Social LCA

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Aalborg 6th September 2013

2.-0 LCA consultants

www.lca-net.com

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Overview

- The need for social impact assessment tools
- Selection of impact categories and characterization models
- Introduction to the methodological sheets
- Introduction to / comparison of practical methods
- Exercise: Quantifying social impact pathways

Sustainable Development

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs"

"Our common future" (The Brundtland report)

Sustainable production & consumption
(sustainability-improved production & consumption)

- Human activities
- Production (mean)
- Consumption (end) = well-being
- Impacts from / impacts on
- Reducing impacts →
  - maximising productivity
  - maximising well-being

Human well-being

- No single agreed definition
- “Living a full life”; “Happiness”
- “All human beings are born free and equal in dignity and rights” (Article 1 of the World Declaration on Human Rights)
- Freedom (autonomy) & Equality (fairness)

  Includes:

  - Health, safety, security
  - Participation, influence
  - Equal opportunities

Social responsibility

- **CSR:** “commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life” (Holme & Watts 2000, p. 10)
- **SR (ISO 26000): “**responsibility of an organisation for the impacts of its decisions and **activities** on society and the environment, through transparent and ethical behaviour that
  - contributes to sustainable development, including health and the welfare of society;
  - takes into account the expectations of stakeholders;
  - is in compliance with applicable law and consistent with international norms of behaviour; and
  - is integrated throughout the organization and practised in its **relationships**”
- The life cycle perspective is implicit in SR

ISO 26000
Guidance on social responsibility

https://www.iso.org/obp/ui/#iso:std:iso:26000:ed-1:v1:en

Table 2 — Core subjects and issues of social responsibility

Core subjects and issues	Addressed in sub-clause
Core subject: Organizational governance	**6.2**
Core subject: Human rights	**6.3**
Issue 1: Due diligence	**6.3.3**
Issue 2: Human rights risk situations	**6.3.4**
Issue 3: Avoidance of complicity	**6.3.5**
Issue 4: Resolving grievances	**6.3.6**
Issue 5: Discrimination and vulnerable groups	**6.3.7**
Issue 6: Civil and political rights	**6.3.8**
Issue 7: Economic, social and cultural rights	**6.3.9**
Issue 8: Fundamental principles and rights at work	**6.3.10**
Core subject: Labour practices	**6.4**
Issue 1: Employment and employment relationships	**6.4.3**
Issue 2: Conditions of work and social protection	**6.4.4**
Issue 3: Social dialogue	**6.4.5**
Issue 4: Health and safety at work	**6.4.6**
Issue 5: Human development and training in the workplace	**6.4.7**
Core subject: The environment	**6.5**
Issue 1: Prevention of pollution	**6.5.3**
Issue 2: Sustainable resource use	**6.5.4**
Issue 3: Climate change mitigation and adaptation	**6.5.5**
Issue 4: Protection of the environment, biodiversity and restoration of natural habitats	**6.5.6**
Core subject: Fair operating practices	**6.6**

LCC and LCIA

	People	Planet	Profit
Private costs **LCC**	E.g. health and safety expenditures, product liability expenses	E.g. costs of pollution prevention	Costs of raw materials, wages, taxes, interest on capital
Externalities **LCIA**	E.g. reduction in human well-being due to pollution stress or inequality	E.g. biodiversity impacts from pollution	E.g. reduction in productivity due to human health impacts, missing education due to child labour, or reduction in crop yields due to pollution

Green: The traditional focus of biophysical LCA

LCC: The economic aspect (except economic externalities)

Red circles: The focus of Social LCA

LCC + Biophysical LCA + Social LCA

= Sustainability Assessment ?

or just

= LCA ?

Blurred boundary between biophysical and social LCA

Bio-physical impacts seen in some Social LCAs:

- Occupational health
- Injuries
- Dietary health
- Food contamination
- Well-being of animals in human care
- Maintenance of agricultural landscape heritage
- Disruption of archaeological heritage
- Antibiotic resistance
- Noise
- Odour
- Visual impacts
- Space consumption

Social responsibility

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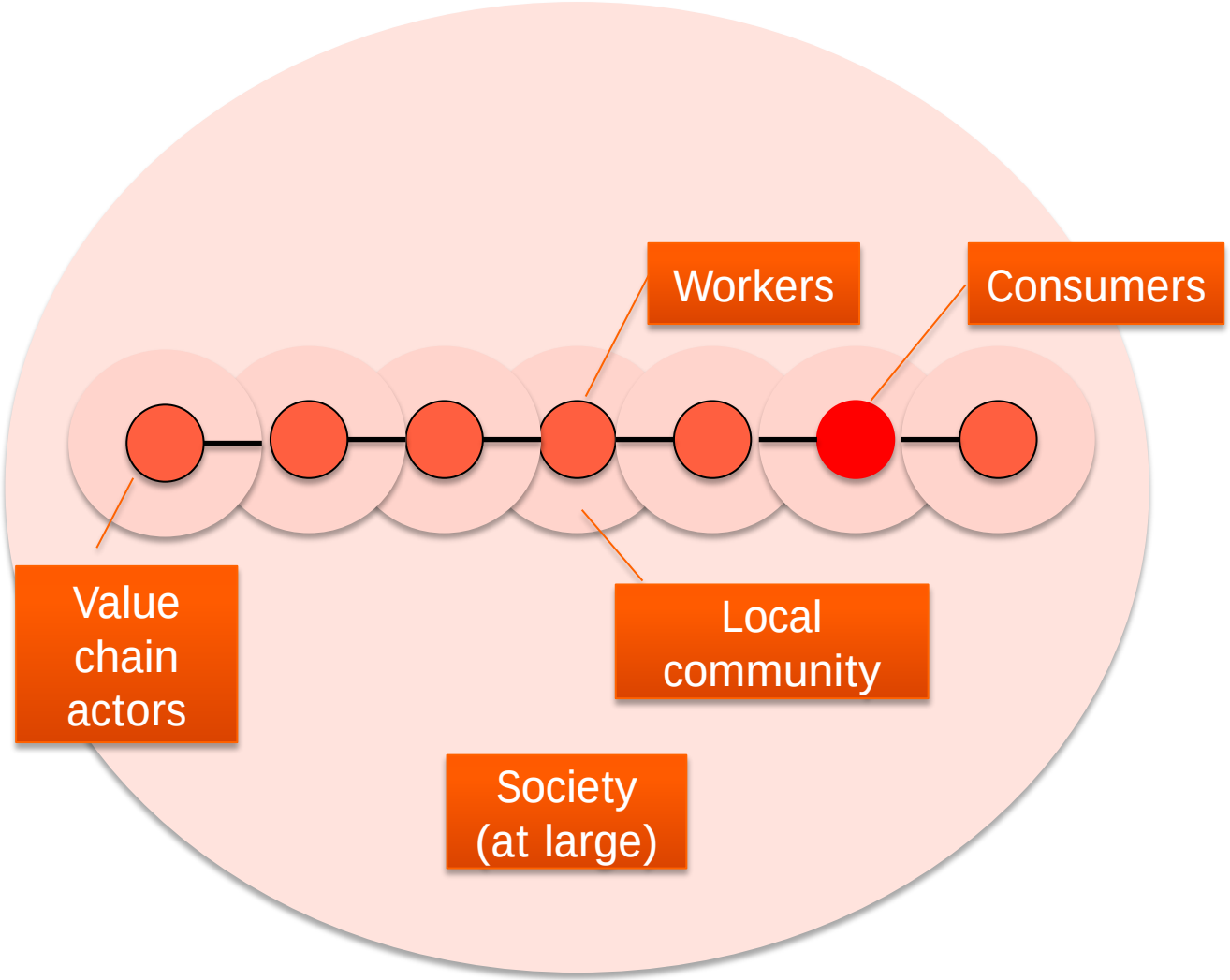
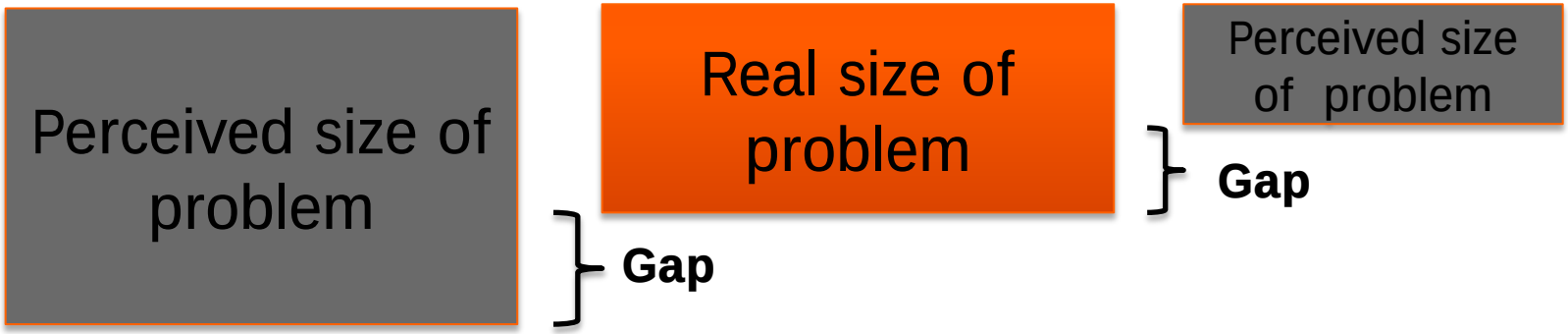
Stakeholder categories



