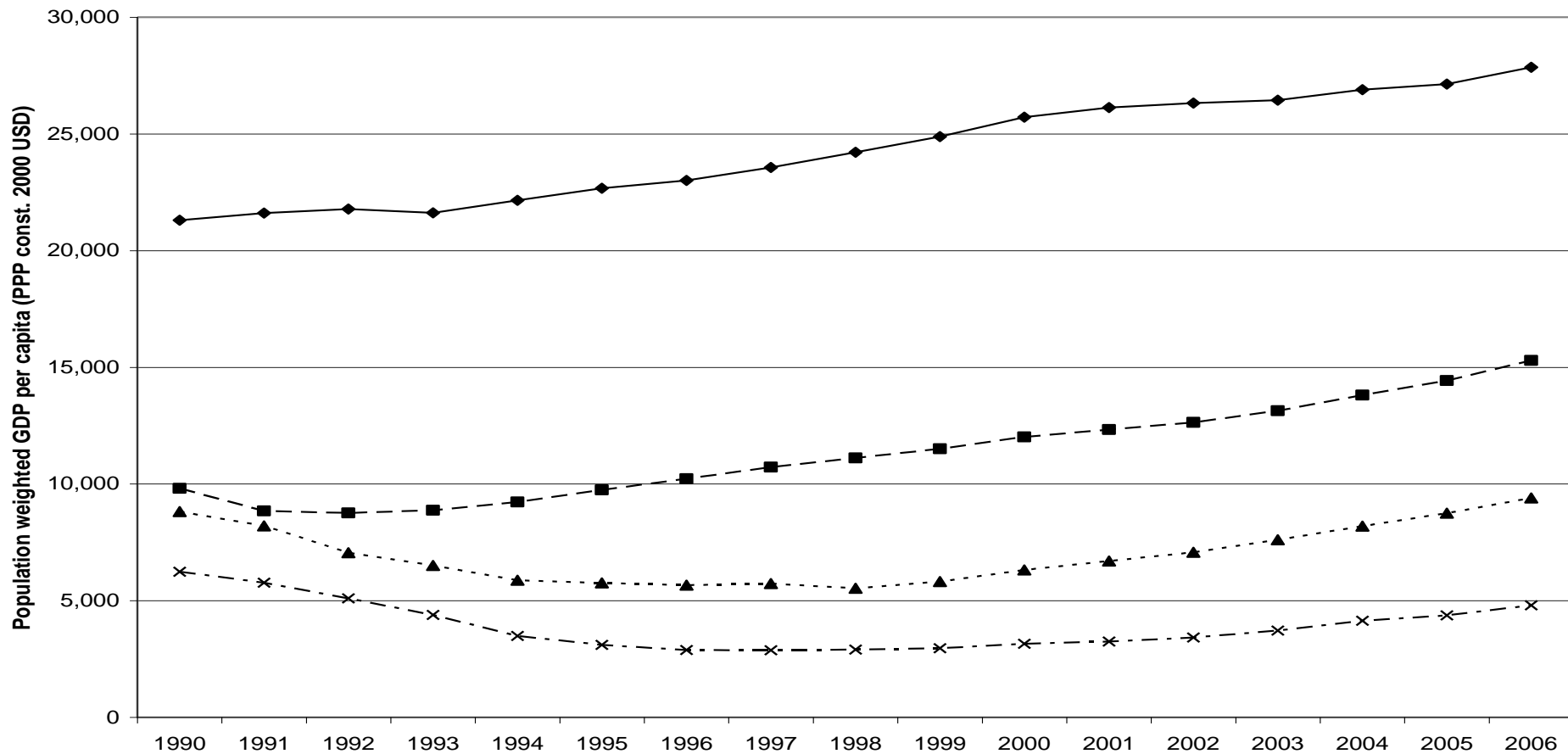
$$ANS = (GNS - D_h + CSE - \sum R_{\pi,i} - CD) / GNI$$

- *ANS* - the Adjusted Net Savings indicator,
- *GNS* - Gross National Savings,
- *D_h* - depreciation of produced capital,
- *CSE* - current non-fixed capital expenditures on education,
- *R_{π,i}* - rent from natural capital depletion,
- *CD* - damage from carbon dioxide emissions,
- *GNI* - Gross National Income at market prices.

