

THE SOCIAL HOTSPOTS DATABASE

Supporting documentation

Update 2019



A woman ride bike to work in Myanmar © Jason Gutierrez/IRIN

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INTRODUCTION

MORE INFORMATION ON SOCIAL IMPACTS IS NEEDED

The need for increased data; leadership and social change in supply chains is broadly recognized in today's globalized system of production and trade. Projecting in the near future, to be successful, organizations will need to design products and supply chains with mindful intent.

NewEarth B offers information on supply chain social risks providing organizations with a rich and holistic overview of where their most salient social impacts may be. This enables organizations to become knowledgeable about their potential human rights risks and discover their greatest opportunity to contribute to the Sustainable Development Goals hence, supporting prioritization and decision-making.

In 2011, the United Nations Guiding Principles on Business and Human Rights (United Nations Global Compact, 2011) affirmed the State's duty to protect human rights, the corporate responsibility to respect human rights and the need for greater access to remedy for victims of business-related abuse. These guidelines resulted in the emergence of an international legal framework. Increased regulation in the UK (GOV.UK, 2014), France (Business & Human Rights Resource Center. (n.d.)), the Netherlands (MVO Platform, n.d.) and Australia (Guilbert, 2018) regarding supply chain human rights, human trafficking/modern slavery or child labor has incentivized the need for organizations to conduct Human Rights Due Diligence. Human Right Due Diligence, as defined by the UN Guiding Principles, is "a business's ongoing processes for assessing its actual and potential human rights impacts, integrating and acting upon its findings, tracking its responses and communicating how its impacts are addressed". It should not only "cover adverse impacts that a business may cause or contribute to through its own activities" but also those, which may be directly linked to its operations, products or services by its suppliers. Due diligence is also a core component of ISO 26000, a business guidance document on social responsibility management. Furthermore, the current version of the GRI reporting guidelines (G4) launched in 2013, not only increases the focus on determining what are the most relevant sustainability issues for each reporting organization (materiality analysis) but also includes requirements regarding

transparency and accountability for behaviors that encompass several tiers of supply chain actors, over which the firm has varying degrees of control.

Supply chains have to be described, including types, numbers, locations and how they relate to the organization' business operations (Brown & Mooley, 2013). Finally, companies increasingly want to report on their contribution to Sustainable Development Goals (SDG's) as agreed upon by all UN members in 2015 (UNDP, 2015). There is a general understanding that companies can contribute through their core business and that actions taking place in global supply chains can have a significant impact on the SDG's (SDG Compass, n.d.). Social risks can be understood as potential adverse impacts, but they can also be considered as an opportunity to improve upon a particular social issue.

HOW SOCIAL LIFE CYCLE ASSESSMENT CAN HELP

Life Cycle Assessment (LCA) is a technique developed in the late 1960's and first standardized in the 1990's. It is used to quantify the environmental impacts of a product or service over its life cycle, including raw material extraction, manufacture, distribution, use, and disposal. The methodology standardized by ISO 14040 aggregates inputs and outputs of resources and chemicals to air, water, and soil into several environmental impact categories, such as global warming, resource depletion, human health, and ecosystem services (ISO, 2016). Life Cycle Assessment deploys or rests upon a combination of methods, models, and data.

Social Life Cycle Assessment (S-LCA) is a newer technique to quantitatively evaluate the life cycle social impacts related to production and consumption, including those associated with worker's rights, community development, consumer protections, and societal benefits. In 2009, the United Nations Environment Program (UNEP) and the Society of Environmental Toxicology and Chemistry (UNEP/SETAC) Life Cycle Initiative published the Guidelines for Social Life Cycle Assessment of Products (The Guidelines) (Benoit & Mazijn (eds.), 2009). These Guidelines are currently being revised under the umbrella of the UN Environment Life Cycle Initiative.

S-LCA *methods* can be found in reference documents like the Social LCA Guidelines; the Pré Social Roundtable Handbook for social impact assessment (Pré Consultants, 2018),

and various journal articles. *Models* are used to provide a representation of a product system; several types can be used but Global Trade models (MRIO=Multi Regional Input Out) are the most common because they contain critical geography information. *Data* is the engine that enables the assessment to take place.

S-LCA employs the modeling capabilities and systematic assessment process of LCA combined with relevant social sciences methods. The social aspects assessed in S-LCA are those that may affect stakeholders positively or negatively across the supply chain or life cycle of a product/organization. The impact categories covered are largely defined by the international community through its policy frameworks and other social responsibility references, and in respect to best available science (a top down approach).

S-LCA can either be applied on its own or in combination with E-LCA. It differs from other social impact assessment techniques by its objects -- products and services -- and by its scope: the entire life cycle. Social LCA can also be applied at the level of the organization, country or consumer. The scope (the life cycle) and the methodology (a systematic process of collecting and reporting about social impacts and benefits) are both key aspects that draw interest in the technique (Benoît et al., 2010).

To collect site-specific data throughout a supply chain is a time and cost-prohibitive endeavor. When a bottom-up, enterprise-level data collection approach is used exclusively, very few companies in a supply chain can be fully assessed. A screening tool containing generic country and sector-specific data on social issues of concern can be used to guide site-specific data collection efforts by identifying hotspots (Benoit & Mazijn, (eds.)). Hotspots are production activities in the product life cycle that provides a higher opportunity to address issues of concern (e.g., human and worker rights, community well-being), as well as highlight potential risks of violations, damage to reputation, or issues that need to be considered when doing business in a specific sector and country (Benoit & Mazijn (eds.)). Social LCA methodology and the modular social hotspots database (SHDB) system provide the necessary elements to conduct such an assessment of the risks and opportunities in supply chains. Whether an organization wants to reduce its product or corporate social footprint or calculate its handprint, the SHDB will provide the necessary information to get started.

THE SOCIAL HOTSPOTS DATABASE

HISTORY

The Social Hotspot Database (SHDB) was launched in 2009 to ensure that users have full transparent access to information about working conditions and other social impacts in global supply chains, and the hundreds of sources drawn upon as well as the methods used to determine risks.

The SHDB's end objective is to foster greater collaboration in improving social conditions worldwide by providing transparent information about social risks and opportunities in the global economy. The information provided can help supply chain stakeholders to improve their management of social responsibility issues and create incentives to collaborate and drive progress.

The early development of the SHDB benefitted from the advice and support from the NewEarth advisory board chaired by Raymond Robertson (Better Work Programme) including 24 distinguished individuals from academia, industry, intergovernmental organizations, government and non-governmental organizations. In 2013, the SHDB was made publicly available through the SHDB website (www.socialhotspot.org) and through licenses that work in professional LCA software such as Open LCA and SimaPro.

In 2013, NewEarth made available for public use the Social Hotspots Database in two formats: yearly subscriptions to a web risk tool (www.socialhotspot.org) and licenses to use the database in Life Cycle Assessment software (Sima Pro, Open LCA and Quantis Suite). In 2016, NewEarth B, a for-benefit corporation (B-Corp) spin off from the non-profit NewEarth, was created to deliver excellence and enable two platforms to reach scale (SHDB and Handprinter).

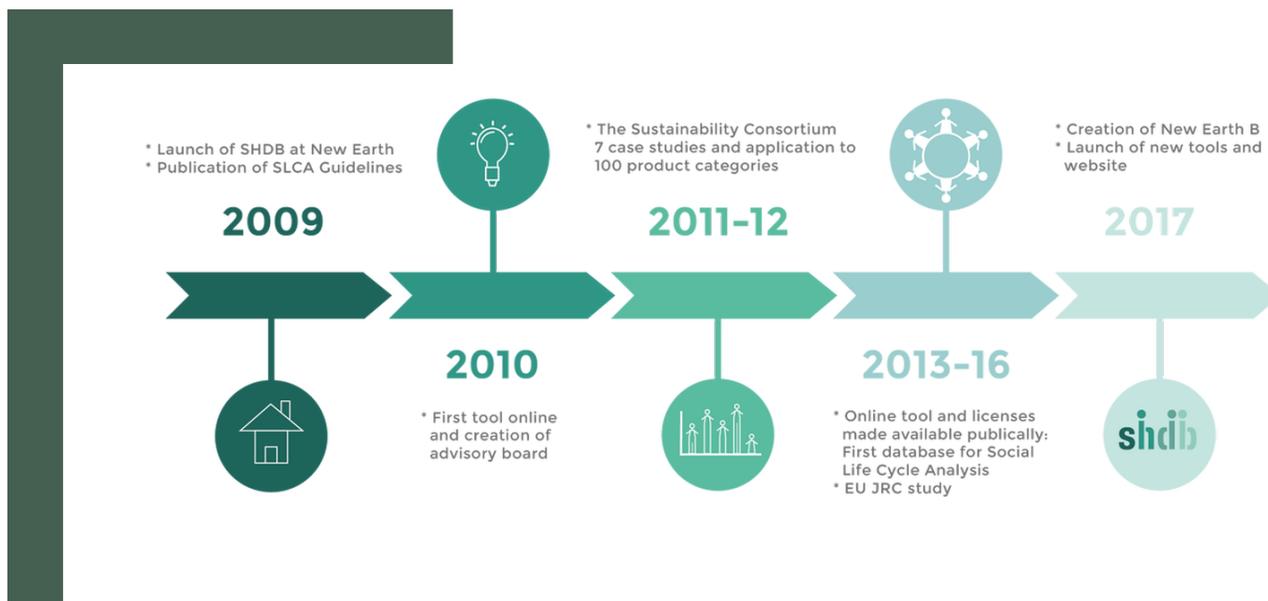


Figure 1: SHDB history

The two main products offered by NewEarth B to provide access to information on potential social impacts are:

- the SHDB risk mapping tool (on the SHDB website) and
- the SHDB license.

The SHDB risk mapping tool gives users access to information on social risks in 244 countries and territories and 57 sectors through visualization and analysis tools. The SHDB licenses used in combination with LCA software, provide access to the full SHDB system including a trade model, a worker hours model that are combined with the social risks and opportunities information and impact assessment method. It is not possible to model supply chains with trade data using the risk mapping tool.

WHAT QUESTIONS CAN THE SHDB ANSWER?

The SHDB can serve as a valuable tool for companies in their efforts to conduct hotspot/risk assessments around complex social issues. It is a tool that not only supports supply chain managers, but also has applications for academics, policy-makers, development organizations, investors and donors alike. Examples of SHDB application are:

- Prioritize site-specific data collection and audits;

- Identify the key human rights issues in product supply chains;
- Identify which of the thousands of potentially important processes in the supply chains actually account for the most important share of the total risk (hotspot);
- Identify potential social handprints and contributions to the Sustainable Development Goals;
- Identify effective actions to pursue in collaboration with stakeholders that reduce these risks; and track and report the progress being achieved by such engagement on these key social hot spots;
- Inform product category and ingredient sustainability assessment;
- Inform Socially Responsible purchasing process (e.g., questions to be asked for sourcing);
- Inform investment process;
- Provide perspective and context to site-specific assessment results and sustainability reporting;
- Inform and report about sponsored programs designed to improve the social conditions of production;
- Inform and report about governmental policy and programs;
- Assess/report the scope of a certification or social footprint results and
- Educate about the social conditions of production.

Depending on the goal set for your S-LCA you will conduct an assessment on a specific product, on a portfolio, an organization or even at the country level.

CONTENT OF THE SHDB

The Social Hotspots Database is a modular system, which includes the following three data components:

1. Information on the trade flows between the economic sectors of each country or region of the world (Global Input Output Model also called Multiregional Input

Output or MRIO). It provides information on supply chain composition and location according to trade data (accessible with SHDB licenses only).

2. Information on the economic sector labor-intensity (worker hours) associated with each country or region by dollar of output (accessible with SHDB licenses only).
3. Information on social risks and opportunities by country and economic sector (accessible with both the SHDB website and licenses).

Information on social risks and opportunities by country and economic sector

6 Categories
26 Sub-categories
160 indicators
244 countries

Information on economic sector labor-intensity

Information on supply chain composition and location by country specific sectors (Global Input-Output model (GTAP))

140 regions/countries
57 sectors

Figure 2: The main data components of the SHDB

In addition, the database includes a life cycle impact assessment method (Social Hotspots Index) to quantify social risks, identify social hotspots and calculate a social footprint. The SHDB license, in combination with LCA software, gives users full access to this methodology.

The method makes it possible to set baselines, benchmarks, compare the effect of various types of social impacts, and compare the impact of changes (locations, materials or activities, management of risks).

1 Information on supply chain composition

Knowledge on where the production activities are taking place is a major consideration for social assessments because of the influence of societal, political, and cultural differences on the potential social impacts. Information on country and economic sector trade flows (global input/output model) is used to generate geographically specific supply chains models.

The SHDB uses the Global Trade Analysis Project (GTAP) global economic equilibrium model version 9, which is the most recent and uses 2011 reference year. The current version of the GTAP model contains trade data for 57 economic sectors¹ for each of 140 countries and regions².

The [Global Trade Analysis Project](https://www.gtap.agecon.purdue.edu/databases/contribute/detailedsector.asp) (GTAP) is a global network of researchers and policy makers conducting quantitative analysis of international policy issues. GTAP is coordinated by the [Center for Global Trade Analysis](https://www.gtap.agecon.purdue.edu/databases/regions.asp?Version=9.211) in [Purdue University's Department of Agricultural Economics](https://www.gtap.agecon.purdue.edu/about/consortium.asp). Core support and advice for the Project comes from a [Consortium](https://www.gtap.agecon.purdue.edu/about/consortium.asp) of international and national agencies from around the world such as WTO, EU JRC, The World Bank, US EPA etc.³ GTAP's Global Input Output model provides the greatest country resolution while providing a more homogenous 57 sectors framework than any other MRIO. This safeguards the comparability of the results and provides a consistent view of supply chains.