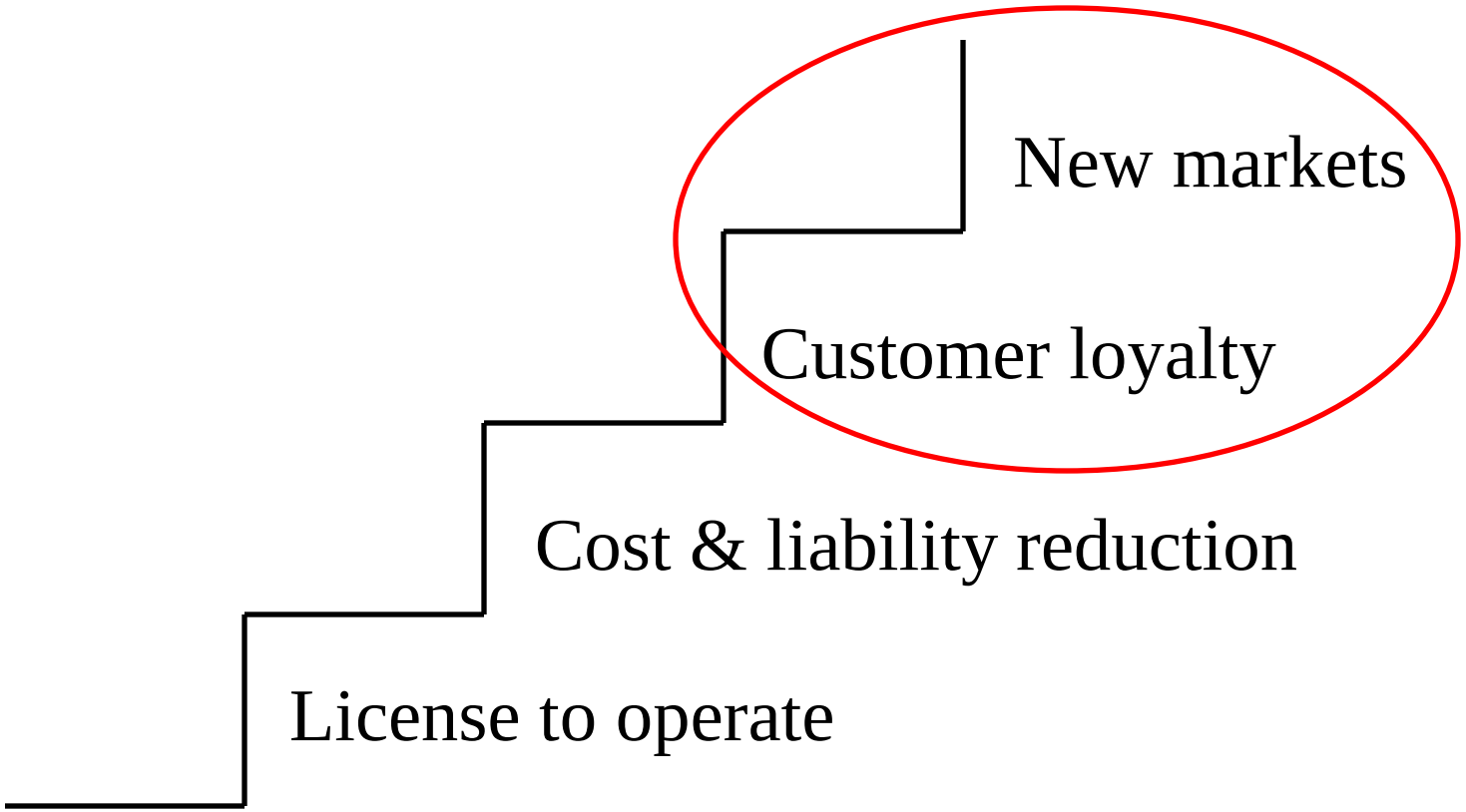
Why do stakeholder opinion matter?

Perception and reality:



Gap = Reputational risk (Stephan Shakespeare, YouGov)

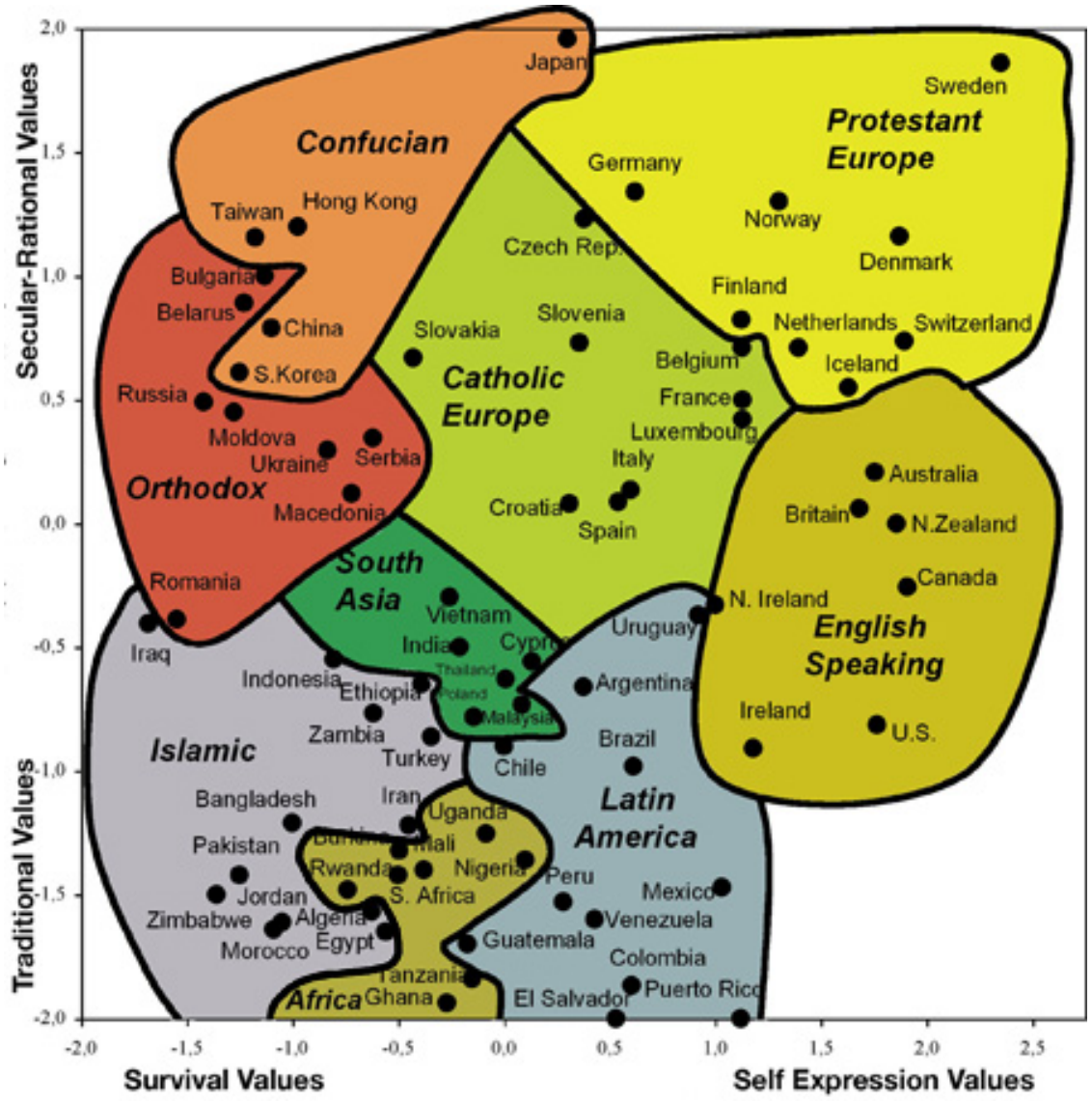
The business value ladder



Selecting impact categories

- Purpose of selection?
- Prioritisation of data collection
- What is important (in my context)?