Assessing the Transformation Impact on Sustainability: Adjusted Net Savings



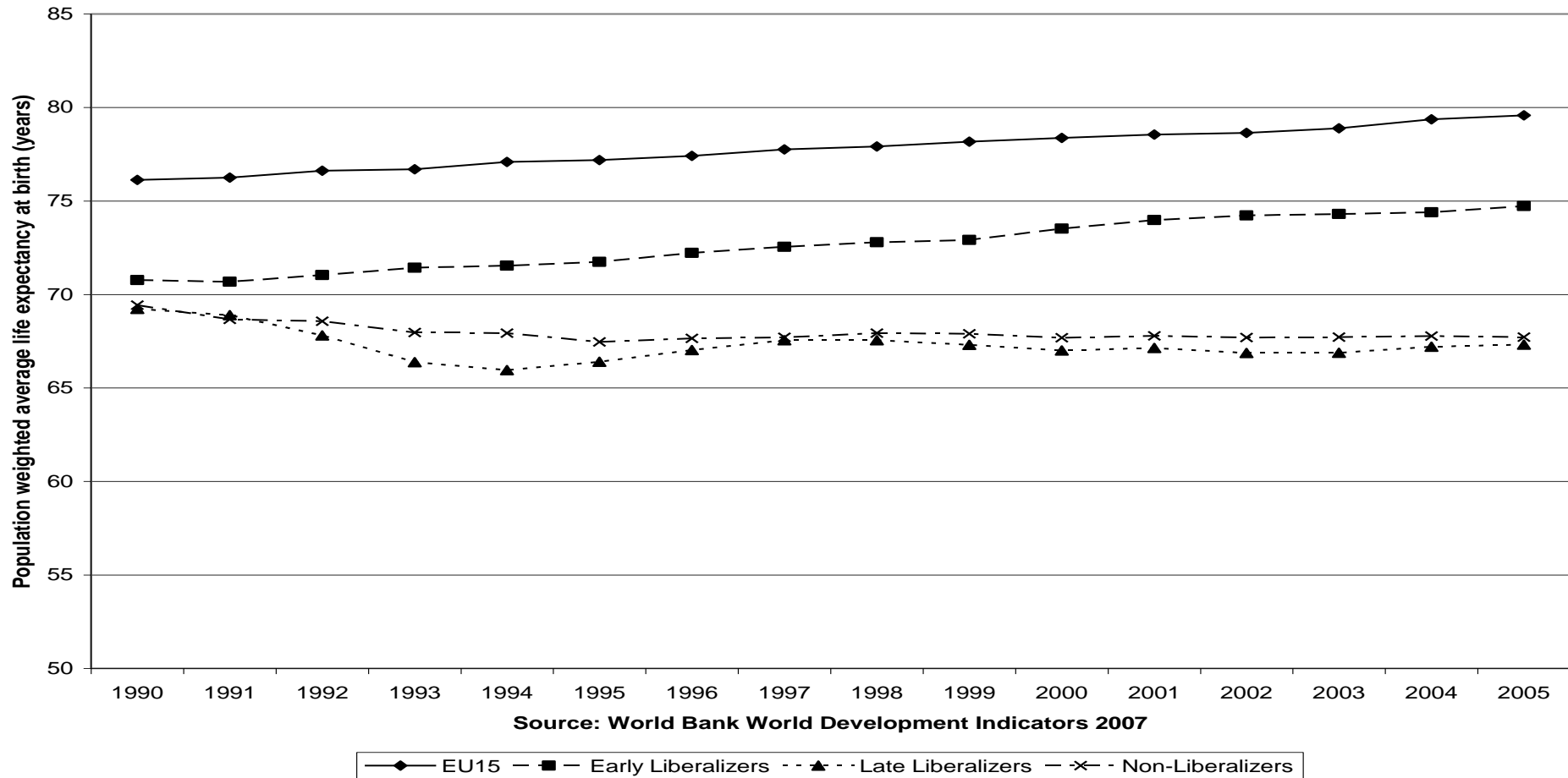
Assessing the Transformation Impact on Sustainability: GDP per Capita (PPP)