2 Information on labor intensity

Life Cycle Attribute Assessment (LCAA) is a method developed by Greg Norris, co-creator of the SHDB (2006), and enshrined in the Social LCA Guidelines. It enables to deliver social assessment results in a way that carries information about the scope of the

¹ <https://www.gtap.agecon.purdue.edu/databases/contribute/detailedsector.asp>

² <https://www.gtap.agecon.purdue.edu/databases/regions.asp?Version=9.211>

³ <https://www.gtap.agecon.purdue.edu/about/consortium.asp>

life cycle. LCAA consists in quantifying the % of an activity variable that possesses an attribute of interest (eg. a high risk of a social issue, a certification etc.).

Because the activity variable data is used as a vector, to give an appreciation of the magnitude of the supply chain where an issue or opportunity is found (in \$ and labour intensity), a proven relationship with the attribute of interest is not necessary. The literature (Dreyer, Hauschild & Schierbeck, 2010) describes a few potential activity variables (also referred-to as product relation factors) with worker hours being the most popular.

Data on worker hours help identify where the human activity is occurring in supply chains. This information can be tapped to enable a first prioritization of data collection activities, to establish an action plan, or as part of the implementation of a social responsibility program.

Why use worker hours as an activity variable? Heymann and Barrera (2010) consider it important to identify who performs the majority of the vital work in supply chains. One reason is that the success of firms is correlated with the quality of work done by the people who contribute the majority of labor. However, the quality and productivity of employees who are at the bottom of the scale depend on the presence of decent working conditions (Heymann & Barrera, 2010). More generally, worker hours are relevant because they represent evidence of the intensity of work required by each country-specific sector directly related to production. Work intensity is one of the criteria proposed to prioritize decision and action. Furthermore, if work intensity is important in a specific country and sector, not only the impacts of the stakeholder category for workers may be important, but also the impacts affecting all other categories of relevant stakeholders (local community, society, supply chain actors).

Despite the fact that worker hours may be less directly linked to issues related to local communities and society, they remain to date the most meaningful activity variable that can be used to assess the scale of an issue within the context of the supply chain as a whole.

Another activity variable mentioned is value added. The concept of value-added serves to designate the extra value that a company, through its activities, brings to the purchased inputs that it then transforms into a good or service for sale. Value added is

an economic indicator of a company's wealth creation. NewEarth B believe it is not an activity variable most suitable to calculate the percentage of a supply chain at risk of an issue, whether this issue affects the local community or society, because a process contributing a significant share of total life cycle value-added may not be associated with a significant share of total life cycle worker or community engagement.

In summary, if working hours are not a perfect activity variable at every level, they nonetheless provide a relevant and operational variable.

Worker hours play the role of what environmental LCA refers to as an "elementary flow" – the basic or first-order "intervention" by a production process that ultimately is linked to outcomes or impacts of interest. The results can be expressed in the following way if LCAA is used for the purpose of communication: for example; % of workers hours that present a high or very high risk of child labor, or % of worker hours which are paid a fair wage.

NewEarth B developed the labor intensity data by dividing GTAP data on wage payments by country and sector by the country and sector average wage. NewEarth B collected the data on average wage. This provides estimates of worker hours for each sector (57) in each of the GTAP country/region (140). Thus, the SHDB can be used to identify how many worker-hours are involved for each unit process in the supply chain, for a given final demand.

3 Information on social risks and opportunities and data quality

NewEarth B collects, publicly available information on over 160 social impact indicators for 244 countries and territories and 57 sectors. Data sources include intergovernmental databases, country statistics, NGO reports, Trade union and academic papers. For instance: the International Labor Organization, UNICEF, the World Health Organization, the U.S. Department of Labor, the U.S. Department of State, Eurostat, the World Bank are some of the sources used.

Data integrated are selected based on the following criteria:

1. The number of countries and sectors of the economy for which data are available.
2. Legitimacy (public acknowledgment) of the source.

3. The reliability of the methods used by the source to perform data collection.
4. Combination of qualitative and quantitative indicators.
5. Data are representative of the topic under consideration (meaningfulness).
6. Timeliness
7. Different sources to increase robustness

Our criteria follow the OECD Handbook on Constructing Composite Indicators recommendations (OECD, 2005).

Each impact subcategory (26) is assessed by a number of indicators depending of the data context. Sometimes only one indicator is available and relevant and sometimes several indicators are used. NewEarth B uses public information and informs its users about the sources used and data year for all data points. The interpretation of data and the determination of risk levels (referred to as characterizations in LCA) are most often performed through consideration of the range and distribution of values exhibited across the full population of sectors and countries. Classes (risk - very high, high, medium or low) are determined based on data distribution, expert judgment, and literature. The characterization factors were developed to describe the severity of the presence of a serious situation or opportunity and to facilitate data interpretation and visualization of results. For example: a low / medium / high / very high child labor risk in the country / sector. In all cases, the thresholds and algorithms used in the characterization models of the SHDB are transparently reported in its documentation.

Codes	Risk level
ND	No Data
NE	No Evidence
LR	Low
MR	Medium
HR	High
VH	Very High

Data quality can be measured in Social LCA through a pedigree matrix. Lightly shaded are the overall data scores for the Social Hotspots Database.

Table 1. SHDB pedigree matrix scores and explanation.

Indicator	Scores				
	1	2	3	4	5
Reliability of the source(s)	Statistical study, or verified data from primary data collection from several sources	Verified data from primary data collection from one single source or non-verified data from primary sources, or data from recognized secondary sources	Non-verified data partly based on assumptions or data from non-recognized sources	Qualified estimate (e.g. by expert)	Non-qualified estimate or unknown origin
Completeness conformance	Complete data for country-specific sector/ country	Representative selection of country-specific sector / country	Non-representative selection, low bias	Non-representative selection, unknown bias	Single data point / completeness unknown
Temporal conformance	Less than 1 year of difference to the time period of the dataset	Less than 2 years of difference to the time period of the dataset	Less than 3 years of difference to the time period of the dataset	Less than 5 years of difference to the time period of the dataset	Age of data unknown or data with more than 5 years of difference to the time period of the dataset
Geographical conformance	Data from same geography (country)	Country with similar conditions or average of countries with slightly different conditions	Average of countries with different conditions, geography under study included, with large share, or country with slightly different conditions	Average of countries with different conditions, geography under study included, with small share, or not included	Data from unknown or distinctly different regions
Further technical conformance	Data from same technology (sector)	Data from similar sector, e.g. within the same sector hierarchy, or average of sectors with similar technology	Data from slightly different sector, or average of different sectors, sector under study included, with large share	Average of different sectors, sector under study included, with small share, or not included	Data with unknown technology / sector or from distinctly different sector

Pedigree matrix (adapted from Eisfeldt & Ciroth, 2017)

Reliability

- We use data exclusively from recognized secondary sources (2/5)

Completeness

- We use complete data for country-specific sector/ country (1/5)

Temporal conformance

- Depend of source and country, some country statistics (data from home survey) are only revised every 5 or 10 years

Geographical conformance

- We use only country-specific data (1/5)

Further technical conformance

- We use data from same technology (sector) (1/5)

and

- Data from similar sector, e.g. within the same sector hierarchy, or average of sectors with similar technology because we source data using a multitude of classification systems (2/5)

4. Social categories and subcategories

The database includes information on 160 indicators covering 26 impact subcategories, 6 impact categories and 4 stakeholder groups: workers, local communities, value chain actors and society.

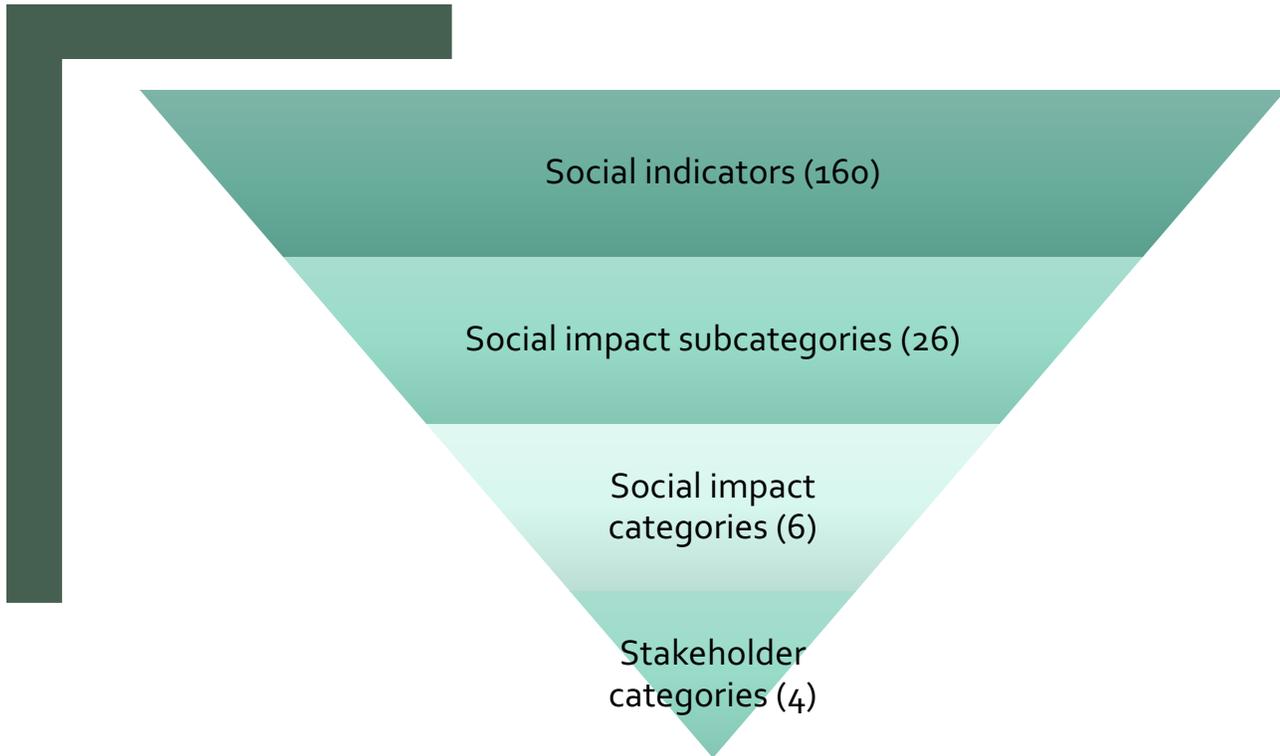


Figure 3: Indicators to categories/stakeholder groups

The Social LCA Guidelines provide a definition for social themes/ issues which read as follows: "Social themes of interest represent issues that are considered as threatening social well-being or that may contribute to its further development. Social themes of interest include but are not restricted to: human rights, work conditions, cultural heritage, poverty, disease, political conflict, indigenous rights." The SHDB attempts to capture the most relevant social indicators and impact categories based on the international legal framework and scope of the main social responsibility instruments and references (GRI, SLCA Guidelines, ISO 26000, the Sustainable Development Goals).



Figure 4: SHDB categories and subcategories

4. Social Hotspot Index

A commonly accepted methodology on how to assess social sustainability does not exist yet. In order to aggregate impacts for the entire supply chain and help highlighting potential hotspots, a Life Cycle Impact Assessment method is necessary. NEB has developed a method called the Social Hotspots Index (SHI). The possibility to measure the social impacts gives you the opportunity to set a baseline, track performance or compare. Measuring social impacts is important to manage Social Responsibility issues.

Life Cycle Impact Assessment (LCIA), the 3rd phase of an LCA, is the “what does it mean” step. The Guidelines define LCIA as being “the phase of a S-LCA that aim at understanding and evaluating the magnitude and significance of the potential impacts for a product system throughout the life cycle of the product.” The SHDB impact assessment method is called the Social Hotspots Index.

The labor intensity information is used together with the social risk levels, to express social risks and opportunities in terms of medium risk hours equivalent, by sector and country for 5 of the 6 main social impact categories, the 26 social impact subcategories and the nearly 160 different indicators. The expression of social impacts in medium risk hours equivalent, provides the users of the SHDB license the possibility to calculate a

social footprint and to identify target areas in their supply chains to verify or improve social conditions (hotspots).

Considering the risk characterizations contained across the entire database, we developed a weighting that represents the relative probability of an adverse situation to occur. Relative probabilities are expressed in relation to the medium risk level.

Table 2. SHDB Impact Assessment method

Very High Risk	10
High Risk	5
Medium Risk	1
Low Risk	0.1

This weighting will augment or lower the number of workers hours (medium risk hours) depending of the risk level. In doing so, it helps identify hotspots or country specific sector where the risk is elevated and the contribution to total worker hours is important.

For example; if child labor in sector X in country Y has been assessed as potentially at very high risk and the working hours to produce 1\$ of final products has been estimated to be 0.5 hours, the medium risk hours can be calculated.

Very high risk and 0.5 working hours; $0.5 * 10 = 5$ Mrh

In case the working hours to produce that same 1\$ of final products also includes an activity in country A and sector B with High risk for 1 hour; $1 * 5 = 5$ Mrh

This basic Life Cycle Impact Assessment Method is offered with the SHDB. It can be modified to serve specific needs. For instance, sometimes practitioners do not want to include low-risk country specific sectors in their results so the LCIA characterization factor can be changed to zero in the Life Cycle Impact Assessment method.

5. Social hotspot index method for the SHDB risk mapping tool

In order to quantify the risks in the SHDB risk mapping tool we use the same factors as for calculating the medium risk hours equivalent: low, medium, high and very high-risk level is equated to 0.1, 1, 5 and 10 respectively. In the risk mapping tool, the impact categories are weighted equally. The risk level of the subcategories reflects the average indicator results and the five main categories are calculated the same way. Because impact categories are weighted equally, some subcategories are weighted less in the Social Hotspot Index, Impact category bar chart. But because the detail on the subcategory results is just below and there is no overall social footprint calculation, that doesn't impact the analysis.

SHDB TOOLS AND THE DATA INPUT REQUIREMENTS

The SHDB information is available via different tools. Each tool has its specific input requirements and meet different user needs.