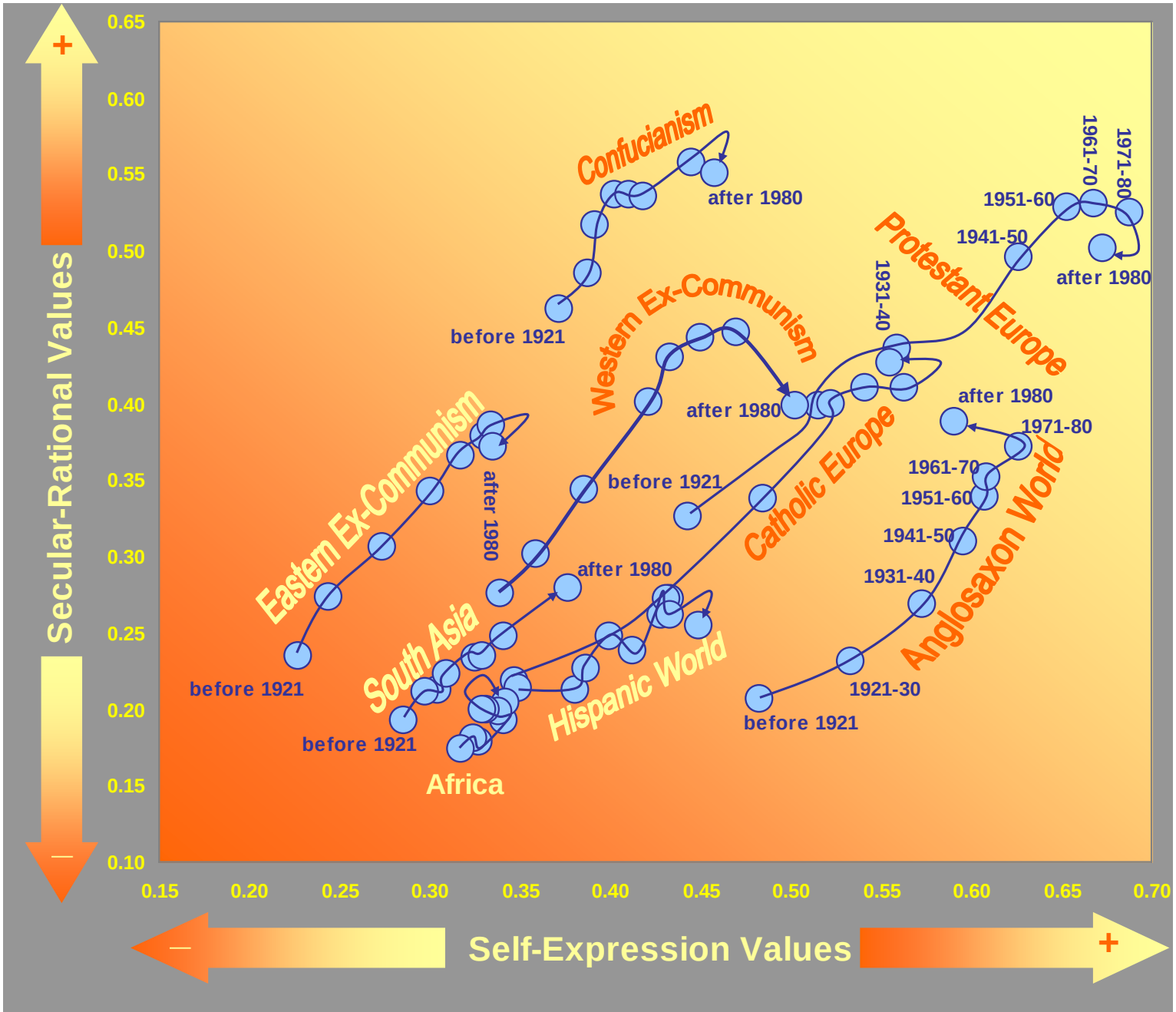
The World Value Survey Cultural Map

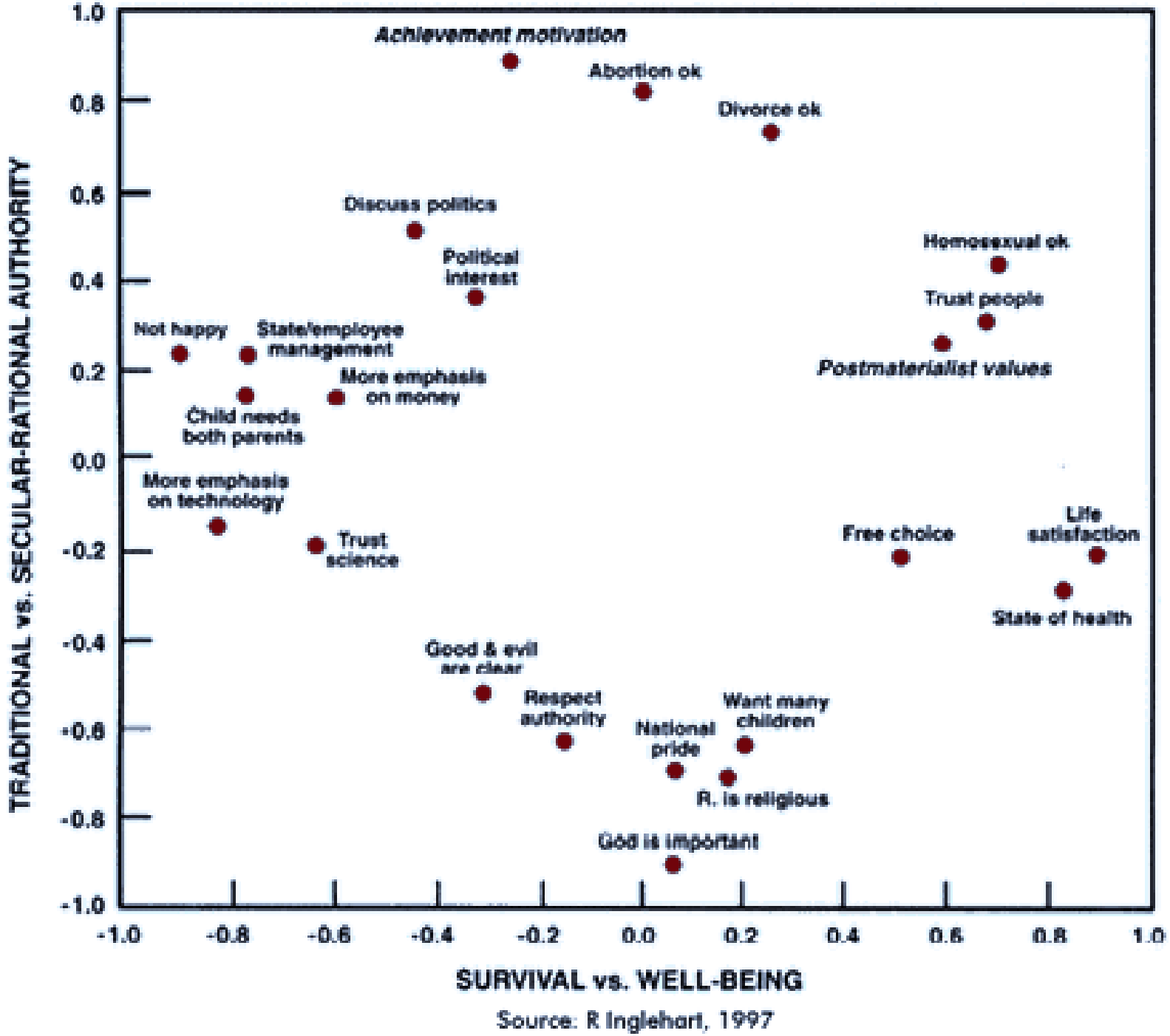


Source: Inglehart R, Welzel C. (2010). Changing Mass Priorities: The Link Between Modernization and Democracy. Perspectives on Politics 8(2):554

Over time values change towards secular and self-expression values in all cultural zones except Africa

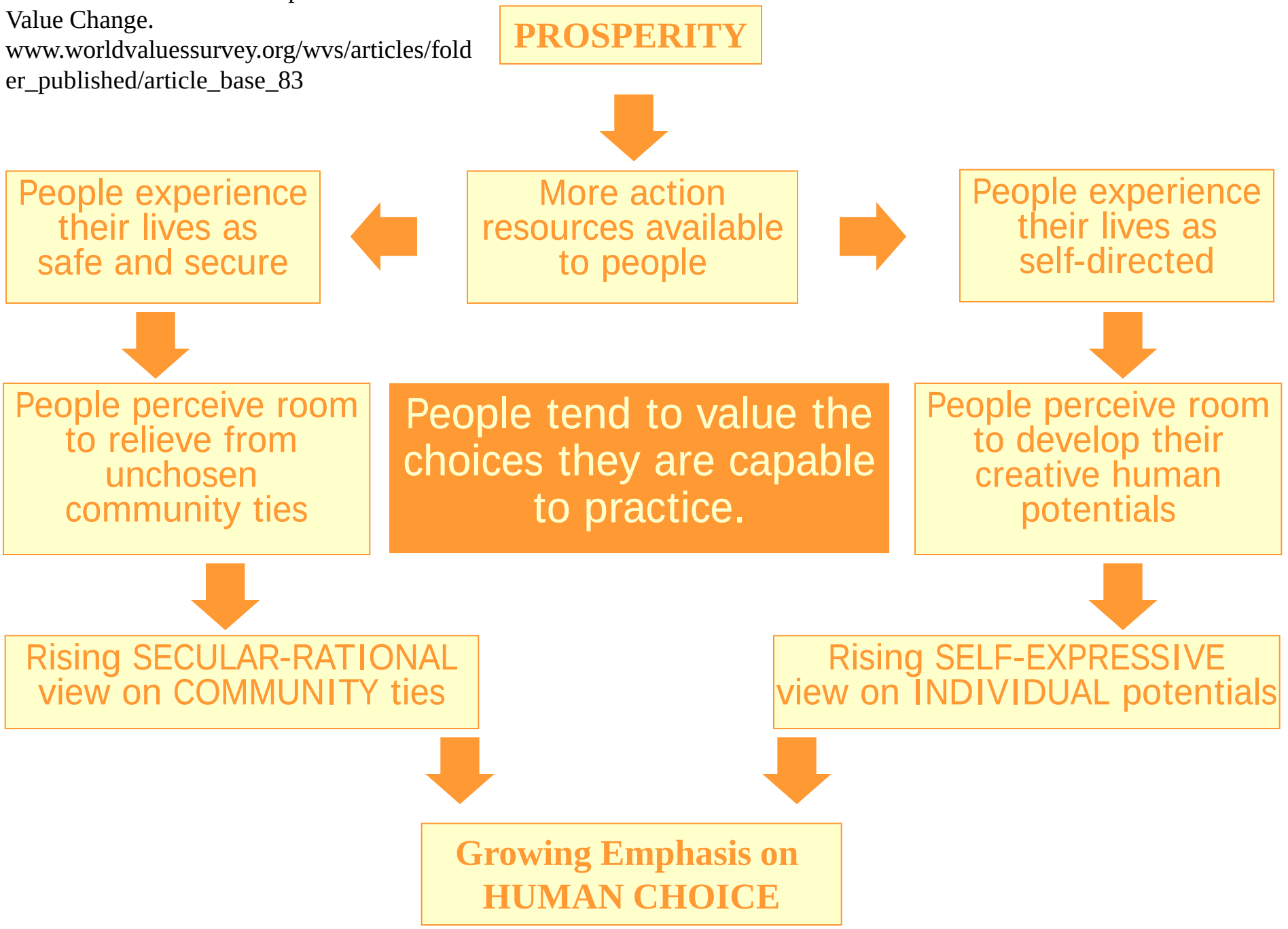
C Welzel: A Human Development View on Value Change