Source: World Bank World Development Indicators 2007

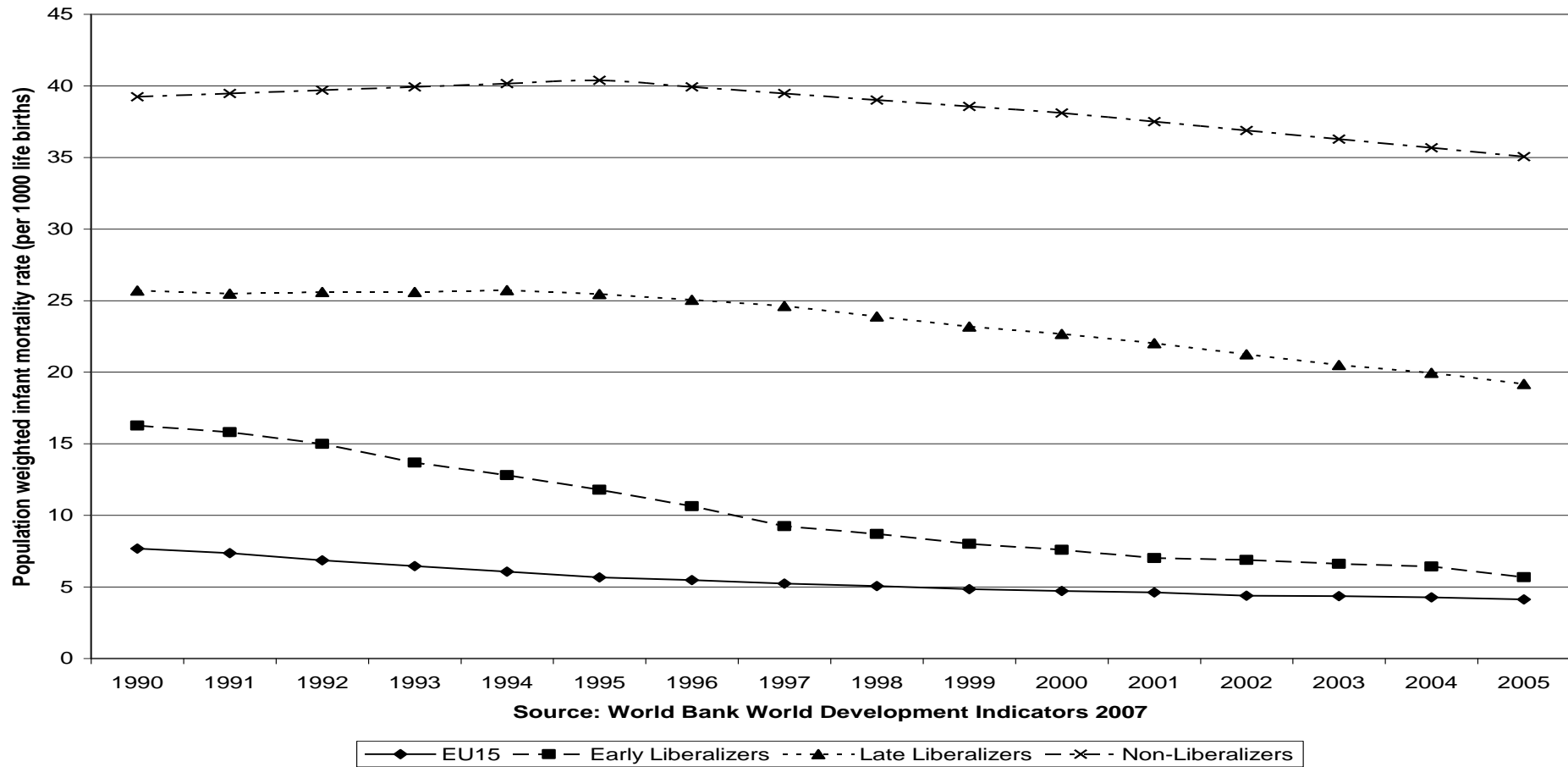
—◆— EU15 -■- Early Liberalizers ··▲·· Late Liberalizers -x- Non-Liberalizers