THE SHDB WEB-BASED RISK MAPPING TOOL

This user portal provides access to the SHDB risks and opportunities data in an intuitive and visually attractive way. It enables users to access over 160 risk indicators by country and when applicable, by sector. The different analysis and visualization options are helpful to determine the risks and opportunities associated with particular production activities or commodities by country without the full supply chain view. The tool provides different options to map a single social indicator, multiple social indicators within 1 of the 5 social categories (as defined by NewEarth B), or total overall risk taking into account the SHDB index methodology to determine the risk levels. However footprint calculations are not included in this tool and customers do not get access to information regarding the socio-economic contributions' impact category .

Best use: Quick access to risks and opportunity information for a limited number of production activities or commodities. Especially useful when the sector and locations are known or you want to compare social risks for similar products coming from different locations.

Data requirement: You need to have information on the location of the production (country/region) and to which GTAP sector the product belongs to. Link to 57 GTAP sectors.

<https://www.gtap.agecon.purdue.edu/databases/contribute/detailedsector.asp>

SHDB LICENSE FOR SIMA PRO LCA SOFTWARE

Sima Pro is a professional Life Cycle Assessment software that provides users with flexible and comprehensive features enabling to explore the LCA results in detail,

compare different scenario's and options to change product system, process information as well as specific risk profile. This is extremely helpful to advanced users who want to clearly understand the risk of specific production activities in the context of the full supply chain, want to tailor the assessment closely to their situation or compare different scenarios.

Best use: Comprehensive due diligence, social hotspotting, social footprinting, social handprinting or comparative assessment with a trusted and well-known tool.

Data requirement: In order to conduct an S-LCA, information is needed on

- the materials used to produce a product or purchases made by an organization
- which of the 57 GTAP sectors the materials/ purchases belongs to,
- in which country were the materials/ purchases sourced from and
- what is the cost of the materials/ purchases.

In case an S-LCA is conducted on an organization as a whole, all the purchases should be linked to the 57 GTAP sectors and the production locations of the purchased materials are known.

INSTALLING THE SHDB IN SIMA PRO

To install the SHDB in Sima Pro simply click on the file or from the Sima Pro Menu, Select File and click on import Sima Pro database. The software will open the SHDB and save a backup of the database at the chosen location.

SHDB LICENSE FOR OPEN LCA

Open LCA is open source software that provides advanced Life Cycle Assessment software features to the mass. This software will be most helpful to users that require accessing a multiplicity of databases. Its features enable users to tailor the assessment to their specific situation, compare results and explore different scenarios.

Best use: Comprehensive due diligence, social hotspotting, social footprinting, social handprinting or comparative assessment in an open and accessible platform.

Data requirement: In order to conduct an S-LCA, information is needed on

- the materials used to produce a product or purchases made by an organization
- which of the 57 GTAP sectors the materials/ purchases belongs to,
- in which country were the materials/ purchases sourced from and
- what is the cost of the materials/ purchases.

In case an S-LCA is conducted on an organization as a whole, all the purchases should be linked to the 57 GTAP sectors and ideally the production locations of the purchased materials are known.

INSTALLING THE SHDB IN OPEN LCA

To install the SHDB in Open LCA, you need to create a new database with reference data, or use an existing one. Then, select 'import nexus pack' from one of the import menus (context menu / import or file / import). The nexus pack files are encrypted. In order to import them, you need to provide your nexus user account and password before the import starts. This information is also stored in the data sets, in visible text fields and otherwise. Once the provided credentials are correct, the import starts. As soon as it is finished, the data sets are available in Open LCA.

WHAT IS NEXT? (AFTER INITIAL ASSESSMENT)

After an initial assessment there are several steps that can be taken to 1) gather more evidence and generate a more specific assessment tailored to the supply chain in question and its suppliers, 2) manage risks, 3) work on improving conditions, 4) redesign the product and supply chain for maximum sustainability benefits

GATHER MORE EVIDENCE AND GENERATE A MORE SPECIFIC ASSESSMENT TAILORED TO THE SUPPLY CHAIN IN QUESTION AND ITS SUPPLIERS

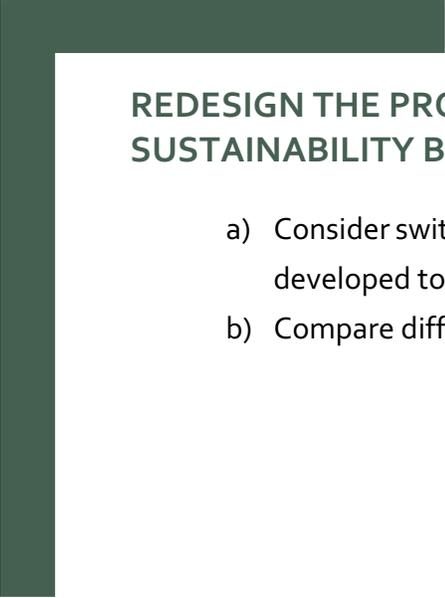
- a) Collect more specific data via the literature or on site via audits or other processes. You can update information regarding the location where production activities occur, sectors involved and how risks are being managed
- b) Understand better the challenges encountered by suppliers, workers and communities where high risks are present from the impacted stakeholders themselves via interviews etc. Update your study with testimonies, linked videos and life stories

MANAGE RISKS

- a) Engage with suppliers, share the results, build trust and capacity
- b) Engage with multistakeholder initiatives that works on the issues at risk in the countries relevant to your product supply chains

WORK ON IMPROVING CONDITIONS

- a) Modify your buying practices
- b) Consider purchasing from certified supply chains
- c) Engage with governments in geographies at risk in your supply chains
- d) Engage with suppliers, workers and trade unions



REDESIGN THE PRODUCT AND SUPPLY CHAIN FOR MAXIMUM SUSTAINABILITY BENEFITS

- a) Consider switching to a business model where relationships with suppliers are developed to be stable and long term
- b) Compare different materials and sourcing scenarios to boost social benefits

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WAGE ASSESSMENT

Overview:

It is a well-known premise that much of the world's working population does not make sufficient wages to support themselves and their families for food, shelter, and health care, even at the bare minimum levels. Poverty is at the center of public and policy debates at both national and international levels and the first Sustainable Development Goal. It is an issue even in richer, industrialized countries of the world like the United States.

As proxy to determine whether wage may be an issue in a country-specific sector, this subcategory assesses whether the country-specific sector average wage is below or above some relevant thresholds: the country minimum wage, the country living wage and the country Sweat free wage.

Data Collection:

The Average Wage indicator is at the core of the SHDB, in that it is used to calculate the worker hours. GTAP provides the data on payment of wages by country and sector and that is divided by the average wage data by country and sector to produce the worker hours by dollar of output. The quantitative data for the indicator "payment of wages by country and sector" are available as part of the impact category Socio-Economic contributions. Data for average wage rates were collected for the greater part from the UNIDO and ILOSTAT databases. When wages were not provided in harmonized format for a country, we had to convert from local currency to USD. Many other specific sources were used for missing countries. Data for each individual GTAP country/region (140) were compiled. For sectors, we often had to map from one classification to another. For ILOLEX data, we mapped from ISIC revisions 3 and 4 to GTAP. Sometimes the mapping connects an individual sector to another, sometimes there is a variation in the level of granularity. For instance, data may be available for "agriculture" which are getting mapped to all the agricultural GTAP sectors.

For the subcategory "wage assessment" the country and sector average wages were compared to country-level Sweatfree wages, national minimum wage rates set by state governments and country level living wages calculated by WageIndicator.

The Sweatfree rates are based on San Francisco Admin Code Section 12U.3(b), which requires that Contractors and Subcontractors pay "for Workers working in countries other than the United States, a wage, to be set and adjusted annually by the Director, that shall be comparable to the wage for domestic manufacturers established (11.99\$ USD for 2018), adjusted to reflect the country's level of economic development by using the World Bank's most recent Gross National Income per capita Purchasing Power Parity Index. It is not necessarily an accurate reflection of relative economic wellbeing and does not claim that the wage figures are accurate measures of living wages. Nonetheless, these sweatfree wages provide a conservative estimate of a fair wage. Updated national minimum wage figures come from research published on Wikipedia.

All minimum wages were converted to current U.S.\$. The Average Wage data is 100% compiled using actual data for each GTAP country/region. When data is not available for each GTAP sector, proxy sector wage data using similar sector wages are applied. All wages are scaled to 2011 US\$ data to be comparable. The average wages were also compared to the living wages available for 55 countries. Living wage is another international model determining gross income levels that allow decency. It has been developed by the WageIndicator Foundation and is based on the methodology developed by Richard and Martha Anker for the Global Living Wage Coalition. The Living Wage is composed of seven parts: food, housing, transport, health, education, tax and other costs. Living Wages are estimated for a set of common household compositions and under different assumptions about working hours. The WageIndicator approach is innovative as it collects prices inter alia through web surveys. When necessary, the collection of prices is organized through face-to-face surveys and helped by field workers who can observe market prices. Living Wages are updated every quarter to reflect the fluctuations of prices.

In most cases, the Sweatfree wage rate is higher than the current minimum wage for a country. Often, however, it is less than the average wages determined for that country. Comparing these wage indicators to average wages gives an approximate understanding of whether or not a country's workforce is making a fair wage.

Resources used:

Indicator	Source Citation	Full Reference
Average Wages	INDSTAT 4, 2018, ISIC Revision 3 and ISIC Revision 4 United Nations Industrial Development Organization (UNIDO), 2018	United Nations Industrial Development Organization (UNIDO). 2018. Retrieved from http://www.unido.org
	ILOSTAT, 2018: Mean nominal monthly earnings of employees, by sex and economic activity Harmonized series Mean nominal hourly earnings of employees, by sex and occupation Harmonized series Mean nominal hourly earnings of employees by sex and occupation	ILOSTAT. 2018. ILOSTAT Internet. Retrieved from: https://www.ilo.org/ilostat/
	Mean nominal monthly earnings of employees by sex and economic activity	
	Average brutto monthly salary in Oman by survey (OMR), Paylab, 2018	Paylab. 2018. Retrieved from: https://www.paylab.com/OM/salaryinfo
	OECD. 2018. Employee compensation by activity (indicator)	OECD. 2018. Employee compensation by activity (indicator). Retrieved from: https://data.oecd.org/earnwage/

	Jeune Afrique, 2018	Jeune Afrique. 2018. Salaire Moyen au Maroc. Retrieved from: https://www.jeunefrique.com/emploi-formation/609859/salaires-au-maroc-le-secteur-public-paie-mieux-que-le-prive/
	International Organization for Migration, 2014	Afghanistan profile, 2014. http://www.bamf.de/SharedDocs/MILo-DB/EN/Rueckkehrfoerderung/Laenderinformationen/Informationsblaetter/cfs_afghanistan-dl_en.pdf%3F__blob%3DpublicationFile
	Eurostat, 2018	Eurostat. 2018. EU Labour Force Survey. Retrieved from: https://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey
	INSEE, 2018	Institut National de la statistique et des études économiques. Retrieved from: https://www.insee.fr/fr/statistiques/3303417?sommaire=3353488
Living Wage	WageIndicator Foundation, 2017	WageIndicator.org; wages in context. https://wageindicator.org/salary/wages-in-context
Sweatfree wages	City of San Francisco, 2018	Sweatfree Contracting Ordinance (Administrative Code) 2018 Retrieved from: https://sfgov.org/olse/sweatfree-contracting-ordinance

Risk Characterization Rules:

The subcategory risk levels were determined at the sector-level (comparing country-level minimum wage and non-poverty guideline to sector-level average wage). Using the acronyms NPL = non-poverty guideline (Sweatfree), AW = average wage, MW = minimum wage, the risk levels were determined as follows:

For the Non-Poverty Guideline (Sweatfree):

Low: $NPL < AW$

Medium: $NPL > AW$ by $< 25\%$

High: $NPL > AW$ by $25-50\%$

Very High: $NPL > AW$ by $> 50\%$

For the Minimum Wage:

Low: $MW < AW$ by $> 25\%$

Medium: $MW < AW$

High: $MW > AW$ by $0-25\%$

Very High: $MW > AW$ by $> 25\%$

For the Living wage

Low: $NPL < AW$

Medium: $NPL > AW$ by $< 25\%$

High: $NPL > AW$ by $25-50\%$

Very High: $NPL > AW$ by $> 50\%$



POVERTY

Overview:

Poverty is “unacceptable deprivation in human well-being” The poverty rate is the ratio of the number of people whose income fall below the poverty line. In 2015 the World Bank updated their absolute international poverty line to \$1.90 a day per person in 2011 PPP dollars (coming from \$1.25/day in 2005 PPP) and started to report on 2 additional poverty lines: a \$3.20/day line for lower middle-income countries and \$5.50/day line for upper middle-income countries. The EU and OECD use relative poverty lines as a percentage of national median incomes.

Poverty headcount ratio at \$1.90 a day is the percentage of the population living on less than \$1.90 a day at 2011 international prices. This rate is used to determine the social risks related to poverty in low income countries as defined by the WB. SDG 1.1 (By 2030, eradicate extreme poverty for all people everywhere) is also based on the 1.9 /day poverty rate indicator.

Data Collection:

The Population living below 1.90/day is a poverty line set by the World Bank and reported in their World Development Indicators with major updates every other (even) year.

Sources used:

Source	Full Reference
World Bank, World Development Indicators, 2017	World Bank. 2017. World Development Indicators. Retrieved from: http://data.worldbank.org/indicator/ https://data.worldbank.org/topic/poverty

Risk level assessment rules:

For every country it is determined whether it is a low-income, lower middle-income country, an upper middle income or high-income country according to the World Bank.

For the low-income countries, the risk is determined based on the percentage of the population living below \$ 1.9 a day, for lower middle income respectively upper middle countries it is based on \$3.2 resp. \$5.5 a day. Subsequently the following risk level assessment rules are used;

Low: <2%

Medium: 2-10%

High: 10-50%

Very High: >50%

What is new?

The former version of SHDB was based on \$2/day. The current SHI methodology takes into account the three different poverty levels for the different groups of countries based on their income level.