Source: R Inglehart, 1997

C Welzel: A Human Development View on Value Change.
www.worldvaluessurvey.org/wvs/articles/folder_published/article_base_83



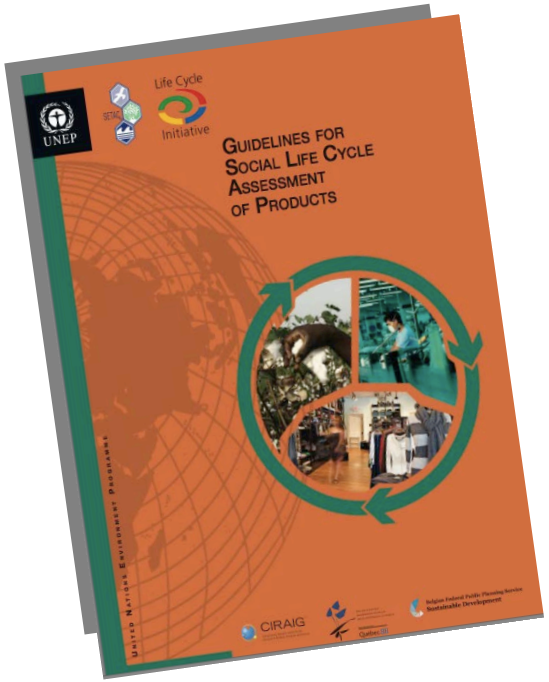
UNEP/SETAC category list

http://www.unep.fr/shared/publications/pdf/DTIx1164xPA-guidelines_sLCA.pdf

page 49

Exercise:

Find the “sub”category that corresponds to yours



UNEP/SETAC category list

Stakeholder categories	Subcategories
Stakeholder "worker"	Freedom of Association and Collective Bargaining Child Labour Fair Salary Working Hours Forced Labour Equal opportunities/Discrimination Health and Safety Social Benefits/Social Security
Stakeholder "consumer"	Health & Safety Feedback Mechanism Consumer Privacy Transparency End of life responsibility
Stakeholder "local community"	Access to material resources Access to immaterial resources Delocalization and Migration Cultural Heritage Safe & healthy living conditions Respect of indigenous rights Community engagement Local employment Secure living conditions
Stakeholder "society"	Public commitments to sustainability issues Contribution to economic development Prevention & mitigation of armed conflicts Technology development Corruption
Value chain actors* not including consumers	Fair competition Promoting social responsibility Supplier relationships Respect of intellectual property rights

Table 3 – Stakeholder categories and subcategories

Methodological sheets

http://www.estis.net/sites/lcinit/default.asp?site=lcinit&page_id=A8992620-AAAD-4B81-9BAC-A72AEA281CB9

Methodological sheets: Policy relevance section

Explains WHY category is relevant

- but not WHO it is relevant for

- WHO causes the impact?
- WHO should take action?

Production Consumption Government

Exercise: Determine *relevance* for your indicator(s)

Methodological sheets

Sections on:

International conventions and agreements

International targets and recommendations

Role of minimum requirements in an assessment:

Is there a threshold effect?

Legality or legitimacy

2 types of indicators: Management (Driver) and Pressure

ISO 26000
Guidance on social responsibility

https://www.iso.org/obp/ui/#iso:std:iso:26000:ed-1:v1:en

Here you will also find a bibliography that references all relevant international conventions and agreements, incl.:

[37] ISO 10993-2:2006, Biological evaluation of medical devices — Part 2: Animal welfare requirements

[40] ISO/IEC Guide 71:2001, Guidelines for standards developers to address the needs of older persons and persons with disabilities

[41] African Union Convention on Preventing and Combating Corruption, 2003

[44] Council of Europe Civil Law Convention on Corruption. 1999

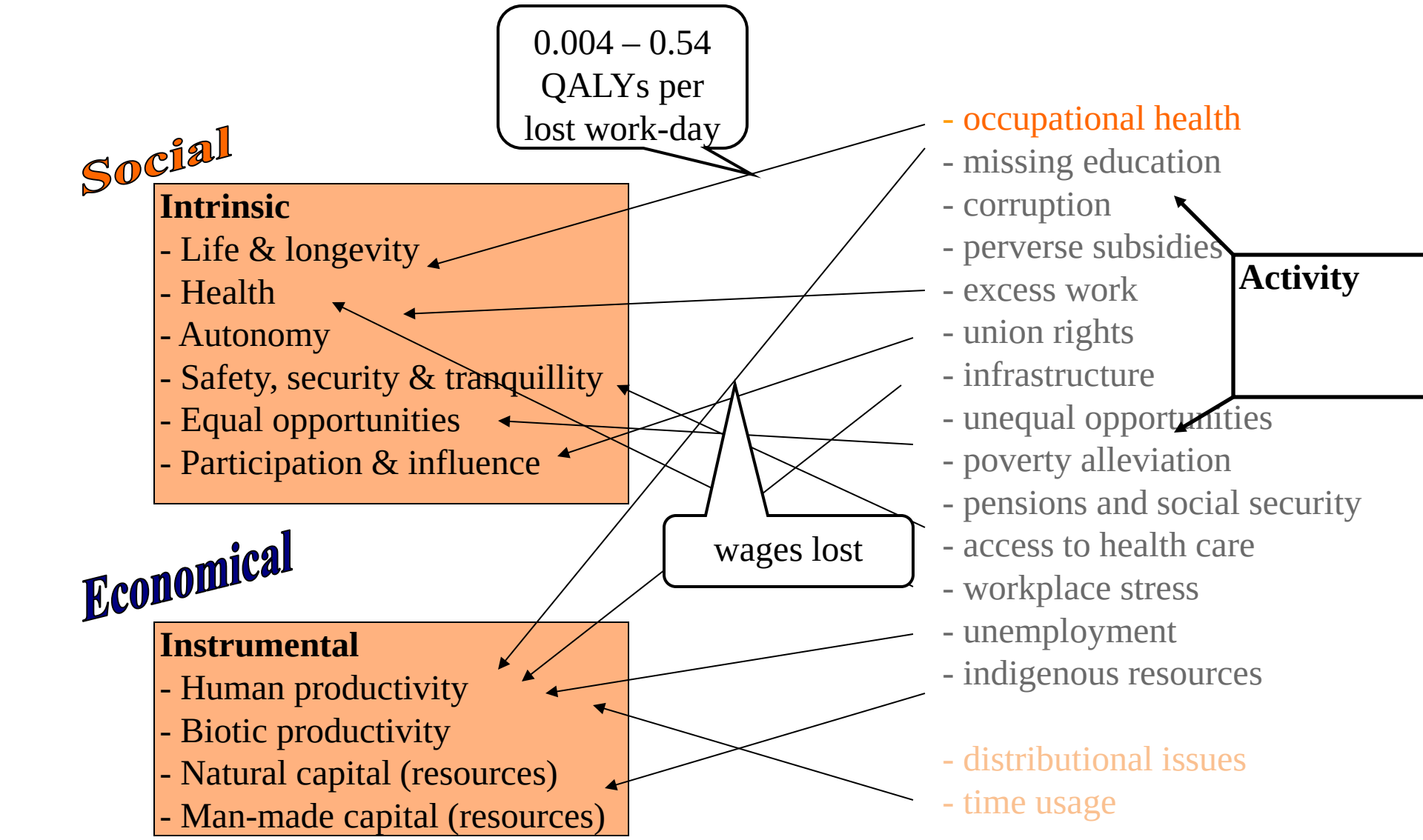
[49] International Labour Organization (ILO): Abolition of Forced Labour Convention (No. 105). 1957

[126] Organization for Economic Co-operation and Development (OECD): OECD Principles of Corporate Governance. 2004