Assessing the Transformation Impact on Sustainability – Average Life Expectancy at Birth



Assessing the Transformation Impact on Sustainability: Social Aspects

Infant Mortality Rates



Assessing the Transformation Impact on Sustainability: Political Aspects based on the Freedom House Indexes

Country, Territory	Civic Society	Independent Media	Corruption	<i>Democracy Score</i>
Early Liberalizers	1.67	1.88	2.29	2.11
Late Liberalizers	4.25	3.92	5.29	3.62
Non- Liberalizers	5.58	6.17	6.29	6.12
CEE10	1.82	2.18	3.65	2.32
<i>Average</i>	3.47	4.22	4.79	4.12
<i>Median</i>	3.00	4.00	5.00	3.93

NOTES: The ratings are based on a scale of 1 to 7, with 1 representing the highest level of democratic progress and 7 the lowest. The 2007 ratings reflect the period January 1 through December 31, 2006.

The Democracy Score is an average of ratings for Electoral Process (EP); Civil Society (CS); Independent Media (IM); National Democratic Governance (NGOV); Local Democratic Governance (LGOV); Judicial Framework and Independence (JFI); and Corruption (CO).

Evaluating Sustainable Development: Non-Declining Wealth vs. Non-declining Total Capital

- Non-declining Total Capital
(Bochniarz & Bolan, 2005, expanding concepts of Solow, 1974; Hartwick, 1977; and Pearce, 1989)
- $TK = K_m + K_n + K_h + K_s = \text{constant}$ (non-declining)
- Where:
 - $K_m = K_{mf} + K_{mo}$ (*man-made physical and financial*)
 - $K_n = K_{nu} + K_{nr}$ (unique and renewable *natural capital*).
 - $K_h = K_{hi} + K_{hr}$ (institutionalized and renewable *human capital*)
 - $K_s = K_{so} + K_{sn}$ (old, inherited and new, needed at a current stage of development *social capital*).

Social Progress Index

Basic Human Needs

- ▼ Nutrition and Basic Medical Care
- ▼ Water and Sanitation
- ▼ Shelter
- ▼ Personal Safety