CHILD LABOR

Overview:

Child labor refers to work for children under the age of 18 that is mentally, physically, socially and/or morally dangerous or harmful and interferes with their schooling (ILO). UNICEF defines child labor as work that exceeds a minimum number of hours, depending on the age of a child and on the type of work. For ages 5-11, it means at least one hour of economic work or 28 hours of domestic work per week. For ages 12-14, it means at least 14 hours of economic work or 28 hours of domestic work per week. For ages 15-17, it means at least 43 hours of economic or domestic work per week. Such work is considered harmful to the child and should therefore be eliminated.

An estimated 152 million children (64 million girls and 88 million boys) aged 5-17 are engaged in child labor, one in ten children in the world. 72 million children in Africa, 62 in Asia and the Pacific, 11 in the Americas, 5.5 in Europe and Central Asia and 1.2 million in Arab States. Approximately one third of children aged 5 to 14 engaged in child labor are outside the education system. 38 per cent of children in hazardous work aged 5 to 14 and almost two-thirds of those aged 15-17 work more than 43 hours per week. Children living in the poorest households and in rural areas are most likely to be engaged in child labor. Most child laborers continue to work in agriculture, approximately 71 percent. Those burdened with household chores working as domestic servants, are overwhelmingly girls who are especially vulnerable to exploitation and abuse. The relevant SDG for this subcategory is SDG 8.7 "Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms"

Data Collection:

Data for this subcategory not only represents the worst forms of child labor as specified by the ILO convention 182, but any form of labor, including working for family businesses and farms.

UNICEF data regarding the percentage of children aged 5-14 years engaged in child labor is integrated in the SHDB besides data from the Understanding Children's Work (UCW) database. The UCW database is compiled by UNICEF, ILO, and the World Bank and includes data about the percentage of children working by economic sector aiming at producing research to inform policies in the area of labor and youth employment. Based on this information NewEarth B determined risk levels.

The U.S. Department of Labor's Findings on the Worst Forms of Child Labor was also a source with sector data for agriculture, manufacturing, and services. Furthermore, the United States Department of Labor's List of Goods Produced by Child Labor or Forced Labor and ITUC data are used to determine the social risk regarding child labor using qualitative data.

Sources used:

Sources	Full Reference
UCW Project, 2018	Understanding Children's Work (ILO/UNICEF/World Bank). 2018. http://www.ucw-project.org/statistics-child-labour.aspx#ContentContent_Ct1
UNICEF, 2017	UNICEF. 2017. State of the World's Children. https://data.unicef.org/topic/child-protection/child-labour/
U.S. Department of Labor, 2016 and 2017	U.S. 2016 and 2017. Department of Labor. Findings on the Worst Forms of Child Labor
International Trade Union Confederation (ITUC), 2012	International Trade Union Confederation. 2012. http://www.ituc-csi.org/documents.html

Risk level assessments rules:

To determine the overall risk in a country-specific sector, if quantitative data exists, then the quantitative sector risk is used as described above. If only qualitative data exists in a sector, the country level risk is increased by one level. If no sector data exists, the country level risk is used. Where country level data is not available, as is the case for some countries, a regional value is used to determine risk.

Since quantitative data for both country and sector was available, risk of child labor was determined at both the country level and at the sector level, as well as for males, females, and total. The risk levels for the different countries and sectors were determined as follows;

- Low: <4% of children engaged in child labor
- Medium: >4-10%,
- High: >10-20%, or
- Very High: >20%.

Criteria for determining risk within countries at sector level using quantitative data:

In the agriculture, forestry, fishing sectors:

- Very High: if percent of children in economic activity is greater than 50%,
- High: >10%,
- Medium: > 0%.

For other sectors;

- Very High; if percent of children in economic activity is greater than 10%,
- High: > 1%,
- Medium: > 0%.

Qualitative risk assessment was done as follows: Where issues exists according to sources, very high risk assumed.

What is new?

All indicators have been updated except the ITUC information which was kept for the qualitative data.



FORCED LABOR

Overview:

According to the UN Global Compact's ten principles, forced or compulsory labor is any work or service that is exacted from any person under the menace of any penalty, and for which that person has not offered himself or herself voluntarily. Forced labor not only constitutes a violation of fundamental human rights, it also deprives societies of the opportunity to develop skills and human resources and to educate children for the labor market of the future. Forced Labor is also defined in the ILO Conventions 29 and 105 (Forced labor and abolition of forced labor), ratified by 178 and 175 respectively out of 187 ILO Member States. The Convention also provides that forced labor shall be punishable as a penal offence, and it shall be an obligation on any ratifying State to ensure that the penalties imposed by law are really adequate and are strictly enforced.

The 2017 ILO Global Estimate of modern slavery indicates that at least 25 million people worldwide are involved in some form of forced labor. Women and girls represent the greater share of forced labor victims (58%). Of the total number of forced laborers, 16 million (64%) are exploited in the private economy, by individuals, or by enterprises (84.2% female). 4.8 million (18% total) are victims of forced sexual exploitation (99.4% female), and 4 million (17%) are victims of state-imposed forms of forced labor (40.6 % female), for example in prison under conditions which contravene ILO standards on the subject, or in work imposed by the state military or by rebel armed forces.

Data collection:

This subcategory provides an assessment of the risk of forced labor by country and by country-specific sector. The Global Slavery Index (GSI) 2016 provides a quantitative ranking of 167 countries around the world according to the estimated prevalence of slavery, that is, the estimated percentage of enslaved people in the national population at a point in time.

The Department of State's Trafficking in Persons (TIP) Report from 2017 divides countries in four groups. This report annually measures government efforts across prosecuting traffickers protecting victims and preventing crime. Tier 1 includes countries

whose governments fully comply with the TVPA's (Trafficking Victim Protection Act) minimum standards for the elimination of trafficking. Under the minimum standards for the elimination of human trafficking under the Trafficking Victims Protection Act an effective criminal justice response to human trafficking should treat the prosecution of cases as seriously as other grave crimes. The existence of a comprehensive anti-trafficking law and criminal accountability are important elements which are looked upon. Tier 2 includes countries whose governments do not fully comply with the TVPA's minimum standards but are making significant efforts to bring themselves into compliance with those standards. Tier 3 includes those governments who do not fully comply with the TVPA's minimum standards and are not making significant efforts to do so. Countries In Tier 2 Watch list are those whose governments do not fully comply with the TVPA's minimum standards, but are making significant efforts to bring themselves into compliance with those standards and:

- The absolute number of victims of severe forms of trafficking is very significant or is significantly increasing; or
- There is a failure to provide evidence of increasing efforts to combat severe forms of trafficking in persons from the previous year; or
- The determination that a country is making significant efforts to bring themselves into compliance with minimum standards was based on commitments by the country to take additional future steps over the next year.

The U.S. Department of Labor List of Goods Produced by Child Labor or Forced Labor 2016 is the main resource to determine the potential social impact related to forced labor by sector. The department maintains a list of goods and their source countries which it has reason to believe are produced by child labor or forced labor in violation of international standards, as required under the Trafficking Victims Protection Reauthorization Act (TVPRA). As of September 30, 2016, the List of Goods Produced by Child Labor or Forced Labor comprises 139 goods from 75 countries.

Sources used:

Sources	Full Reference
U.S. Department of State, 2018	U.S. Department of State. 2017. The Trafficking in Persons Report. Retrieved from: https://www.state.gov/j/tip/rls/tiprpt/2017/
U.S. Department of Labor, 2017	U.S. Department of Labor. 2016. List of Goods Produced by Child Labor or Forced Labor. Retrieved from https://www.dol.gov/ilab/reports/child-labor/list-of-goods/
Global Slavery Index, 2016	Global Slavery Index. 2016. Retrieved from: http://www.globallslaveryindex.org/

Risk level assessment rules:

Country level

The Global Slavery Index provides estimated percentages of enslaved people and the risk levels were set (characterized) as follows:

Low: $<0.19\%$ = Low,
 Medium >0.20 = Medium,
 High >0.30 = High,
 Very high >0.70 = Very High.

The four groups distinguished in the U.S. Department of Labor Trafficking in Person's Report namely Tier 1, 2, 3 and Tier 2 Watch List, correspond with low, medium, very high and high risk respectively.

When data for a country was only available from a single source, the risk level associated with that source was used. Data from both sources were used when available. In those cases, a weighted average was determined for these 2 country level measurements. Qualitative data from the GSI was weighted 85%, and data, from the U.S. DOL, was weighted 15%. If the weighted average was >3.0 then Very High, if >2.5 then High, if >1.5 then Medium, if $X < 1.5$ then Low.

Sector level

The sectors related to the goods listed by the U.S. Department of Labor list of goods produced by forced labor are set at a "very high" risk level. All other sectors remain at the country level risk.

What is new?

@ Country level

The ILO's Global estimate of Modern Slavery is no longer being used to determine the overall risk level for forced labor per country because the regions have been reorganized. European and Asian countries were combined together in this new version with an average rate of forced labor of 3.6 per 1,000 inhabitants comparatively to an average rate for African countries of 2.8 per 1,000 inhabitants. This new compilation was no longer considered a good representation of the risk for some of the countries included in this group (in particular the European countries). The weighing factors for 1 of the 2 remaining indicators was therefore adjusted and changed from 65% to 85% compensating for the original weight of 20% for the ILO data.

@ Sector level

In the former version of the SHDB, social risks information related to forced labor for each country-specific sector were based on several qualitative sources that identified forced labor for each country and sector. The data from the US Department of Labor list of goods produced by forced labor was one of the sources and the one used in the current version of the SHDB.



EXCESSIVE OVERTIME

Overview:

Article 24 of the United Declaration of Human Rights of 1948 states that “Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay” (www.ohchr.org). Already in the early 19th century it was recognized that working excessive hours posed a danger to the worker’s health and their families. The elaboration and adoption of international standards governing hours of work has been given high priority by the International Labour Organization since its creation in 1919.

Data Collection:

The ILO Key Indicators of the Labor Market (KILM) is the main source for the percentage of the labor force working more than 48 hours per week. However, many countries did not have this statistic available. Qualitative assessments of working time (at country level) are made by the U.S. Department of State in the Human Rights Reports. The existence of a regulatory framework for working hours and the extent to which it has been implemented is the base for determining these risk levels

Sources used:

Sources	Full Reference
International Labor Organization (ILOSTAT), 2014	International Labor Organization, ILOSTAT. 2014. Retrieved from: http://www.ilo.org/ilostat/faces/home/statisticaldata?_afLoop=357518407855177#%40%3F_afLoop%3D357518407855177%26_adf.ctrl-state%3D12jq98cghc_474
International Labor Organization (KILM), 2014	International Labor Organization. 2014. Key Indicators of the Labor Market (KILM). www.ilo.org/kilm

U.S. Department of State, 2013	U.S Department of State. 2014. Country Reports on Human Rights Practices for 2013. http://www.state.gov/j/drl/rls/hrrpt/humanrightsreport/index.htm#wrapper
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Risk level assessment rules:

The following criteria were used to determine risks based on qualitative information from the U.S. Department of State Human Rights Reports:

Laws or collective agreements are enforced, and overtime is compensated	Low
Laws or collective agreements exist but are not always enforced through governmental inspections	Medium
Laws or collective agreements exist but are not enforced through governmental inspections	High
Only formal sector abides by laws	Medium
NGO's are reporting frequent cases of non-compliance	Very High
No laws exist for compulsory overtime or compensated overtime	Very High
Inspections shows frequent non-compliance with appropriate labor laws	High
More than one "medium" issue exists	High

The following criteria were used to determine risks based on the quantitative data retrieved from the International Labor Organization (KILM).

Very High: 10% or more of the people work > 60 hours /week and when 20% or more of people work > 49 hours/week

Medium: > 15% and <20% work > 49

Medium: > 10% and < 15% work > 49 hours/week

Low: < 9% work > 49 hours/week

Country level risk is based on the risks assessed based on the qualitative information. The risk level was adjusted in case the risk levels as assessed using quantitative information was more than 1 level different from the risk level determined based on the qualitative data. For example, if the qualitative data was MEDIUM and the quantitative data was Very High, we upgraded the country level risk level to High.

What is new: Update spring 2019



FREEDOM OF ASSOCIATION, COLLECTIVE BARGAINING, AND RIGHT TO STRIKE

Overview:

Freedom of association, including the right to form and join unions for the protection of one's rights and interests, has been recognized as one of the fundamental human rights deriving from the inherent dignity of the human person. Trade union rights became universally recognized 70 years ago when the United Nations (UN) General Assembly adopted the Universal Declaration of Human Rights on December 10, 1948. Article 20 of that Declaration states that "Everyone has the right to freedom of peaceful assembly and association and that no one may be compelled to belong to an association." The freedom of association and the right to form and join unions have also been recognized as human rights under the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights. The Preamble to the Constitution of the ILO also indicates that recognition of the principles of freedom of association is vital for the improvement of the conditions of labor and the achievement of universal and lasting peace. Two key International Labour Organization (ILO) conventions which define and guarantee these worker rights (conventions 87 and 98) have been ratified by 156 and 165 Member States of the ILO, respectively, out of a total of 187 worldwide.

Convention no. 87 guarantees to all workers and employers, without distinction whatsoever, the right to establish and join organizations of their own choosing without previous authorization. It makes an exception for members of the armed forces and the police by providing that the extent to which the Convention shall apply is determined by national laws or regulations. It calls upon public authorities to refrain from any interference that would restrict this right or impede the lawful exercise thereof. The right to strike has not been explicitly guaranteed under the Convention. However, the right to strike is considered to be an intrinsic corollary of the right to organize guaranteed by the Convention. Convention No. 98 guarantees to workers adequate protection against acts of anti-union discrimination in respect of their employment.

Collective bargaining is a process of negotiation between independent unions and employers (or employers' organizations) to determine terms and conditions of employment, typically wages and working time, and relations between the parties. Collective bargaining is predicated on respect for the right to organize and the recognition of the right to collective bargaining.

Data Collection:

This subcategory provides an assessment of level of risk by country. The International Trade Union Confederation (ITUC)'s Annual Survey of violations of trade union rights was replaced by the ITUC Global Rights Index in 2014 and is the predominant source of information for this subcategory.