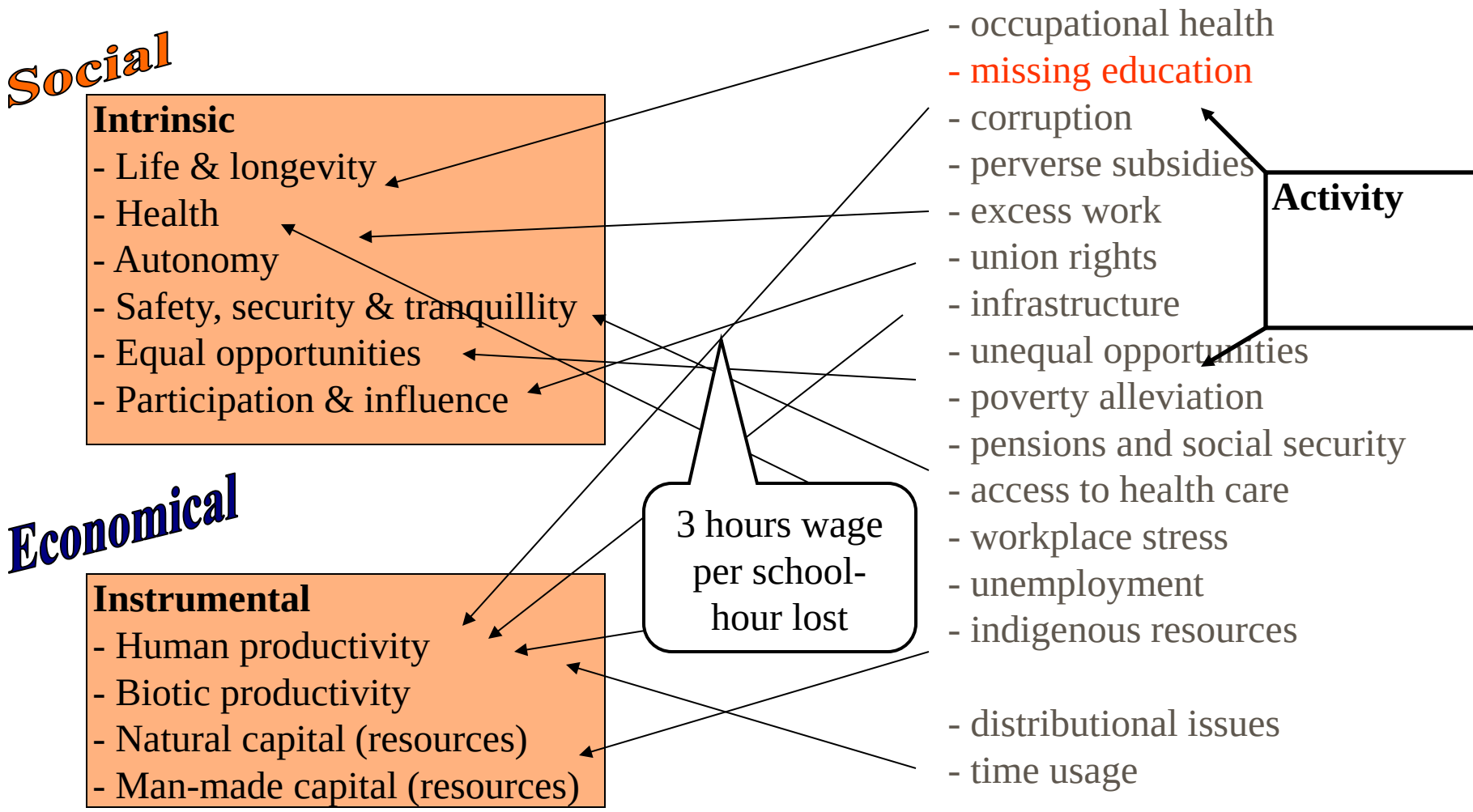
[133] United Nations (UN): Convention on the Elimination of All Forms of Discrimination against Women. 1979

[135] United Nations (UN): Convention on the Rights of the Child. 1989

Modelling social and economic impact pathways



Modelling social and economic impact pathways



Modelling impact pathways

Needs:

1) To agree on a set of endpoints
2) To agree on clear definitions, the units for comparison, and measurement methods (i.e. beyond the international conventions)
3) To agree on the impact pathways (classification – covering all the issues)
4) To agree on the characterisation models and factors for each impact pathway (in assigning models, beware not to reduce to what is believed to be measurable)
5) To measure the inventory pressures and calculate the impacts

Practical methods

- Weidema’s 14 indicator method
- PROSA
- Social Hotspot Database
- Humtec RWTH capabilities approach

Weidema

- Starting point: Gross lists from social impact assessment literature, GRI, etc.
- Divide in inventory, midpoint and endpoint categories
- Net list of 30 social inventory categories. Examples: Missing education, Corruption, Missing property rights, Unequal treatment, Occupational health, Trade barriers, ...

Weidema

- Filter out those categories that relate only to activities of government (I would not do that today!)
- Short list of 14 social inventory categories that can be influenced by industrial activities
- Identify quantitative pressure (inventory) indicators for the 14 categories. Criteria:
  - Default data available from statistical sources
  - Credible monitoring possible at factory / company level

Weidema's 14 quantitative social pressure indicators (complete list for industry):

Occupational health	Unequal opportunities
Productivity loss from missing education	Inadequate access to health care
Productivity loss from corruption	Unemployment and underemployment
Effect of trade barriers	Inadequate access to pensions or social security
Labour rights violations	Stressful working conditions
Productivity loss from lacking physical infrastructure	Poverty
Excessive work	Appropriation of indigenous resources

Weidema's 14 quantitative social pressure (inventory) indicators for industry (1-6)

Impact category	Suggested inventory indicators	Data source for default inventory data
Occupational health	**Lost work-days**	**USDL, ILO CISDOC, WHO CCOH network**
Missing education	**No. of school-hours lost (or gained)**	**UNESCO, Antislavery International**
Productivity loss from corruption	**Monetary value of additional prod. costs**	Transparency International
Effect of trade barriers	**Monetary value of subsidies**	World Bank
Excessive work	**No. of work-hours in excess of 48/person/week**	ILO
Labour rights violations	**No. of work-hours of unorganised labour**	ILO

Weidema's 14 quantitative social pressure (inventory) indicators for industry (7-10)

Impact category	Suggested inventory indicator	Data source for default inventory data
Productivity loss from lacking physical infrastructure	**Monetary contribution (in PPS) to local infrastructure development**	(part of corporate taxes used for this purpose?)
Unequal opportunities	**Sum of wages in excess of balanced composition relative to recruitment base**	ILO
Poverty	**Monetary value of specific, more than industry-average, efforts to provide: flexible jobs with low demands on skills, parent-friendly employment opportunities, fair transactions and payment options for the poor, and delivery and personal services for the disabled**	(Worldbank?)
Inadequate access to health care	**No. of workers without adequate access to health care (defined as >1000 capita / doctor) for themselves and their family**	WHO Global Atlas of the Health Workforce

Weidema's 14 quantitative social pressure (inventory) indicators for industry (11-14)

Impact category	Suggested inventory indicator	Data source for default inventory data
Unemployment and underemployment	**Positive: No. of work-hours by workers recruited from long-term unemployment. Support to terminated workers.**	(ILO?)
Inadequate access to pensions or social security	**No. of workers without adequate pension scheme and/or social security access**	**US Social Security Administration's assessment "Social Security Programmes Throughout the World"**
Stressful working conditions	**No. of work-hours * relative stress measure above threshold**	UK HSE
Appropriation of indigenous resources	**Assessed market value of resources with property rights assigned to indigenous people**	?

Weidema's default values for social pressure indicators (1-6)

Impact category	Inventory indicator unit	Global default value
Occupational health	Lost work-days	0.0075 per full-time worker-year
Missing education	School-hours lost	15 per full-time worker-year
Productivity loss from corruption	Monetary value	2.2% of added value
Effect of trade barriers	**Monetary value of direct or indirect subsidies**	Specific values per product group
Excessive work	**No. of work-hours in excess of 48/person/week**	38 per full-time worker-year
Labour rights violations	**No. of work-hours of unorganised labour**	780 per full-time worker-year

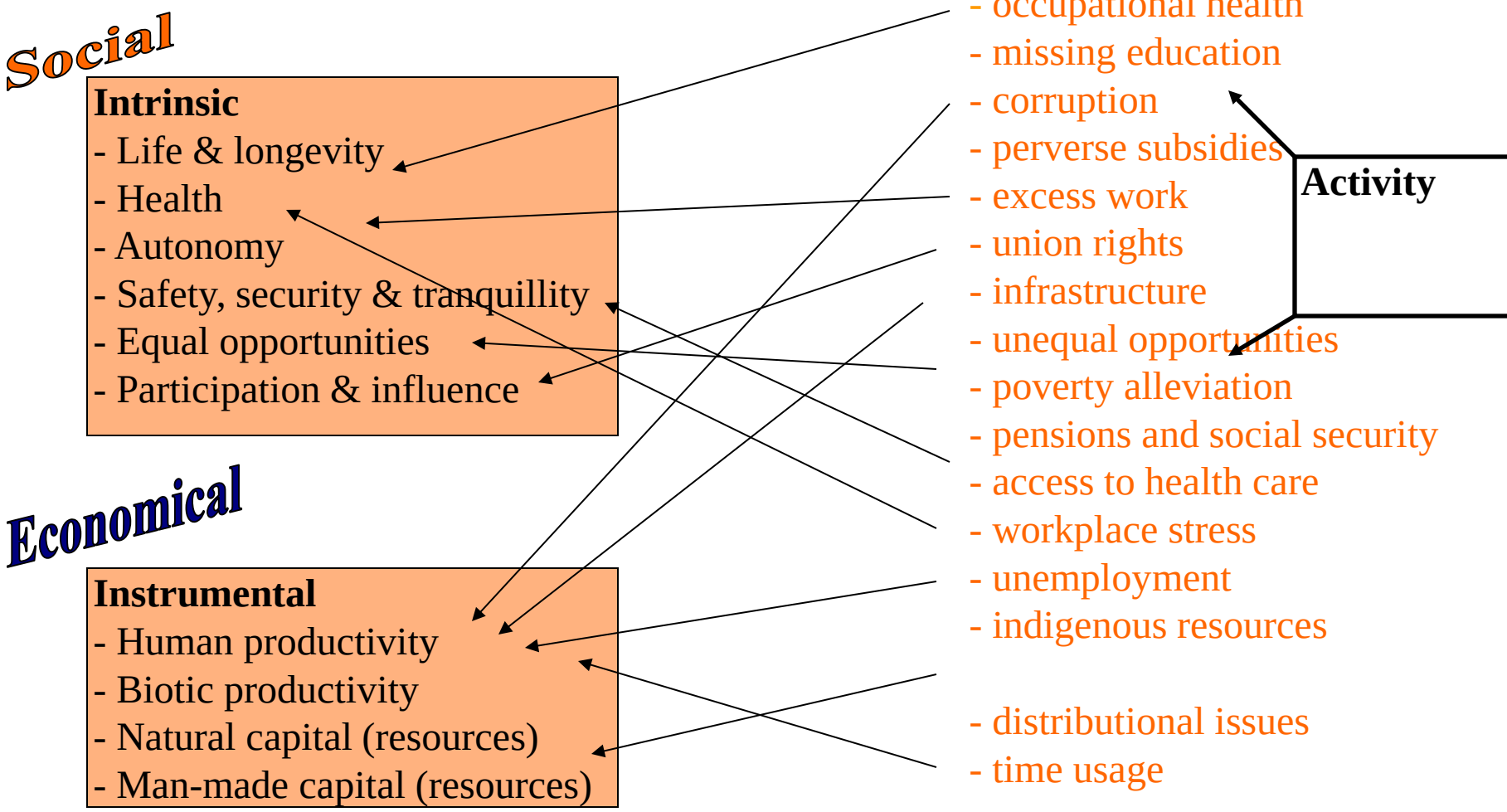
Weidema's default values for social pressure indicators (7-11)