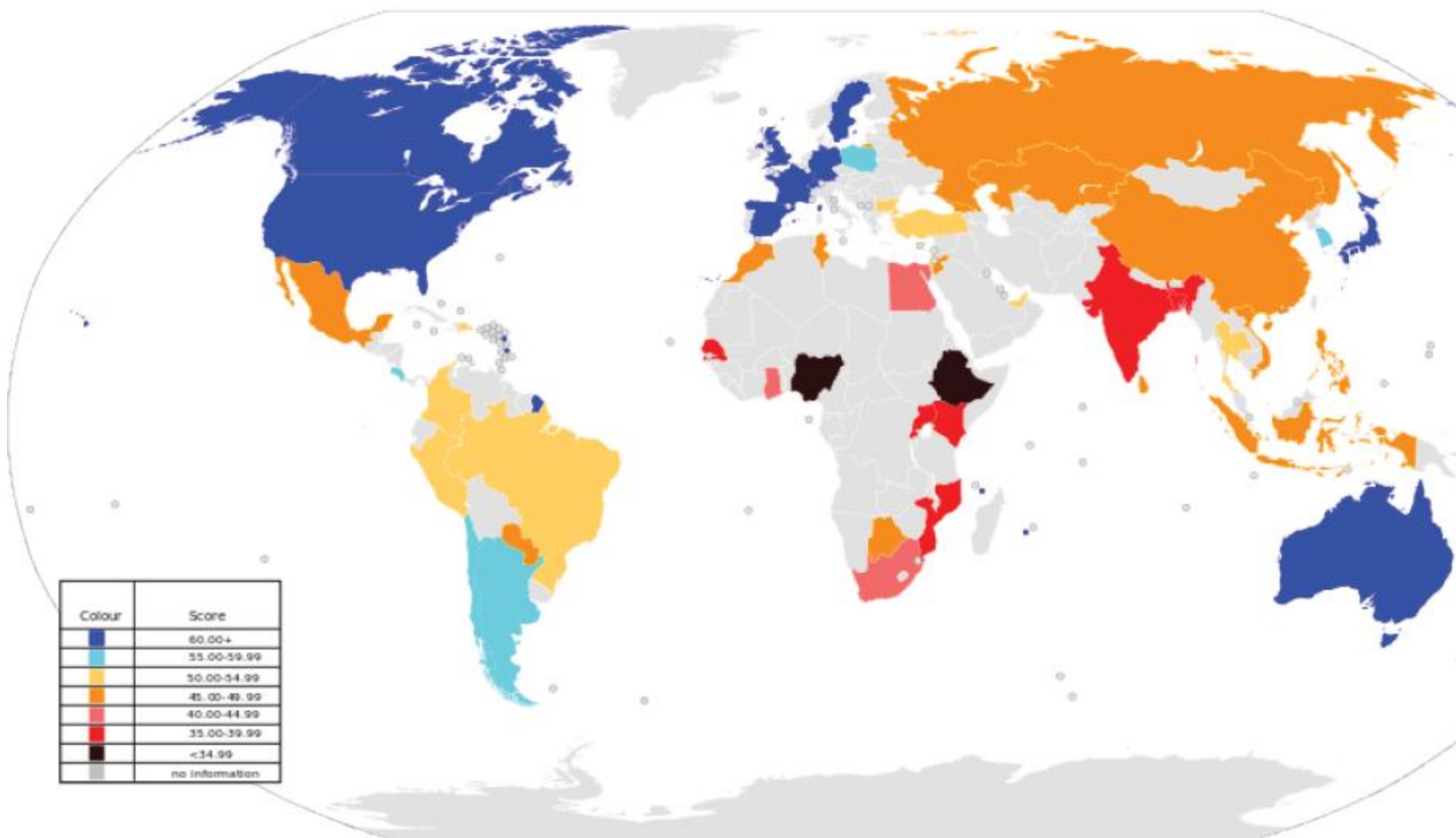
Foundations of Wellbeing

- ▼ Access to Basic Knowledge
- ▼ Access to Information and Communications
- ▼ Health and Wellness
- ▼ Ecosystem Sustainability

Opportunity




















- ▼ Personal Rights
- ▼ Personal Freedom and Choice
- ▼ Tolerance and Inclusion
- ▼ Access to Advanced Education




















<http://www.socialprogressimperative.org/data/spi>










Countries	Social Progress ...	Basic Human Need...	Foundations of W...	Opportu
New Zealand	88.24	91.74	84.97	88.01
Switzerland	88.19	94.87	89.78	79.92
Iceland	88.07	94.32	88.19	81.71
Netherlands	87.37	93.91	87.56	80.63
Norway	87.12	93.59	86.94	80.82
Sweden	87.08	94.59	84.71	81.95
Canada	86.95	93.52	80.31	87.02
Finland	86.91	94.63	84.17	81.92
Denmark	86.55	95.73	84.82	79.10
Australia	86.10	92.47	80.27	85.54
Austria	85.11	94.57	86.35	74.42
Germany	84.61	93.08	84.96	75.81
United Kingdom	84.56	91.90	79.47	82.29
Japan	84.21	94.72	79.25	78.67
Ireland	84.05	93.63	75.89	82.63
United States	82.77	89.82	75.96	82.54
Belgium	82.63	92.74	78.81	76.34
Slovenia	81.65	92.05	83.60	69.30
Estonia	81.28	87.13	84.39	72.32
France	81.11	91.23	79.37	72.72
Spain	80.77	90.22	76.99	75.49




















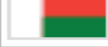
2014 Social Progress Index [\[edit\]](#)