The index depicts the world's worst countries for workers by rating 161 countries on a scale from 1-5 and 5+ based on the degree of respect for worker's rights. A high score effectively means that a large number of violations were committed which in turn results in a poor rating. The ranking is based on 97 indicators regarding violations in law and in practice on civil liberties, rights to establish or join unions, trade union activities, rights to collective bargaining and right to strike.

Sources used:

Sources	Full Reference
International Trade Union Confederation, 2018	The global rights report 2018. ITUC global rights index; The world's worst countries for workers. https://www.ituc-csi.org/ituc-global-rights-index-2018
ILO, ILOSTAT, Industrial relations, 2018	Retrieved from: https://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page3.jspx?MBI_ID=9&_afLoop=1925319597524740&_afWindowMode=0&_afWindowId=19q3lgo8h4_54#!%40%40%3F_afWindowId%3D19q3lgo8h4_54%26_afLoop%3D1925319597524740%26MBI_ID%3D9%26_afWindowMode%3Do%26_adf.ctrl-state%3D19q3lgo8h4_110

The International Labour Organization (ILO) data on the coverage of collective bargaining (in %), available for 50 countries, is the second prominent source of information used to determine this subcategory. The collective bargaining coverage rate

conveys the number of employees whose pay and/or conditions of employment are determined by one or more collective agreement(s) as a percentage of the total number of employees. Collective bargaining coverage includes, to the extent possible, workers covered by collective agreements in virtue of their extension. The rates are adjusted for the possibility that some workers do not have the right to bargain collectively over wages (e.g. workers in the public services who have their wages determined by state regulation or other methods involving consultation).

Risk level assessment rules:

For this subcategory, available data for a worker's rights of freedom of association, collective bargaining, and right to strike is used.

Whereas in the past the ITUC data were not aggregated and the risk levels were determined using the outcomes of the separate questions of the ITUC survey, the current version of the SHDB takes into account the aggregated results of ITUC index. The following scale was used to match the risk levels:

- 5+ no guarantee of rights due to the breakdown of the rule of law (Very High)
- 5 no guarantee of rights (Very High)
- 4 systematic violations of rights (High)
- 3 regular violations of rights (High)
- 2 repeated violations of rights (Medium)
- 1 sporadic violation of rights (Low)

ILO data were also used to complete the assessment and when no ITUC data were available for a country. The following risk levels were determined when using the ILO coverage rates of collective bargaining for employees. Coverage >60% = low, medium 40-60%, 15-40% high and a coverage rate <15% is Very High risk.

What is new:

Because of the new availability of the ITUC ranking methodology, NewEarth B rubric has not been used. For a limited number of countries (50) the SHDB also includes the coverage of collective bargaining for employees (in %) provided by the ILO.



MIGRANT WORKERS

Overview:

The UN definition of a migrant worker is “a person who is engaged in a remunerated activity in a state of which he or she is not a national.” Those not included in the definition are “employees of international organizations, government officials, persons sent or employed by a state or on its behalf outside its territory who participate in development programs and other cooperation programs, investors, refugees and stateless persons, students and trainees, non-national non-resident seafarers and workers on an offshore installation.” A migrant worker is considered to be in a regular or documented situation if, “they are authorized to enter, to stay and to engage in a remunerated activity in the state of employment pursuant to the law of that state and to international agreements to which that state is a party”. Irregular migrants, also called undocumented or illegal migrants, are migrants that enter a country looking for work without the necessary documentation and permits to work legally. At present there are approximately 232 million migrants around the world, representing 3,1 percent of the global population.

The status of a migrant worker is not based on sex, race, color, language, religion or conviction, political or other opinion, ethnic or social origin, nationality, age, economic position, property ownership, marital status, birth or other status. Migrant workers contribute to the economies of their host countries, and the remittances they send home help to boost the economies of their countries of origin. Yet at the same time migrant workers often enjoy little social protection, face inequalities in the labour market and are vulnerable to exploitation and human trafficking.

One of the main problems that migrant workers face is discrimination. Discrimination against migrants includes decreased access to employment, increased violence, exploitation, and poor working conditions. Discrimination will vary in severity from country to country.

Data Collection:

The migrant workers subcategory is based on several indicators. Data were collected, and risk levels were determined (characterized) regarding the number of migrant workers and immigrants as a percentage of the population. Furthermore, based on information on total Workers’ Remittances and compensation of employees (World Bank) and the number of immigrants, the remittances and compensation received per

immigrant was determined and risk levels were assigned. Ratified International Labor Organization (ILO) conventions and enacted policies are checked for all countries. Relevant conventions that are considered and used to determine risk levels include the ILO Convention No. 97 on Migration for Employment, 1949; the ILO Convention No. 143 on Migrant Workers (Supplementary Provisions), 1975; and the UN International Convention on the Protection of the Rights of All Migrants, 1990. Data was also collected regarding the countries' immigrant policy, permanent settlement, temporary workers, highly skilled workers, family reunification and integration of non-citizens and the countries' emigrant policy and encouraging the return of citizens (UN).

However, none of the quantitative information gives a picture of what the conditions are like for these workers. Therefore, qualitative data was also collected from the Organization for Economic Co-operation and Development (OECD), the International Organization for Migration (IOM): a UN migration agency, The Office of the High Commissioner for Human Rights (OHCHR), the European University Institute, the US Department of State and the Occupational Safety and Health Administration (OSHA). The migrant integration policy index was also used. This index measures policies to integrate migrants in all EU member states as well as Australia, Canada, Iceland, Japan, South Korea, New Zealand, Norway, Switzerland, Turkey and the US. 167 policy indicators have been developed to create a rich multi-dimensional picture of migrant's opportunities to participate in society. This data regarding health and safety of migrant workers, working conditions, wages and work hours, visas and documentation, illegal trafficking and exploitation, treatment of women and children, equal human rights is used to determine the risk that migrant workers are treated unfairly (qualitative).

Sources used:

Sources	Full Refence
UN DESAP, 2018	<p>United Nations, Department of Economic and Social Affairs, Population Division. 2017. Trends in International Migrant Stock: The 2017 Revision. (United Nations database, POP/DB/MIG/Stock/Rev.2017).</p> <p>http://www.un.org/en/development/desa/population/migration/data/estimates2/estimates17.shtml</p> <p>and</p> <p>http://www.un.org/en/development/desa/population/publications/policy/international-migration-policies-report-2013.shtml</p>

Sources	Full Reference
International Organization for Migration (IOM), 2014	International Organization for Migration (IOM), 2014. http://www.iom.int
Office of the High Commissioner for Human Rights, OHCHR, 2014	United Nations, International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families, Committee on the Protection of the Rights of All. 2014 https://www.ohchr.org/EN/HRBodies/CMW/Pages/CMWIndex.aspx
US department of State, 2017	U.S Department of State (2017). Country Reports on Human Rights Practices for 2016 http://www.state.gov/j/drl/rls/hrrpt/humanrightsreport/index.htm#wrapper and
	US Department of State. 2017. Trafficking in persons report. https://www.state.gov/documents/organization/271339.pdf
OECD, 2013	Organization for Economic Co-operation and Development (OECD), International Migration Outlook, 2013. http://www.oecd.org/migration/
Human Rights Watch, 2018	Human Rights Watch. 2018. 2018 Country reports. https://www.hrw.org/sites/default/files/world_report_download/201801world_report_web.pdf

Risk level assessment rules:

Risks regarding Net Migration Rate NMR per 1,000 Population

- Low: 0
- Medium: 1 or -1
- High: <-1 and >1

Characterization of immigrants is based on the total number of immigrants to destination country.

- Low: <500K
- Medium: >500K and < 1M
- High: >1M and < 5 M
- Very High: >5M

Immigrants as a percentage of the population:

- Low: <2%
- Medium: <5%
- High: <15%
- Very High >15%

Risk that a country's remittances from its emigrants are low is based on the Workers' Remittances and Compensation Received per Emigration (USD/year) – calculated using Total Remittances/# Emigrants.

- Low: <150
- Medium: >150 and <2050
- High >2050
- Very High >4500

Risk that a country does not pay immigrants enough for remittances is based on the Workers' Remittances and Compensation Paid per Immigrant (USD/year) – calculated using Total Remittances/# Immigrants.

- Low: <100
- Medium >100 and < 2000
- High >2000 and < 10,000
- Very High >10,000

Risk that Conventions and Policies are not ratified for protection of Migrant Workers is based on a country's policies to integrate non-citizens, as well as ratification of ILO and UN conventions. It is characterized by low, medium, high and very high ratings:

- Low: 2 to 3 conventions are ratified, and Integration Policy is Yes,
- Medium: All 3 conventions are ratified but Integration policy is No,
- High: Only 2 conventions are ratified, and Integration policy is No or 0 to 1 convention are ratified and Integration policy is Yes,

- Very High: 0 to 1 convention is ratified, and Integration policy is No.

Risk that Migrant Workers are not Treated Fairly (Qualitative) is based on the following rubric:

Laws to protect migrants exists, are enforced and there is no or rare evidence of rights infringement	Low
Laws exist but are not always enforced through governmental inspections and there is some isolated evidence of rights infringements	Medium
Laws exist but are not enforced through governmental inspections and there are frequent evidences of rights infringement	High
Only formal sector abides by laws	High
There are no laws and frequent cases of non-compliance are reported	Very High

What is new:

All updated except for;

- Net Migration Rate (NMR) per 1,000 population (the difference of immigrants and emigrants in and out of an area over a certain period of time,) and
- The workers remittances and compensation received per emigrant.



SOCIAL BENEFITS

Overview:

Social benefits refer to non-monetary employment compensation. Four basic categories of Social Security benefits are often included and are paid based upon the record of worker's earnings:

- Retirement, disability, dependents, and survivors' benefits.

Other social benefits that may be provided include:

- Medical insurance,
- Dental insurance,
- Paramedical insurance including preventive medicine,
- Medicine insurance,
- Wage insurance,
- Paid maternity and paternity leave (parental leave),
- Paid sick leave,
- Education and training,

Social benefits are typically offered to full-time workers but may not be provided to other class of workers (eg. part-time, home workers, contractual). Countries have different laws and policies regarding social security and social benefits and that entails that some benefits may already be taken care for by the national government. For example, some countries have a public medical system accessible to all citizen while other countries have a private medical system calling for citizen/worker to be covered by a medical insurance.

Aim and approach of indicator assessment

This subcategory assesses the country level risk that workers may not be provided social benefits.

Data Collection:

All of the data collected for the subcategory regarding social benefits came from the WORLD Legal Rights Data Centre, McGill Institute for Health and Social Policy. Most of the data from the WoRLD Legal Rights Data Centre was provided by ILO NATLEX (International Labour Organization), and when data from ILO NATLEX were missing, other sources were used such as World Bank's Doing Business Law Library, the Lexadin

World Law Guide, and the World Legal Information Institute's (WorldLII) databases, the Social Security Programs Throughout the World (SSPTW) database, the ILO Working Time Database, the ILO Maternity Protection Database and the World Alliance for Breastfeeding Action (WABA)'s Status of Maternity Protection by Country.

Sources used:

Sources	Full Reference
WoRLD Legal Rights Data, 2015	Source: WoRLD Legal Rights Data Centre. 2015. WoRLD Policy Center, UCLA

Risk level assessment rules:

Paid annual leave:

- Low: 4 weeks and more
- Medium: between 2 and 4 weeks
- High: between 1 and 2 weeks
- Very High: None

Paid sick leave coverage begins on first day of incapacity:

- Low: Starts on first day for all illnesses
- Medium: Starts on first day in case of severe illnesses
- High: Does not start on first day
- Very High: No paid sick leave

Paid sick leave duration:

- 26 weeks or until recovery = Low
- 31 days to 25 weeks = Low
- 11-30 days = Medium
- 1-10 days = High
- No paid sick leave = Very High

Wage replacement of sick leave:

- 75-100% = low
- 50-74% = medium
- 1-49% = high
- No paid leave = very high

Leave for children's educational needs, children's health needs and adult family member's needs:

- Paid = low
- Unpaid = medium
- None = high

Duration of paid leave for mothers:

- 52 weeks or more = low
- 26-51 weeks = low
- 14-25 weeks = medium
- Less than 14 weeks = high
- No paid leave for mothers = very high

Wage replacement of paid leave for mothers, fathers and parental

- 75-100% = low
- 50-74% = medium
- Flat = medium
- 1-49% = high
- No paid leave = very high

Duration of paid leave for fathers:

- 52 weeks or more = low
- 14-51 weeks = low
- 2-13 weeks = medium
- Less than 2 weeks = high
- No paid leave for fathers = very high

Duration of paid parental leave:

Low:

- Mother 52 weeks+, Father 52 weeks+, Parental 52 weeks+,
- Mother 52 weeks+, Father none, Parental 52 weeks+
- Mother 52 weeks+, Father 14-51 weeks, Parental 26-51 weeks
- Mother 52 weeks+, Father -2 weeks, Parental none
- Mother 26-51 weeks, Father 14-51 weeks, Parental 26-51 weeks
- Mother 26-51 weeks, Father 2-13 weeks, Parental 26-51 weeks
- Mother 26-51 weeks, Father 14-51 weeks, Parental – 14 weeks
- Mother 26-51 weeks, Father 2-13 weeks, Parental none
- Mother 26-51 weeks, Father - 2 weeks, Parental none
- Mother 14-25 weeks, Father 14-51 weeks, Parental 14-25 weeks
- Mother 14-25 weeks, Father 2-13 weeks, Parental – 14 weeks

Medium:

- Mother 52 weeks+, Father none, Parental none
- Mother 14-25 weeks, Father 2-13 weeks, Parental none

High:

- Mother nd, Father nd, Parental none
- Mother 14-25 weeks, Father nd, Parental none
- Mother 14-25 weeks, Father -2 weeks, Parental none
- Mother 14-25 weeks, Father none, Parental none

Very High:

- Mother 14 weeks or less, Father -2 weeks, Parental none
- Mother 14 weeks or less, Father -2 weeks, Parental none
- Mother none, Father none, Parental none

Mother means duration of paid leave for mothers

Father means duration of paid for fathers

Parental means duration of paid parental leave

+ Means and more

Nd means no data

What is new: -



LABOR LAWS & CONVENTIONS

Overview:

Labor laws constitute the body of laws, administrative rulings, and precedents that address the legal rights of working people and their organizations. Labor rights are precarious and can differ greatly among countries, to the extent to which they are laid down in national laws and also the way in which they are executed. This sub category clarifies that equality of treatment and fairness in dealings within the working place is not commonplace everywhere. This is reflected in the support of labor rights in national labor laws and the extent to which international Conventions have been ratified.