Impact category	Inventory indicator unit	Global default value
Physical infrastructure	**Monetary contribution (in PPS) to local infrastructure development**	0 per added value
Unequal opportunities	**Sum of wages in excess of balanced composition relative to recruitment base**	**1300 $USD_{2000PPS}$ per full-time worker-year**
Poverty	**Monetary value of specific, more than industry-average, efforts**	0 per full-time worker-year
Inadequate access to health care	**No. of workers without adequate access to health care**	0.26 per full-time worker-year
Unemployment and underemployment	**No. of work-hours by workers recruited from long-term unemployment. Support to terminated workers.**	0 per added value

Weidema's default values for social pressure indicators (12-14)

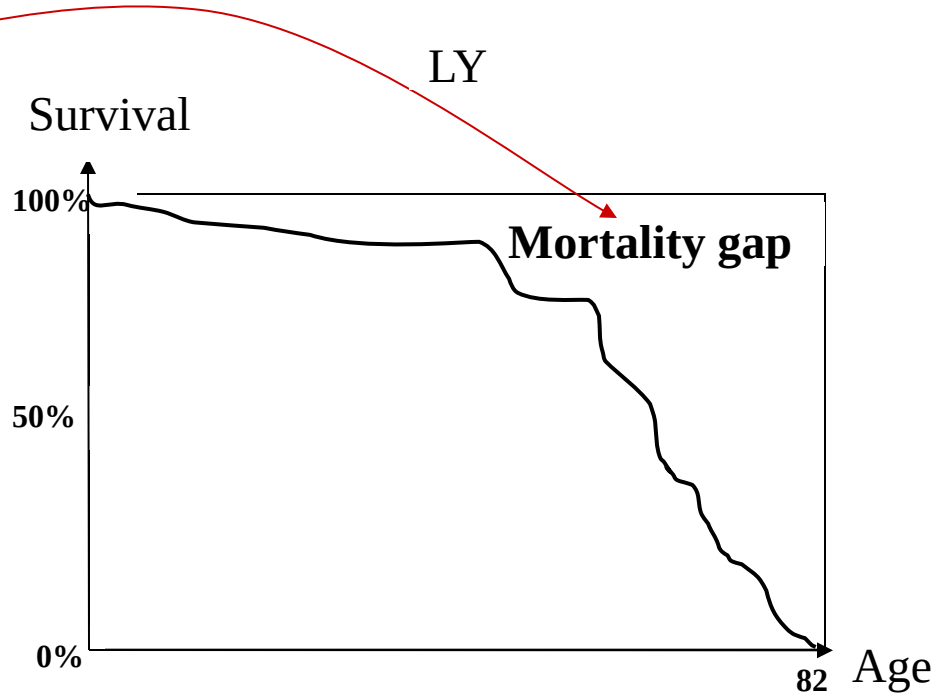
Impact category	Inventory indicator unit	Global default value
Inadequate access to pensions or social security	**No. of workers without adequate pension scheme and/or social security access**	0.11 per full-time worker-year
Stressful working conditions	**No. of work-hours * relative stress measure above threshold**	**478 Quality-Adjusted workhours per full-time worker-year**
Appropriation of indigenous resources	**Assessed market value of resources with property rights assigned to indigenous people**	?

Modelling social and economic impact pathways



Quantifying and aggregating impacts on human well-being

Intrinsic
- Life & longevity
- Health
- Autonomy
- Safety, security & tranquillity
- Equal opportunities
- Participation & influence



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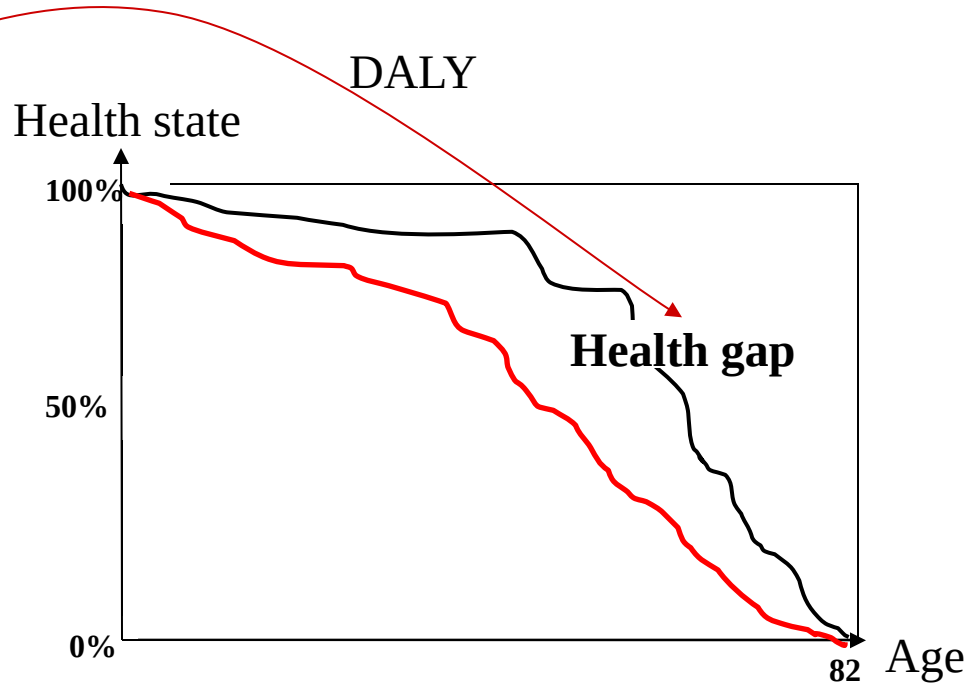

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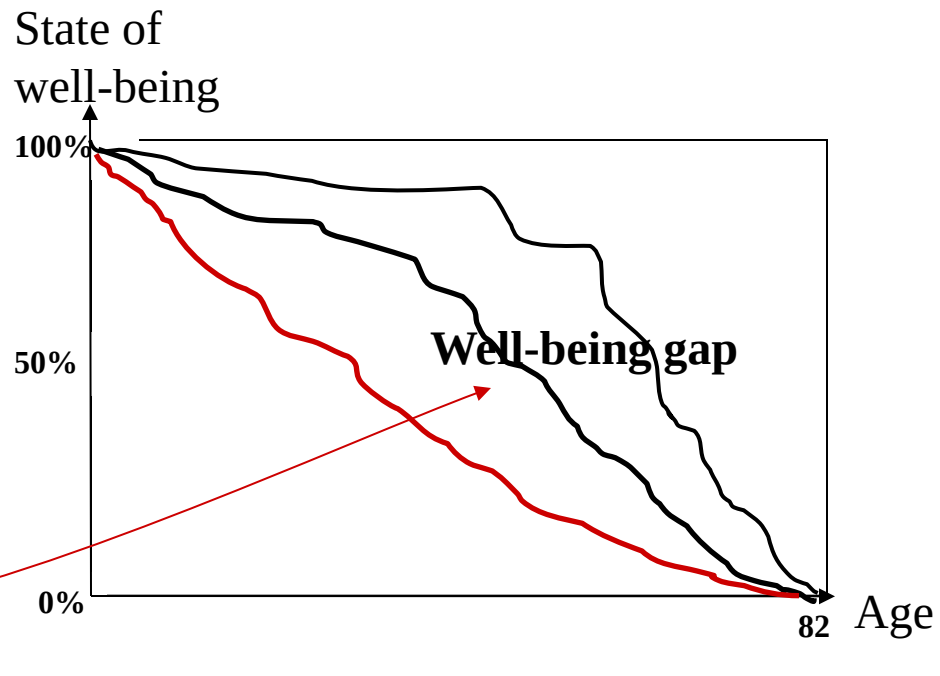
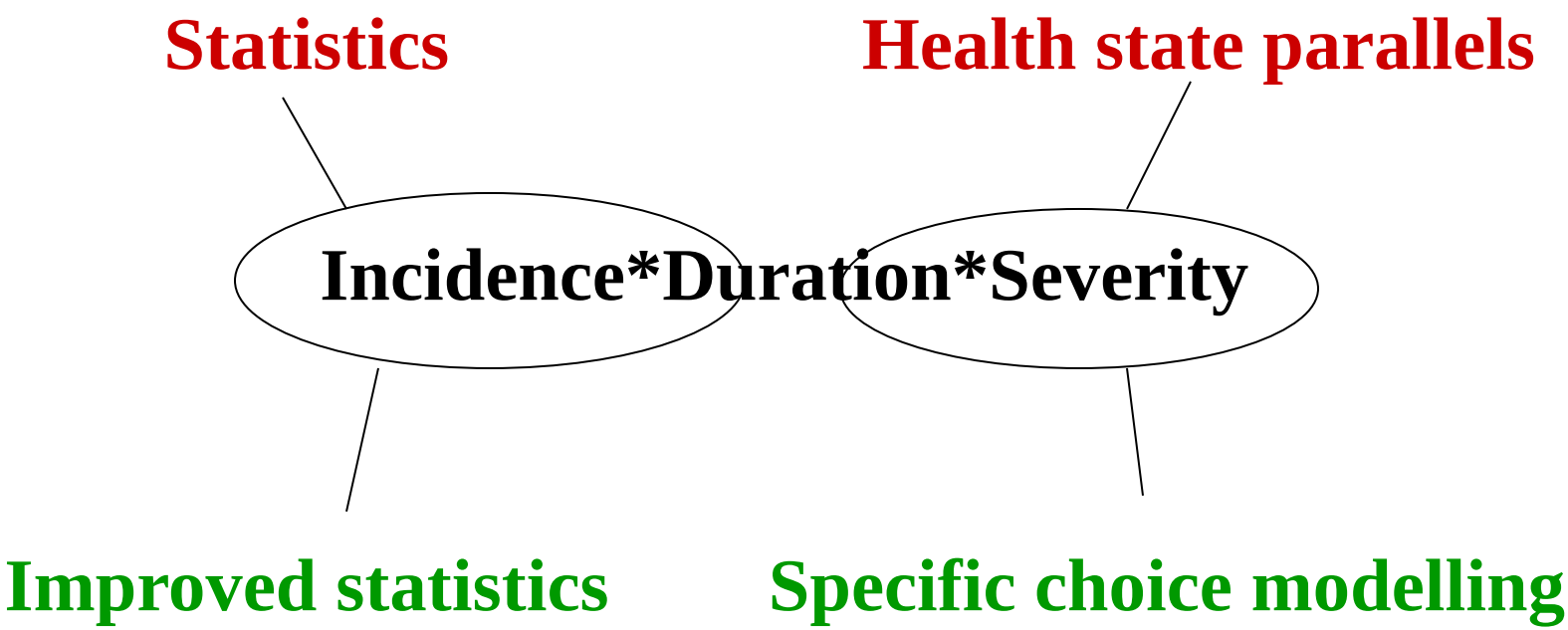