Country	Rank (SPI)	Social Progress Index	Rank (BHN)	Basic Human Needs	Rank (FW)	Foundations of Well-being	Rank (O)	Opportun
 New Zealand	1	88.24	18	91.74	6	84.97	1	88.01
 Switzerland	2	88.19	2	94.87	1	89.78	12	79.92
 Iceland	3	88.07	7	94.32	2	88.19	9	81.71
 Netherlands	4	87.37	8	93.91	3	87.56	11	80.63
 Norway	5	87.12	10	93.59	4	86.94	10	80.82
 Sweden	6	87.08	5	94.59	9	84.71	7	81.95
 Canada	7	86.95	11	93.52	17	80.31	2	87.02
 Finland	8	86.91	4	94.63	11	84.17	8	81.92
 Denmark	9	86.55	1	95.73	8	84.82	13	79.1
 Australia	10	86.1	14	92.47	18	80.27	3	85.54
 Austria	11	85.11	6	94.57	5	86.35	20	74.42
 Germany	12	84.61	12	93.08	7	84.96	16	75.81
 United Kingdom	13	84.56	16	91.9	19	79.47	6	82.29
 Japan	14	84.21	3	94.72	21	79.25	14	78.67
 Ireland	15	84.05	9	93.63	37	75.89	4	82.63
 United States	16	82.77	23	89.82	36	75.96	5	82.54
 Belgium	17	82.63	13	92.74	23	78.81	15	76.34
 Slovenia	18	81.65	15	92.05	12	83.6	25	69.3
 Estonia	19	81.28	28	87.13	10	84.39	22	72.32

 Spain	21	80.77	22	90.22	28	76.9	17	75.19
 Portugal	22	80.49	20	90.93	33	76.11	19	74.43
 Czech Republic	23	80.41	17	91.77	13	83.26	29	66.21
 Slovakia	24	78.93	21	90.49	14	83.25	35	63.04
 Costa Rica	25	77.75	42	82.66	16	80.53	24	70.04
 Uruguay	26	77.51	34	85.79	48	72.18	18	74.56
 Poland	27	77.44	36	84.72	15	81.1	28	66.5
 South Korea	28	77.18	24	88.69	32	76.26	27	66.58
 Italy	29	76.93	30	86.73	26	77.48	26	66.58
 Chile	30	76.3	39	83.85	45	72.99	23	72.06
 Latvia	31	73.91	41	82.77	22	79.11	41	59.85
 Hungary	32	73.87	33	86.24	50	71.91	32	63.46
 Lithuania	33	73.76	48	81.47	24	77.96	38	61.84
 Mauritius	34	73.68	31	86.39	54	71.43	34	63.21
 Greece	35	73.43	29	86.99	41	74.85	43	58.45
 Croatia	36	73.31	26	88.16	29	76.87	57	54.88
 United Arab Emirates	37	72.92	25	88.62	30	76.74	60	53.39
 Panama	38	72.58	57	77.39	25	77.85	37	62.48
 Israel	39	71.4	35	85.77	52	71.57	50	56.87

 Serbia	41	70.61	47	81.86	27	77.1	62	52.87
 Argentina	42	70.59	54	77.77	58	70.62	33	63.38
 Jamaica	43	70.39	76	69.23	31	76.34	30	65.6
 Bulgaria	44	70.24	45	82.01	51	71.72	49	56.98
 Malaysia	45	70	32	86.27	34	76.06	76	47.68
 Brazil	46	69.97	74	71.09	38	75.78	36	63.03
 Trinidad and Tobago	47	69.88	64	74.44	53	71.48	31	63.73
 Albania	48	69.13	50	80.12	43	73.13	58	54.14
 Macedonia	49	68.33	46	81.87	69	67.9	55	55.23
 Ecuador	50	68.15	70	72.98	35	75.97	52	55.51
 Romania	51	67.72	68	73.71	42	74.54	56	54.91
 Colombia	52	67.24	75	69.56	39	75.72	51	56.45
 Montenegro	53	66.8	51	78.91	65	69.01	65	52.48
 Mexico	54	66.41	66	74.18	72	67.37	47	57.67
 Peru	55	66.29	79	68.71	46	72.94	48	57.21
 Philippines	56	65.86	81	66.76	63	69.17	39	61.63
 Botswana	57	65.6	83	65.88	47	72.67	44	58.25
 Belarus	58	65.2	38	84.13	73	67.35	91	44.13
 Thailand	59	65.14	67	74.1	49	71.97	72	49.34
 Armenia	60	65.03	52	78.42	62	69.27	79	47.39