The countries' reluctance to ratify or denounce international labor standards is used to assess potential social impacts especially zooming in on the broad range of ILO Conventions. The standards in these conventions can generally be seen as the basic social standards that, when countries ratify the conventions, have to be implemented in national laws. Included are conventions dealing with freedom of association, collective bargaining and industrial relations, forced labor, elimination of child labor and protection of children and young people, equality of opportunity and treatment, wages, occupational safety and health, working time, social security, and maternity, migrant worker, and indigenous protection, all issues of importance to the SHDB. At the same time, ratification of sector-specific conventions is used to determine the risk levels at the sector level.

Unfortunately, there is no international enforcement or liability scheme to international conventions and therefore, this sub category includes both collective labor laws related to the relation between employee, employer and trade union, and individual labor laws that concern the rights of employees. One of the most prominent of labor laws is for national minimum wages stating the minimum amount that a worker can be paid per hour. Each country sets its own minimum wage laws and regulations, and while a majority of industrialized countries has a minimum wage, some developing countries have not. The most recent year that the minimum wage was updated, is included for this sub category as a means of evaluating the adequacy of Labor Laws in a country, various sources were used. Sector specific laws were separated out for seafarers, fishers, dock workers, agricultural workers, mining and quarrying workers, electricity, gas and water workers, manufacturing workers, construction workers, hotel, restaurant and shop workers, transport and communication workers, banking finance and insurance workers,

community, social and personal services workers, public and civil servants, nursing personnel, teachers, domestic workers and home workers. These were used to characterize the number of laws developed for each sector.

Data Collection:

For this subcategory, NATLEX, the database of ILO's International Labor Standards Department, was the sole source for data on the international conventions on labor laws. From the number of the ratified, possibility to ratify and denounced conventions and protocols, the reluctance to ratify international labor organization conventions was determined. Specifications were made to the general conventions and sector-specific conventions, including seafarers and dockworkers, manufacturing, utility, and agricultural sectors, fishermen, underground work (mining), construction, public service, commerce, domestic work and nursing.

Furthermore, the total labor laws per country were listed for this sub category, also collected from the NATLEX database. Data was available for 17 sector specific laws.

Sources used:

Indicator	Source Citation	Full Reference
Labor Conventions	ILO NATLEX, 2010	ILO NATLEX. (2010). Database of ILO's International Labour Standards. Retrieved from: http://www.ilo.org/dyn/natlex/country_profiles.byCountry?p_lang=en
Labor Laws	ILO NATLEX, 2010	ILO NATLEX. (2010). Database of ILO's International Labour Standards. Retrieved from: http://www.ilo.org/dyn/natlex/natlex_browse.byCountry?p_lang=en
Minimum Wage Date Enacted	Elsalario.com.ar, 2012	Elsalario.com.ar. (2012). Salario minimo. Retrieved from http://www.elsalario.com.ar/main/Salario/salario-minimo
	U.S. Department of State, 2009	U.S. Department Of State. (2009). 2009 Country Reports on Human Rights Practices. Retrieved from http://www.state.gov/j/drl/rls/hrrpt/2009/
	U.S. Department of State, 2011	U.S. Department Of State. (2011). Country Reports on Human Rights Practices for 2011. Retrieved from

		http://www.state.gov/j/drl/rls/hrrpt/humanrightsreport/index.htm
	PortalBrasil.net, 2011	PortalBrasil.net. (2011). Salario Minimo Brasileiro de 2012. Retrieved from http://www.portalbrasil.net/salariominimo_2012.htm
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	Journal de Monaco, 2012	Journal de Monaco,. (2012). Communiqué n° 2012-02 du 4 janvier 2012 relatif au S.M.I.C. Salaire Minimum Interprofessionnel de Croissance applicable à compter du 1er janvier 2012. Retrieved from http://www.legimonaco.mc/Dataweb/jourmon.nsf/100ab120e52ceb84c12568ce002f2909/96ba431cc4c65765c1257984002976e3!OpenDocument
	Federation of European Employers, 2012	Federation of European Employers. (2012). FedEE Review of minimum wage rates. Retrieved from http://www.fedee.com/pay-job-evaluation/minimum-wage-rates/

Risk level assessment rules:

Regarding the characterization describing the reluctance to ratify ILO Conventions;

- Low: ratio of ratified to total possible is >40% and no conventions have been denounced.
- Medium: ratio of ratified to total possible is >30% and no conventions have been denounced and if the ratio of ratified to total possible is >40% and one or more conventions have been denounced.
- High: ratio of ratified to total possible is >20% and no conventions have been denounced, and if the ratio of ratified to total possible is >30% and one or more conventions have been denounced,
- Very High: ratio of ratified to total possible is <20% and whether or not any conventions have been denounced.

Sector specific conventions were characterized in three different ways depending on the number of conventions per sector, which varied. If the majority of conventions were

ratified in a sector, the level of risk is Low, if the majority of conventions simply have the possibility of being ratified, the level of risk is Medium, if conventions have been denounced, the level of risk is High.

The data on total national laws according to NATLEX was characterized as failure to enact laws as follows:

- Very High: <100
- High: 100-400
- Medium: 400-900
- Low: >900

Additionally, the countries' deficiency in updating the minimum wage level was characterized in three levels:

- High: <2008,
- Medium: 2008-2009
- Low: 2010-2012.

The total number of sector specific laws are mapped per sector into 2 categories where low means that laws are enacted to protect sector specific workers and medium means that no laws exist for these workers.



DISCRIMINATION AND EQUAL OPPORTUNITY

Overview

The principles of equality and non-discrimination are part of the foundations of the rule of law. As UN Member States noted in the Declaration of the High-Level Meeting on the Rule of Law, “all persons, institutions and entities, public and private, including the State itself, are accountable to just, fair and equitable laws and are entitled without any discrimination to equal protection of the law” (para. 2). They also dedicated themselves to respect the equal rights of all without distinction as to race, sex, language or religion (para. 3). Hundreds of millions of people suffer from discrimination in the world of work. This not only violates a most basic human right but has wider social and economic consequences. Discrimination stifles opportunities, wasting the human talent needed for economic progress, and accentuates social tensions and inequalities. The risks related to the prevalence of discrimination in the workplace are the focus of this sub category and determine the risk to be discriminated against in the workplace.

Data Collection:

The US department of State’s Human rights report provides information on whether or not countries have included principles of non-discrimination in their constitution, whether or not these principles have been transposed into national legislation, if the national governments are enforcing the rules.

Sources used:

Source Citation	Full Reference
US department of State (2017)	U.S Department of State (2017). Country Reports on Human Rights Practices for 2016 http://www.state.gov/j/drl/rls/hrrpt/humanrightsreport/index.htm#wrapper

Risk level assessment rules:

Based on what is included in the constitution, the national law/regulatory system and the level of enforcement by the government combined with information on the existence of discrimination the risk levels are determined for the different countries.

A few examples

Laws are enforced and there are very little cases of discrimination	Low
Laws exist but not covering all the various aspects and there are cases of discrimination	Medium
Laws are there however enforcement is low and there are reports of significant discrimination	High
Law prohibits discrimination and government enforces however on a regular base discrimination is happening	Medium
Constitution prohibits discrimination but does not explicitly address the various equal rights and there are reports on government officials discriminating	Very High
Constitution does not include non-discrimination	Very High

What is new?

This subcategory is new.



UNEMPLOYMENT

Overview:

Unemployment is defined by the ILO as all persons above a specific age who, during a reference period, were without work (not receiving payment or self-employed), currently available to work, and looking for work (sending applications to employers, seeking help from friends and family, etc.). This definition is based on the labor force not the total population. Some of the social impacts of unemployment include severe financial hardship and poverty, debt, homelessness, family breakdown, discrimination, increased social isolation, crime and loss of self-esteem, and can lead to poor health because of lack of access to health care.

The definition of unemployment varies between countries, and the standards that are used to qualify someone as unemployed or not will also vary. Harmonized unemployment represents unemployed people as a percent of the labor force, total employed and unemployed. It is the best measure of unemployment because it is the most comparable across countries. Unharmonized unemployment data includes different definitions of measurement for each country making it difficult to compare statistically. For example, in locations where conventional means of seeking work are limited, the standards for unemployment may be relaxed to account for the lack of employment means. In regard to the criteria of "currently available to work", the methods may be modified to include desire to work, previous work experience, and readiness to undertake self-employment given the necessary resources. If an employee is temporarily laid off and not seeking employment, they should not be classified as unemployed but should be categorized separately. However, this is not always the case according to some countries' unemployment standards. Students, homemakers and others engaged in non-economic activities should be regarded as unemployed only if they are seeking work. Unfortunately, national definitions of unemployment differ from the recommended international standard definition on age limits, time periods, criteria for seeking work, and treatment of temporarily laid-off persons seeking work for the first time.

Data Collection:

For this subcategory, a time series from 2000-2009 of unemployment percentages by country were collected from the following main sources: the International Monetary Fund (IMF), the Organization for Economic Co-Operations and Development (OECD), Eurostat, and the International Labour Organization (ILO) Laborsta Database. References for each country differ depending on the best data that was available. The data sources were used in a hierarchy. OECD harmonized data was used first followed by IMF, then ILO and Eurostat.

Comparative, or "harmonized", unemployment rates are used frequently in international analyses of labor markets, which are intended to provide a better basis for international comparison than figures based on a national definition. The IMF data reports that it is an unadjusted Unemployment Database, but it cites the use of the Harmonized ILO definition for unemployment through 2009. The IMF unadjusted Unemployment per Country data comes from a national definition of unemployment. The ILO data is from an unadjusted Unemployment Database but cites the use of a labor force survey with total coverage. The ILO surveys were not continuous temporally, but data was collected through 2008. Eurostat data is harmonized through 2009. The data collected between 2010 and 2013 are coming from the web site Trading Economics.

Sector-specific data for unemployment rates came from ILO Laborsta data including 23 different sectors.

Sources used:

Indicator	Source Citation	Full Reference
Unemployment Percentage in country and sector	Eurostat, 2010	Eurostat. (2010). Unemployment Statistics 2000-2009. Retrieved from: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Unemployment_statistics
	ILO Laborsta, 2008	ILO Laborsta (2008). Tables 3A&3D: Unemployment, general level and by economic activity. Retrieved from: laborsta.ilo.org
	International Monetary Fund, 2010	International Monetary Fund. (2010). World Economic Outlook Database. Retrieved from: http://www.imf.org/external/pubs/ft/weo/2010/02/weodata/index.aspx/
	OECD, 2010	OECD. (2010). OECD Stat Database: Labour Force Statistics, Harmonized Unemployment Rate (HUR). Retrieved from: http://stats.oecd.org/

	Trading Economics, 2014	Trading Economics (2014), http://www.tradingeconomics.com/ , accessed January 2014
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Risk level assessment rules:

Since harmonized data was not always available for a country, a better way to compare across countries was to calculate a deviation from the average. The unemployment rates for each year were subtracted from the average unemployment from 2003 to 2013 to get a deviation from the average. This value would be positive or negative depending on whether unemployment increased or decreased from the average. Then the average unemployment rate (2003-2013) and the average deviation from the average unemployment (2010-2013) was used to determine risks levels (characterize) the country-level risk according to the following rules:

Very High: If the average unemployment rate is over 15%, the risk is very high, without consideration of whether conditions are improving or worsening over the last 4 years, and in case the average unemployment is between 10-15% and the average change over the last 4 years is not better than -2% improvement

High, the average unemployment is between 10-15% and the average change then the risk is <-2%, indicating that the last 2 years unemployment has been reduced by more than 2%, Mon dev est fait sur 4 ans au lieu de 3. Est-ce que ça change quelque chose pour le 2 years ? and in case the average unemployment is between 5-10% and the average change over the last 4 years is not any better than -1% improvement, then the risk is high,

Medium: the average unemployment is between 5-10% and the average change is <-1%, indicating that the last 2 years unemployment has been reduced by more than 1%, and If the average unemployment is less than 5% and the average change over the last 4 years is more than 0% improvement (increased unemployment),

Low if the average unemployment is less than 5% but if the average change is <0%, indicating that the last 2 years unemployment has been reduced.

For the sector specific data, ILO Laborsta Table 3D reports thousands of people out of work for 17 sectors within the economically active population. Dividing the thousands within a sector by the total economically active population in a country, gives a percentage that was characterized as follows:

Low: <0.1%

Medium: <0.5% and >=0.1%

High: <1% and >= 0.5%

Very High >=1%



OCCUPATIONAL TOXICS AND HAZARDS

Overview:

Individuals spend a considerable amount of time in their places of work. Therefore, potentially harmful materials that they are exposed to at their occupation play a large role in their overall health. Hazardous and toxic substances are defined as those chemicals that are capable of causing harm to living organisms. The Occupational Safety and Health Act of 1970 (OSH Act) was passed in the US to prevent workers from being killed or seriously harmed at work. The law requires employers to provide their employees with working conditions that are free of known dangers. The Act created the Occupational Safety and Health Administration (OSHA), which sets and enforces protective workplace safety and health standards. OSHA currently regulates exposure to approximately 400 substances in the workplace. OSHA also provides information, training and assistance to workers and employers. Workers may file a complaint to have OSHA inspect their workplace if they believe that their employer is not following OSHA standards or that there are serious hazards.