QALY

Incidence*Duration*Severity

Impact quantification procedure used by Weidema



Desired improvements

Impact severity: Health state parallels Dolan's N3 tariff

	Level 2 Moderate problems	Level 3 Extreme problems
Mobility	-0.069	-0.314
Self-care	-0.104	-0.214
Usual activity	-0.036	-0.094
Pain/discomfort	-0.123	-0.386
Anxiety/depression	-0.071	-0.236
in addition:		
Any score 2 or 3	-0.081	
Any score 3		-0.269

Dolan, P et al. (1995). *A Social Tariff for EuroQol: results from a UK general population survey*, Discussion Paper 138, Centre for Health Economics

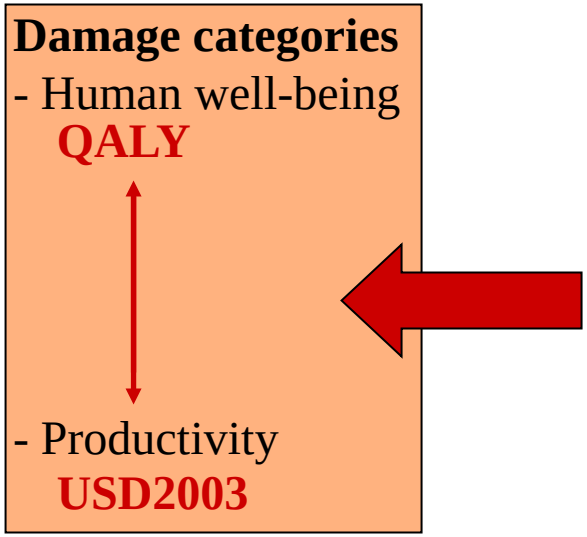
A first estimate of the global burden of social and economic impacts, year 2002, sorted by decreasing overall importance (Weidema 2006a&b)

Impact	Total damage [E+6 QALY]
Value of production and consumption at full efficiency	12460
Mortality	-1700
Non-lethal health impacts	-960
Productivity loss from missing education	-719
Productivity loss from lacking social infrastructure [1]	-438
Productivity loss from health and other work-disabling impacts	-430
Effect of trade barriers	-386
Participation restrictions	-380
Productivity loss from lacking physical infrastructure	-334
Infringement of freedom of expression	-240
Child labour	-234
Excessive work	-200
Unequal opportunities	-160
Inadequate access to health care	-140

Unwanted pregnancies	-102
Unemployment and underemployment	-71
Inadequate access to pensions or social security	-61
Stressful working conditions	-54
Warehoused refugees (> 5 years)	-47
Burglary or attempted burglary	-20
No access to contraceptives	-20
Trafficking	-17
Torture	-17
Interpersonal or communal violence	-16
Genital mutilations, female	-15
Bonded labour	-15
Threatening or traumatic traffic situations	-13
Threats of violence or other contact crimes	-12
Refugees or internally displaced	-11
Incarceration	-7
Genital mutilations, male	-4
Synergy effect of productivity impacts [2]	-2522
Value of production and consumption at current efficiency	**3116**

Monetarisation via the budget constraint

Budget constraint:
Potential Global GEP
with full human productivity
= 84000 USD2003 / person
i.e. 84000 USD2003 / QALY



Gives same values as other monetarisation methods, but with much less uncertainty and without intercultural differences.

Weidema B P. (2009). Using the budget constraint to monetarise impact assessment results. Ecological Economics 68(6):1591-1598.

Social impacts attributable to industry

	USD/person	Relative
Occupational health	140	2%
Missing education	110	1%
Productivity loss from corruption	160	2%
Effect of trade barriers	1650	23%
Labour rights violations	1820	25%
Excessive work	960	13%
Unequal employment opportunities	520	7%
Inadequate access to health care	780	11%
Inadequate access to pensions or social security	330	5%
Stressful working conditions	730	10%
Total social impacts attributable to industry	7200	100%

For comparison: Norm. ref. for biophysical impacts: 3000 USD/person

Source: Weidema (2006)

The PROSA method

Grießhammer R, Buchert M, Gensch C-O, Hochfeld C, Manhart A, Reisch L, Rüdenauer I. (2007). Prosa – Product Sustainability Assessment Guideline. (PROSA 2.0). **Freiburg: Öko-Institut e.V. – Institute forApplied Ecology.**http://www.prosa.org/fileadmin/user_upload/pdf/leitfaden_eng_final_310507.pdf

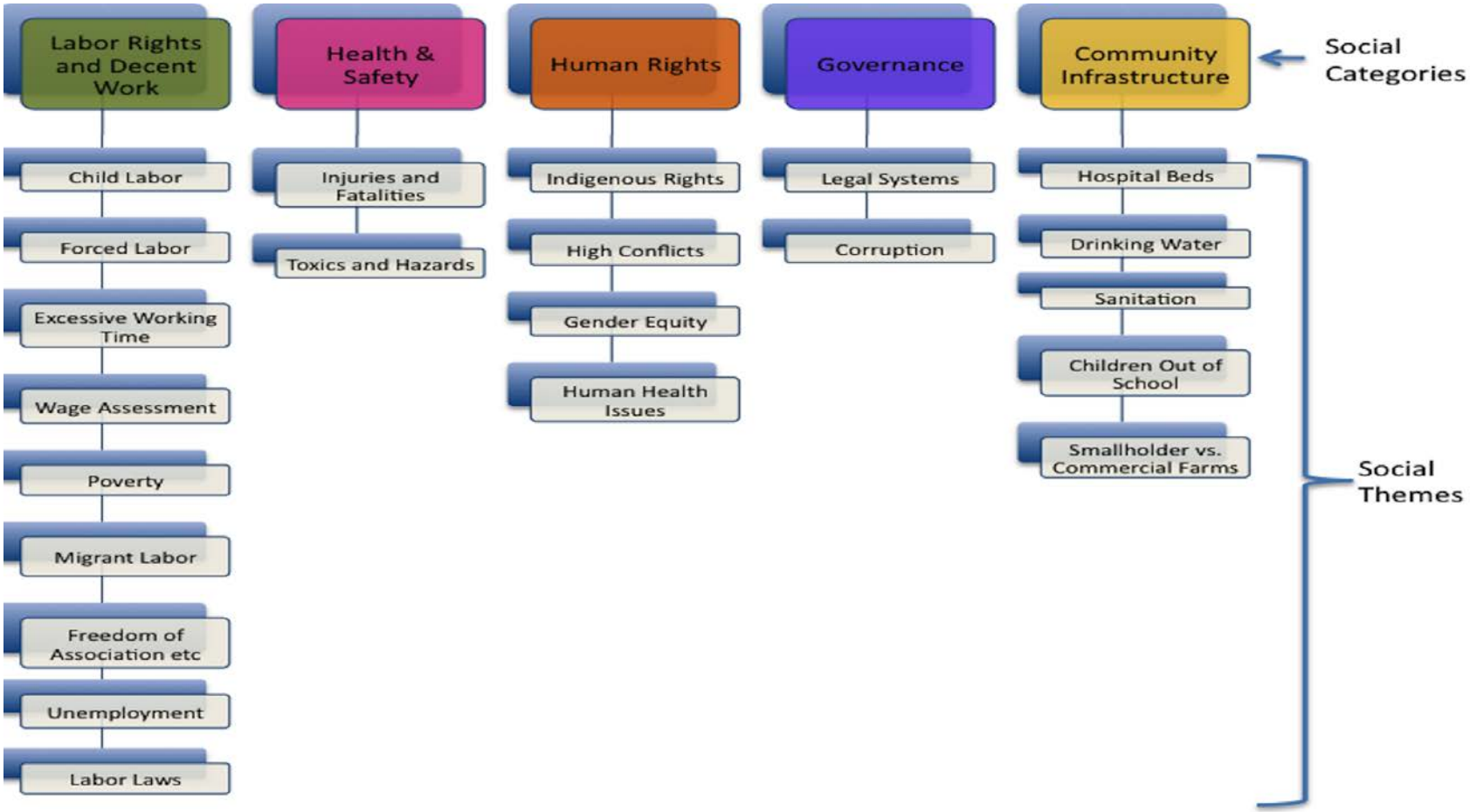
- PROduct Sustainability Assessment
- S-LCA is only one element of a broad method
- Besides LCC & B-LCA it includes:
  - Megatrend & Portfolio Analysis (to identify strategic options)
  - Benefit Assessment (a very detailed analysis of the functional unit and consumer externalities & surplus)
  - ProfitS (scoring tool for impacts on Ecology, Society & Economy on a scale 1-10 and aggregating 1:1:1)