 Moldova	81	60.12	71	72.65	99	59.66	75	48.04
 Guyana	82	60.06	80	68.49	102	58.36	61	53.35
 Lebanon	83	60.05	65	74.35	93	61.28	89	44.52
 Egypt	84	59.97	58	76.77	66	68.98	119	34.17
 Sri Lanka	85	59.71	77	69.05	74	67.27	98	42.8
 Kazakhstan	86	59.47	62	75.14	111	54.8	74	48.47
 Algeria	87	59.13	59	76.25	83	64.25	116	36.9
 Indonesia	88	58.98	87	63.65	61	69.42	92	43.86
 Mongolia	89	58.97	102	53.67	85	63.67	42	59.56
 China	90	58.67	69	73.02	84	63.78	110	39.21
 Morocco	91	58.01	73	71.86	90	62.57	107	39.6
 Uzbekistan	92	57.34	61	75.88	115	53.28	97	42.87
 Kyrgyzstan	93	57.08	86	64.42	97	60.54	83	46.26
 Iran	94	56.65	55	77.76	101	58.36	121	33.82
 Tajikistan	95	56.05	92	62.68	96	60.88	88	44.6
 Ghana	96	55.96	103	52.39	80	65.63	69	49.85
 Senegal	97	53.52	101	54.11	88	63.55	96	42.9
 Laos	98	52.41	97	59.01	91	61.58	118	36.65
 Bangladesh	99	52.04	98	57.28	100	59.4	108	39.44

 Nepal	101	51.58	99	57.13	98	60.12	115	37.49
 India	102	50.24	100	54.48	108	56.84	109	39.39
 Kenya	103	50.2	111	45.8	79	66.38	113	38.41
 Zambia	104	49.88	124	38.57	86	63.67	78	47.41
 Rwanda	105	49.46	106	50.14	105	58.01	105	40.23
 Benin	106	49.11	109	47.76	107	57.24	100	42.33
 Lesotho	107	48.94	116	43.17	119	51.07	64	52.57
 Swaziland	108	48.87	105	50.26	116	53.05	94	43.29
 Malawi	109	48.79	113	44.92	110	55.65	84	45.8
 Republic of Congo	110	47.99	128	34.18	81	64.38	86	45.42
 Uganda	111	47.75	115	43.19	95	61	111	39.05
 Burkina Faso	112	47.33	121	40.16	109	56.07	85	45.75
 Mali	113	46.85	112	45.73	117	52.72	101	42.11
 Tanzania	114	46.06	123	38.79	106	57.27	102	42.1
 Djibouti	115	45.95	95	59.82	132	41.34	117	36.68
 Cameroon	116	45.51	114	44.13	114	53.73	112	38.65
 Mozambique	117	45.23	119	41.19	120	49.86	87	44.64
 Iraq	118	44.84	93	60.82	128	46.36	129	27.35
 Madagascar	119	44.28	122	39.73	118	51.9	104	41.2
 Maldives	120	44.22	125	39.77	124	49.22	99	42.22

 Mauritania	121	43.11	107	49.43	112	54.03	131	25.88
 Togo	122	42.8	120	40.67	113	53.78	120	33.96
 Nigeria	123	42.65	126	36.57	104	58.08	122	33.29
 Pakistan	124	42.4	104	51.24	124	47.75	127	28.22
 Yemen	125	40.23	108	48.5	123	47.88	132	24.31
 Niger	126	40.1	129	33.74	122	48.87	114	37.7
 Angola	127	39.93	118	41.67	127	46.38	124	31.75
 Sudan	128	38.45	117	42.27	126	46.57	130	26.5
 Guinea	129	37.41	127	36.48	130	45.02	125	30.73
 Burundi	130	37.33	130	32.84	129	46.05	123	33.1
 Central African Republic	131	34.17	131	27.42	125	47.38	128	27.7
 Chad	132	32.6	132	25.94	131	42.42	126	29.45