While OSHA is a useful organization for setting a precedent on this issue through classification and communication, it is not as effective at providing global statistics on occupational exposures to toxics and hazards. The World Health Organization's (WHO) Global Burden of Disease (GBD) project reports consistent and comparative data on the burden of diseases and injuries and the risk factors that cause them by global region. The data is often measured using the unit of disability-adjusted life years (DALY). This time-based measure combines years of life lost due to premature mortality and years of life lost due to time lived in states of less than full health. It assesses the burden of disease consistently across diseases, risk factors and regions. Four primary occupational exposures were considered for this sub category using WHO-GBD regional data; noise, carcinogens, airborne particulates, and sharps.

Occupational noise is widespread, with strong evidence linking it to an important health outcome (hearing loss). High levels of occupational noise remain a problem in all regions of the world. Although noise is associated with almost every work activity, occupations at highest risk include those in manufacturing, transportation, mining, construction, agriculture and the military. The situation is improving in developed countries, as more widespread appreciation of the hazard has led to the introduction of

protective measures. Data for developing countries are scarce, but available evidence suggests that average noise levels are well above the occupational level recommended in many developed nations (WHO, 2004a).

The International Agency for Research on Cancer has classified 150 chemical or biological agents as known or probable human carcinogens, and exposures to many of these carcinogens (e.g. asbestos, cadmium and benzene) occur in occupational settings. Three cancers (lung cancer, leukemia, and malignant mesothelioma) account for most occupationally induced cancers. The most important lung carcinogens in occupational settings are asbestos, radon, arsenic, chromium, silica, beryllium, nickel, cadmium and diesel exhaust. The most important agents for leukemia are benzene, ionizing radiation and ethylene oxide. Mesothelioma is often caused by sun exposure (WHO, 2005a).

Nonmalignant respiratory diseases in workers can result from exposures to airborne agents during the course of their work. These agents are mainly in the form of particulates or dusts (dry, aerosol particles) and the primary route of exposure is inhalation. Dusts are dry particle aerosols produced by mechanical processes such as breaking, grinding, and pulverizing. Particle sizes range from less than 1 μm - 100 μm in diameter. The smaller particles present a greater hazard, as they remain airborne for longer periods and are more likely to gain access to the respiratory tract. Dusts of non-biological (e.g. silica, asbestos, coal dust) origin are of focus in this table for the disease's asthma, chronic obstructive pulmonary disease, asbestosis, and silicosis. Miner exposure to coal dust is evaluated separately for the specific sector in this table (WHO, 2004b).

Percutaneous injuries to health-care workers from sharps carry significant risk of transmitting blood-borne pathogens such as HBV, HCV and HIV. Globally, it is estimated that sharps injuries cause about 66,000 HBV, 16,000 HCV and 200–5,000 HIV infections among health-care workers each year. These infections have serious consequences, including long-term illness, disability and death (WHO, 2005b).

Data Collection:

The Occupational Toxics and Hazards subcategory is about the exposure of people in a country to a wide variety of these dangers including harmful noise levels, carcinogenic compounds, airborne particulates that could result in respiratory or other illnesses, as well as two sector-specific hazards, airborne particulates related to coal mining and sharps injuries to healthcare workers.

Data for excessive noise exposure comes from the World Health Organization's (WHO) Environmental Burden of Disease Series. This detailed source reports percentages of males and females in 4 different age groups (15-29, 30-44, 45-59, 60-69) exposed to two

different decibel ranges (85-90 dBA and >90 dBA). The data is reported for 14 sub-regions. The regional data is used for all countries within the region.

Workplace exposure to carcinogens is documented in the American Journal of Industrial Medicine in an article titled, "Global Burden of Disease due to Occupational Carcinogens," for lung cancer, leukemia, and mesothelioma. Both number of deaths and disability-adjusted life years (DALYs) for both genders are given for the 14 sub-regions defined by the WHO, which are assigned to the individual countries within the region.

Another WHO Environmental Burden of Disease Report was developed for Airborne particulates and the various diseases that result from this hazard. The diseases include Asthma, Chronic Obstructive Pulmonary Disease, Asbestosis and Silicosis. For this data, only DALYs, and not Deaths, are reported for men and women by region. DALYs specific to the coal-mining sector are also reported in the same document.

Lastly, estimates of the percent of the health care workforce that has contracted Hepatitis B, C, and HIV are reported for the year 2000 by WHO using the same regions.

Sources:

Indicator	Source Citation	Full Reference
Noise Exposure	World Health Organization, 2004a	World Health Organization. (2004). Occupational noise: Assessing the burden of disease from work-related hearing impairment at national and local levels. Geneva, Switzerland: Concha-Barrientos, M., Campbell-Lendrum, D., & Steenland, K. Retrieved from http://www.who.int/quantifying_ehimpacts/publications/en/ebdg.pdf
Carcinogenic Exposures	World Health Organization, 2005a	Driscoll, T., Nelson, D. I., Steenland, K., Leigh, J., Concha-Barrientos, M., Fingerhut, M., & Pruss-Ustun, A. (2005). The Global Burden of Disease Due to Occupational Carcinogens. American Journal of Industrial Medicine, 48, 419-431. Retrieved from http://www.cdc.gov/niosh/nas/rdrp/appendices/chapter5/a5-6.pdf

Airborne Particulates	World Health Organization, 2004b	World Health Organization. (2004). Occupational airborne particulates: Assessing the environmental burden of disease at national and local levels. Geneva, Switzerland: Driscoll, T., Steenland K., Pruss-Ustin, A., Nelson, D. I., & Leigh, J. Retrieved from http://www.who.int/quantifying_ehimpacts/publications/en/ebd7.pdf
Sharps Injuries in Health Care Sector	World Health Organization, 2005b	World Health Organization. (2005). Sharps injuries : assessing the burden of disease from sharps injuries to health-care workers at national and local levels. Geneva, Switzerland: Elisabetta Rapiti, Annette Prüss-Üstün, Yvan Hutin. Retrieved from http://www.who.int/quantifying_ehimpacts/publications/ebd11.pdf

Risk level assessment rules:

To determine the risk of noise exposure in males and females, all ages were averaged for each of the two decibel levels. A distribution of the data was used to determine 4 quartiles of risk. The exposure to 90+ dBA (M) is weighted twice as heavy as exposure to 85-90 dBA (N). If $(M+(2*N)) > 22.5$ then risk is very high, > 22 then risk is high, > 14 then risk is medium, < 14 then risk is low. For females, if $(M+(2*N)) > 12$ then risk is very high, > 11 then risk is high, > 6 then risk is medium, < 6 then risk is low. An average risk for both genders is determined as well.

The risk of carcinogenic exposure is determined (characterized) individually for the three recognized diseases for the total results (i.e., male and female). It is also characterized separately for DALYs and Deaths. Characterizations are all based on distributions of the data. The following risk levels are used:

- Lung Cancer Deaths: if total $> 20,000$ then risk is very high, $> 10,000$ then risk is high, $> 1,100$ then risk is medium, $< 1,100$ then risk is low
- Leukemia Deaths: if total $> 1,300$ then risk is very high, > 550 then risk is high, > 250 then risk is medium, < 250 then risk is low
- Mesothelioma Deaths: if total $> 10,000$ then risk is very high, $> 2,400$ then risk is high, $> 1,000$ then risk is medium, $< 1,000$ then risk is low
- Lung Cancer DALYs: if total $> 150,000$ then risk is very high, $> 90,000$ then risk is high, $> 15,000$ then risk is medium, $< 15,000$ then risk is low
- Leukemia DALYs: if total $> 20,000$ then risk is very high, $> 9,000$ then risk is high, $> 3,500$ then risk is medium, $< 3,500$ then risk is low

- Mesothelioma DALYs: if total > 100,000 then risk is very high, > 25,000 then risk is high, > 10,000 then risk is medium, < 10,000 then risk is low

An average risk is determined for total risk of occupational carcinogens using the Death and DALY data for all three diseases.

Characterization of the airborne particulate DALY data is performed on total results only for each of the four possible diseases:

- Asthma DALYs: if total > 350K then risk is very high, > 50,000 then risk is high, > or = 40,000 then risk is medium, < 40,000 then risk is low
- Chronic Obstructive Pulmonary Disease DALYs: if total > 250,000 then risk is very high, > 100,000 then risk is high, > or = 50,000 then risk is medium, < 50 then risk is low
- Asbestosis DALYs: if total > 100,000 then risk is very high, > 20,000 then risk is high, > 5,000 then risk is medium, < 5,000 then risk is low
- Silicosis DALYs: if total > 100,000 then risk is very high, > 20,000 then risk is high, > 10,000 then risk is medium, < 10,000 then risk is low

Again, an average is determined for all four diseases to report a risk of loss of life due to airborne particulates in the workplace.

The mining sector had its own data for total DALYs resulting from workplace exposure in a coal mine. The results were characterized based on a distribution of the data. If total > 100,000 then risk is very high, > 40,000 then risk is high, > 10,000 then risk is medium, < 1,000 then risk is low.

The Healthcare workforce exposure data to diseases spread by sharps were weighted based on the severity of each virus. HIV is weighted heaviest, followed by HCV, followed by HBV. If the weighted average of percentage infected > 12% then risk is very high, > 9% then risk is high, > 6% then risk is medium, < 6% then risk is low.



OCCUPATIONAL INJURIES AND DEATHS

Overview:

Safe working conditions are a basic human right and a fundamental part of Decent Work. 27 million workers die each year from work-related accidents and diseases and four percent of the global GDP are lost due to accidents and poor working conditions. According to the ILO, the definition of an occupational injury is that which results from an accident arising out of or in the course of employment, including commuting, that may result in death, personal injury, or disease that involves loss of work time. Occupational diseases are diseases contracted as a result of an exposure to risk factors arising from a work activity. Commuting accidents include accidents that occur while commuting between the worker's principal or secondary residence, from the location of meal breaks and from where they are paid. The incapacity to work is the inability to perform normal duties required by employment and loss of work time is the loss of days including the day after the accident measured in calendar days, weekdays, work shifts or working days.

ILO and WHO both advocate that occupational health should aim at: "the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job."

Nationally, the term of an occupational accident will vary considerably. A lot of definitions will also reference sudden or unexpected events and acts of violence that occur at the workplace. These two topics have been a growing cause of injuries in the workplace according to the USDA. Many countries expand on the general ILO definition to include these other forms of occupational injuries. Unless companies have established standards and procedures, workers are at risk of workplace injury and often unprotected by the company when injuries do occur.

ILO data on fatal and non-fatal occupational injuries per 100.00 workers is data used to determine progress towards SDG 8 "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all". Especially

SDG 8.8 “Protect labour rights and promote safe and secure working environments of all workers, including migrant workers, particularly women migrants, and those in precarious employment”

Data Collection:

For this subcategory, only data data was gathered from the International Labor Office (ILO) database on labor statistics. Data on fatal and non-fatal occupational injuries per 100.000 workers was for the following was collected by the ILO coming from different sources covering various groups (for example insured) and collected in different ways. Data quality varies between different countries. Therefore, the figures shown may be lower than the actual occurrence. Sector level data was available too from the ILO ILOSTAT Database. Fatal and Non-Fatal injuries by economic sector provided data for 10 respectively 15 economic sectors, so far from complete.

References:

Source Citation	Full Reference
ILO STAT, 2018	International Labour Organization , Statistics and databases https://www.ilo.org/global/statistics-and-databases/lang-en/index.htm

Risk level assessment rules:

Risk level were determined as follows:

Non-fatal occupational injuries per 100.000 workers

Very high: 2000

High: >500

Medium >100

Low: < 100

Fatal occupational injuries per 100.000 workers

Very High: >10

High: >5

Medium: >1

Low: ,1

What is new?

Only one source for this sub category was used for the current version of the SHDB. A second source used in the former version had not been updated at a country level and therefore not taken into account for 2018 SHDB version.



INDIGENOUS RIGHTS

Overview:

The United Nations Permanent Forum on Indigenous Issues (2006) estimates the indigenous population to be over 350 million. It is also estimated that up to 15 percent of the world's poor, and up to one-third of the rural poor, are indigenous (UNPFII).

After decennia of debate and thinking, no UN definition has ever been adopted. All parties, including observers from indigenous organizations developed a common position that rejected the idea of a formal definition of indigenous peoples at the international level to be adopted by states. Instead of a definition, Article 33 of the United Nations Declaration on the Rights of Indigenous Peoples, adopted in 2007, underlines the importance of self-identification, that indigenous peoples themselves define their own identity as indigenous. Article 1 of the ILO Convention No. 169 adopted in 1989 and another key legal tool used by indigenous peoples, also expresses the importance of self-identification and indicates that the Convention applies to:

- a) tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations;
- b) peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

The indigenous focused on for this sub-category are those distinctly different from other groups within a state, holding for example special attachment to and use of their traditional land and natural resources, distinct social, economic or political systems, distinct language, culture and beliefs and most often experiencing subjugation, marginalization, dispossession, exclusion or discrimination because of the different cultures, ways of life or modes of production than the national dominant model.

The situation of indigenous peoples in many parts of the world continues to be critical. They are often severely disadvantaged, faced by systemic discrimination in all levels of society, excluded from access to natural resources, displaced by environmental disaster or wars, entrenched in extreme poverty and more. Meanwhile, their culture, religion, ways of life, and languages continue to be threatened. It seems those international agreements and the installed human rights instruments are far from enough to safeguard indigenous peoples from abuse of their rights.

It is far beyond the scope of this sub category to address an exhaustive list of all issues that concern indigenous peoples of each country. The sector specific portion of the table identifies particular problems and provides the tools for characterization of the risk of marginalization of indigenous peoples per sector and in the countries they live.

Data Collection:

The main organizations that monitor indigenous populations and issues, the International Work Group For Indigenous Affairs and the Minority Rights Group International, are the essential sources of information on indigenous populations. In many cases, indigenous populations are not separated from other ethnic minorities. This happens for many reasons such as no official recognition of some peoples by the government, or no national census that asks for ethnicity, or national census that limits ethnicities to be chosen from, or other possibilities. Given such scenario, in some cases, it was not possible to clearly distinguish all the indigenous groups inside the minorities. In some other cases, indigenous groups might have become integrated to urbanized society in some countries, as in other countries the same group might still live a more traditional way of life. So, even though the name of the population was the same across neighboring countries, we did not assume they are always indigenous unless clearly stated by the sources. Also, it became clear that some minorities, even if not indigenous, were facing extreme human rights violations, in many cases similar or worse than those lived by indigenous peoples. Therefore, because of the possibility of having indigenous groups as ethnic minorities, and because of the human rights violations suffered by minorities, we decided to include all the minorities in this new version of this sub category. Whenever possible, we identified the minorities and indigenous populations' numbers and percentages separately.