The PROSA method

- 157 Indicators of 33 impact categories organised in 4 stakeholder categories (page 13; Table 14)
- Gives a very complete and detailed picture
- Difficult to aggregate in a meaningful way
- PROSA suggests to select only 5-10 indicators from the complete list
- “The goal of the evaluation ... is not to arrive at an absolute evaluation of particular products, but to derive possible measures for improving social problems.”
- Optional scoring from 1-10 of the selected indicators.

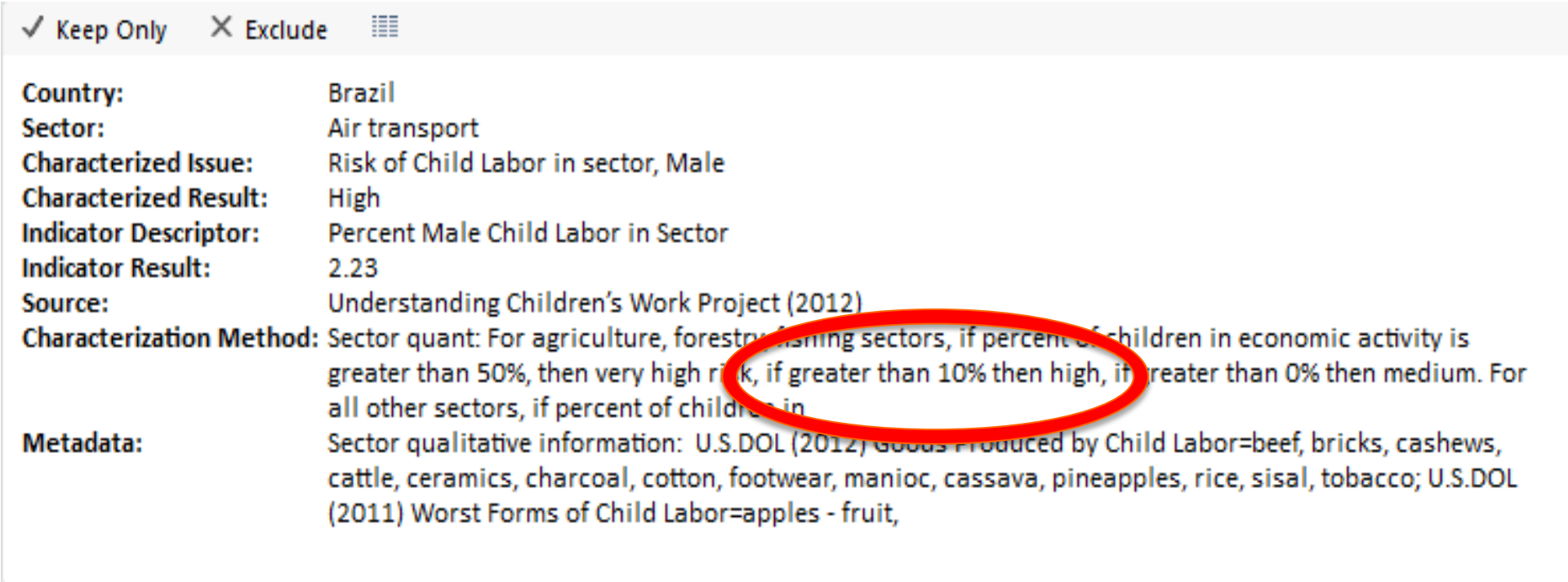
The Social Hotspot Database
http://socialhotspot.org/

150 indicators for 22 impact categories (“themes”) in 5 “social categories”:



The Social Hotspot Database

- Data for 227 countries and 57 economic sectors (worker hours/value added and semi-quantitative "risk" data)



The Social Hotspot Database

- Online portal or LCA-tool (OpenLCA so far)
- Online portal gives data access and comparison or aggregation for 5 sectors/countries
- GTAP-based LCA-option in LCA-tool
- Social Hotspot Index = ratio of weighted impacts / maximum weighted impact (currently only for 26 indicators)

The Social Hotspot Database

CATEGORY	THEME	ISSUE	WEIGHT
Labor Rights & Decent Work	Wage Assessment	Risk of Sector Ave Wage being lower than Country's Non-poverty Guideline	1.5
	Wage Assessment	Risk of Sector Ave Wage being lower than Country's Minimum Wage	1.5
	Poverty	Risk of Wages being under $2 per day	1.5
	Forced Labor	Risk of Forced Labor by Sector (used country level risk [not shown] if no sector data was found)	1.5
	Child Labor	Risk of Child Labor in sector, Total (used country-level risk where no sector data was found)	1.5
	Working Time	Risk of excessive working time by sector (used country level risk [not shown] where no sector data exists)	1.5
	Freedom of Association, Collective Bargaining, and Right to Strike	Risk that a country lacks or does not enforce Freedom of Association rights	1.5
	Freedom of Association, Collective Bargaining, and Right to Strike	Risk that a country lacks or does not enforce Collective Bargaining rights	1.5
	Freedom of Association, Collective Bargaining, and Right to Strike	Risk that a country lacks or does not enforce the Right to Strike	1.5
	Migrant Workers	Risk that migrant workers are treated unfairly (based on qualitative literature review)	1

The Social Hotspot Database

CATEGORY	THEME	ISSUE	WEIGHT
Health & Safety	Occupational Injuries & Deaths	Risk of non-fatal injuries by sector	1.5
	Occupational Injuries & Deaths	Risk of fatal injury by sector	1.5
	Occupational Toxics & Hazards	Risk of workplace noise exposure, both genders	1
	Occupational Toxics & Hazards	Risk of loss of life or death by exposure to carcinogens in occupation	1
	Occupational Toxics & Hazards	Risk of loss of life by airborne particulates in occupation	1
Human Rights	Indigenous Rights	Risk that indigenous people are negatively impacted at sector level	1.5
	High Conflict Zones	Overall Risk for High Conflict-increased if risk exists at sector level	1.5
	Gender Equity	Overall Risk of Gender Inequality in country	1.5
	Gender Equity	Risk of Gender inequality by Sector based on representation in the workforce	1
	Human Health - Non-communicable Diseases and other health risks	Risk of mortality from non-communicable diseases	1
	Human Health - Communicable Diseases	Risk of mortality from communicable diseases	1
Governance	Legal System	Risk of fragility in the legal system considering all indicators	1.5
	Corruption	Overall Risk of Corruption considering all indicators	1.5
Community Infrastructure	Access to Improved Drinking Water	Risk of no access to an Improved Source of Drinking Water	1.5
	Access to Improved Sanitation	Risk of no access to an Improved source of Sanitation	1.5
	Access to Hospital Beds	Risk that there are too few hospital beds to support population	1

The Social Hotspot Database

Overall assessment:

- Most comprehensive collected data source available
- Only semi-quantitative data published – aggregation therefore very uncertain
- Uncertainty not presented
- Index not science-based

Humtec RWTH

- Conceptual framework based on Finis et al.'s "dimensions of life" combined with a capabilities approach, defining human well-being in terms of the capability for (and/or freedom to) 7 areas:
  - Life, health and safety
  - Knowledge and aesthetic experience
  - Friendship
  - Excellence in work & play (achievement)
  - Inner peace
  - Self-expression
  - Trancedence

Humtec RWTH

- As areas of protection are defined as
  - Autonomy (incl. life, health, safety & participation)
  - Fairness
- Applied to re-evaluate and re-organise the UNEP/SETAC categories. Some examples:
  - capability to enjoy recreation (Excess work)
  - capability to choose meaningful work (Forced labour)
  - capability to participate in community life & capability to choose one's place of living (Delocalisation and migration)
  - capability to practice and revitalize cultural tradition (Cultural heritage)
  - Capability for informed responsible decisions (Transparency)

Humtec RWTH

Currently a conceptual framework only:

- Indicators not further defined
- No attempt at impact pathway modelling (yet?)

Reitinger C, Dumke M, Barosevcic M, Hillerbrand R. (2011). A conceptual framework for impact assessment within SLCA. International Journal of Life Cycle Assessment.