The existence of an indigenous population or ethnic minority was collected from different sources, including: The Indigenous World 2017, by the International Work Group For Indigenous Affairs, the World Directory of Minorities and Indigenous Peoples website and the Peoples Under Threat website, both by Minority Rights Group International, the World Directory of Minorities and Indigenous Peoples (UNHCR, 2008), the Indigenous World (IWGIA, 2010), the State of the World's Indigenous Peoples (UNDESA, 2009), the World Bank Indigenous Peoples, Poverty and Development (2010), Indigenous peoples, poverty & human development in Latin America 1994-2004 (World Bank, 2006), the Rights of indigenous peoples in 24 African countries (ILO, 2009), the

EIRIS and CAER SEE Risk briefing on Indigenous Peoples (2007), and the book *Ethnic Groups Worldwide* by David Levinson (1998). Using the same sources as mentioned above, the sector issues were specified for each country on a different sheet.

It was assumed that if no information was found on a country's indigenous, then that country does not have an indigenous population. This is most likely true for the individual GTAP countries, but it is possible that information was not available for some of the countries within GTAP regions, because these are typically smaller nations or territories. It was difficult to find data for the sector risks since it was qualitative, so the coverage is quite low.

The World Bank Open Data was the source for countries' populations, except in the case of Taiwan and French Guyana, which estimates were obtained in the website *World Population Review*, in June 06, 2018. The percent of minorities and indigenous peoples in comparison to total countries' populations were calculated and reported. NORMLEX from ILO provided information on the number of countries that ratified the ILO 169 Convention Concerning Indigenous and Tribal Peoples in Independent Countries 1989. The UN Permanent Forum on Indigenous Issues gave information on the number of countries which either not endorsed the Declaration on the Rights of Indigenous Peoples or absented from endorsing the Declaration. NATLEX was the source used for laws enacted by countries regarding their indigenous populations. All these sources were consulted between May and June, 2018.

References:

<u>Indicator</u>	<u>Source Citation</u>	<u>Full Citation</u>
Indigenous Peoples	MRGI Directory	Minorities Rights Group International. Retrieved May and June 2018 from: http://minorityrights.org/directory/
	Peoples Under Threat	Minorities Rights Group International. Retrieved May and June 2018 from: http://peoplesunderthreat.org
	Indigenous World 2017	International Work Group for Indigenous Affairs (2017). <i>The Indigenous World 2017</i> . Retrieved April 2018 from: SBN: 978-87-92786-72-2

Minority Rights Group International, 2007	World Health Organization. (2007). World Health Statistics 2007. Retrieved from http://www.who.int/gho/publications/world_health_statistics/en/index.html
Minority Rights Group International, 2008	World Health Organization. (2008). World Health Statistics 2008. Retrieved from http://www.who.int/gho/publications/world_health_statistics/en/index.html
Minority Rights Group International, 2009	World Health Organization. (2009). World Health Statistics 2009. Retrieved from http://www.who.int/gho/publications/world_health_statistics/en/index.html
World Bank (n.d.)	The World Bank. World Bank Open Data. Retrieved May and June 2018, from: https://data.worldbank.org/
World Bank, 2005	World Bank. (2005). Indigenous Peoples, Poverty and Human Development in Latin America: 1994-2004. Retrieved from http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/0,,contentMDK:20505834~pagePK:146736~piPK:146830~theSitePK:258554,00.html
ILO (n.d)	International Labour Organization (n.d.). NATLEX Database of national labour, social security and related human rights legislation. Retrieved May 2018, from: http://www.ilo.org/dyn/natlex/natlex4.listResults?p_lang=en&p_count=102935&p_classification=21&p_classcount=527

	ILO (n.d)	International Labour Organization (n.d.). NORMLEX Information System on International Labour Standards. Ratifications of C169 - Indigenous and Tribal Peoples Convention, 1989 (No. 169). Retrieved May 2018, from: http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11300:0::NO::P11300_INSTRUMENT_ID:312314
	ILO, 2009	International Labour Organization. (2009). OVERVIEW REPORT of the Research Project by the International Labour Organization and the African Commission on Human and Peoples' Rights on the constitutional and legislative protection of the rights of indigenous peoples in 24 African countries. Retrieved from http://www.ilo.org/indigenous/Resources/Publications/WCMS_115929/lang-en/index.htm
	UNDESA, 2009	United Nations Department of Economic and Social Affairs. (2009). State of the World's Indigenous Peoples. New York, NY. Retrieved from http://www.un.org/esa/socdev/unpfii/documents/SOWIP_web.pdf
	World Bank, 2010	World Bank. (2010). Indigenous Peoples, Poverty and Development. Hall, G., & Patrinos, H. Retrieved from http://siteresources.worldbank.org/EXT

		INDPEOPLE/Resources/407801-1271860301656/full_report.pdf
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Risk level assessment rules:

Data for this sub category did not provide the opportunity to determine (characterize) an overall risk of indigenous rights infringements in a country.??? Instead, the percentage of indigenous, the ratification or endorsement of international laws and the development of national laws were all characterized as separate indicators. The percentage of indigenous in a country's population was determined first, based on a distribution of the data.

- Low: no indigenous were reported by any source.
- Medium: > 2%
- High: 2% - 20%
- Very High: >20%.

Risk level related to whether countries have ratified ILO Convention 169 and/or endorsed the UN Declaration for the countries with an indigenous population.

- Low: ratified C169 and endorsed the UN Declaration
- Medium: not ratified C169 and they abstained from signing the UN declaration
- High Risk: not ratified C169 and against the UN declaration (just U.S. And Canada)

Finally, a risk level is assigned for number of laws a country has developed to protect their indigenous peoples.

If there are none reported, the result is na, if there is >50% indigenous, there is a Majority and risk is not assigned for no laws. If there are <50% indigenous and more than 1 law according to NATLEX, the risk is Low, if there is one law, the risk is Medium, countries with no laws have a High risk of not protecting indigenous rights.

What is new?



GENDER EQUITY

Overview:

Gender parity is fundamental to whether and how economies and societies thrive. Ensuring the full development and appropriate deployment of half of the world's total talent pool has a vast bearing on the growth, competitiveness and future-readiness of economies and businesses worldwide. Main world bodies declare gender equity as a human right, especially a women's right. It encompasses the goal of equality of genders implying a society in which women and men enjoy the same opportunities, outcomes, rights and obligations in all spheres of life. A critical aspect of promoting gender equality is the economical, educational and political empowerment of women, which is essential to advancing development and reducing poverty. Nonetheless, gender inequality is day-to-day practice in many societies. Women and girls continuously deal with discrimination, gender-based violence, political exclusion, economic disadvantage and poverty, hardship during and after humanitarian emergencies, and less access to education and health services, particularly in maternity. Therefore, a gender equality sub indicator is invaluable to the goals of the SHDB.

Data Collection:

A vast amount of statistics and indicators have been organized on the topic of gender equity. The Social Institutions and Gender Index (SIGI) developed by the OECD, Global Gender Gap Index. (WEF), the Gender Inequality Index (UNDP Human Development Indicator) and information from the Cingranelli-Richards Human Rights Dataset (CIRI) was used to describe the sub category on gender equality in the SHDB.

The SIGI is a cross-country measure of discrimination against women in social institutions (formal and informal laws, social norms, and practices) across 160 countries. Discriminatory social institutions intersect across all stages of girls' and women's life, restricting their access to justice, rights and empowerment opportunities and undermining their agency and decision-making authority over their life choices. As underlying drivers of gender inequalities, discriminatory social institutions perpetuate gender gaps in development areas, such as education, employment and health, and hinder progress towards rights-based social transformation that benefits both women and men.

It measures gender inequality in five areas: Family Code, Physical Integrity, Son Preference, Civil Liberties and Ownership Rights (access to resources and assets). The SIGI's variables quantify discriminatory social institutions such as unequal inheritance rights, early marriage, violence against women, and unequal land and property rights. Its values are between 0 and 1, with 0 meaning no inequality and 1 indicating complete inequality.

The World Economic Forum developed another prominent resource called the Global Gender Gap Index. including comparisons of economic participation and opportunity, educational attainment, health and survival, and political empowerment

The UNDP Human Development Indicators Report calculates a Gender Inequality Index, which replaced the Gender Development Index (GDI) and Gender Empowerment Measure (GEM) in 2010. The Gender Inequality Index (GII) reflects women's disadvantage in three dimensions—reproductive health, empowerment and the labor market. It ranges from 0, which indicates that women and men are equal, to 1, which indicates that women fare as poorly as possible in all measured dimensions. Two indicators measure the health dimension: maternal mortality ratio and the adolescent fertility rate. Two indicators also measure the empowerment dimension: the share of parliamentary seats held by each sex and by secondary and higher education attainment levels. The labor dimension is measured by women's participation in the work force.

Three indicators were extracted from the Cingranelli-Richards Human Rights Dataset (CIRI) regarding gender equity. Women's Economic Rights includes equal pay for equal work, free choice of profession, right to gainful employment, equality in hiring and promotion, job security (ie., benefits), non-discrimination and no sexual harassment, right to work in dangerous occupations (incl. Military, police). Women's Political Rights includes right to vote, run for political office, hold government positions, join political parties, and petition government officials. Women's Social Rights includes right to inheritance, travel, divorce, own and manage property, participate in social activities, education, and freedom to choose residence, from genital mutilation, and forced sterilization.

For a sector assessment, female representation in agriculture, industry, and service sectors was obtained from the ILO - Key Indicators of the Labor Market (KILM) Database.

Sources used:

<u>Sources</u>	<u>Full Citation</u>
Social Institutions and Gender Index (SIGI), 2014	Social Institutions and Gender Index (SIGI). (2012). https://www.genderindex.org/

World Economic Forum, 2017-2018	World Economic Forum. (2017). The Global Gender Report 2016. http://www.weforum.org/reports/global-gender-gap-report-2011
United Nations Development Programm, 2015	United Nations Development Programme.. http://hdr.undp.org/en/content/gender-inequality-index-gii and http://hdr.undp.org/en/composite/GII
The CIRI Human Rights Data Project, 2014	The CIRI Human Rights Data Project. http://www.humanrightsdata.com/p/data-documentation .
ILO-Key Indicators of the Labor Market (KILM), 2015	ILO-Key Indicators of the Labor Market (KILM) Database, (2015). Table 4a: Female Employment by Sector http://kilm.ilo.org/kilmnet/

Not clear what date (year) was used of the ILO data used to update this sub category

Rules for Characterization:

The first of the five sources mentioned above used for overall characterization of gender equity at the country level is the SIGI. Using a distribution of the data, SIGI was characterized as is shown below:

>0.3	Very High
0.2-0.3	High
0.1-0.2	Medium
<0.1	Low

The Global Gender Gap Index is a ratio of female to male, and was also characterized based on a distribution of all countries with data according to these levels:

<0.64	Very High
0.64-0.69	High
0.69-0.72	Medium

>0.72	Low
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The GII was characterized, based on a distribution of the data as follows:

>0.6	Very High
0.4-0.6	High
0.2-0.4	Medium
<0.2	Low

Scoring for CIRI is based on a scale of 0-3. Using Women's Economic Rights as an example, 0 = no economic rights for women in law and systematic discrimination may be built into law, 1 = some economic rights under law, but not effectively enforced, 2 = effective enforcement of some rights although a low level of discrimination may still occur, 3 = nearly all of women's economic rights are guaranteed by law and are fully enforced. Both Political and Social Rights are similar, 0 being the worst score, 3 the best. The average of all three indicators was used to characterize CIRI whereby:

<1 = Very High, 1-1.5 = High, 1.5-2.3 = Medium, >2.3 = Low.

A weighted average was calculated of all the individual index characterizations to come up with the overall Risk of Gender Inequity at the country level. The highest emphasis was placed on the Global Integrity Index (GII) and the Global Gender Gap (GGG) because of their reputation, representativeness, and completeness, both at 30% weight. SIGI and CIRI were weighted 20%. The final characterization is classified as:

Low (<1.67), Medium (1.67-2.67), High (2.67-3.67), and Very High (>3.67)

At the sector level, the ILO-KILM data provided a percentage of the workforce that was female in three broad sector categories. These were mapped to GTAP sectors where Agriculture = All Agriculture Sectors; Industry = Food manufacturing, manufacturing, mining, oil, gas, forestry, fishing, utilities, and construction sectors; and Services = Commerce, Tourism, Business, Social Services, Transportation, Communication Sectors. If <10% women in a sector, then there is very high risk that women are discriminated against in the sector, if 10-20% women in a sector then there is a high risk, if 20-33% women in a sector then there is a medium risk and if >33% women in a sector then there is a low risk.

What is new?

updated



HIGH CONFLICT

Overview:

According to the Heidelberg Institute for International Conflict Research, conflicts are defined as the clashing of interests (positional differences) over national values of some duration and magnitude between at least two parties (organized groups, states, groups of states, organizations) that are determined to pursue their interests and achieve their goals. Conflicts can, thus, include societal (civil, ethnic and communal) and interstate warfare. Conflicts conducted with sporadic use of violence are rather classified as crises. A specific table for the SHDB on high conflict zones is included since war ravaged societies are highly prone to humanitarian crises while being prone to the abuses of resources and people.

Data Collection:

The Heidelberg Institute for International Conflict Research is the premier source for this sub category, It lists conflicts by country, gives them a level of intensity. The maximum intensity is ranging from 1-5 (where 5 = war; 4 = severe crisis; 3 = crisis; 2 = manifest conflict; 1 = latent conflict). Furthermore whether the situation has been improving or worsening has been identified.

The Center for Systemic Peace provides data on the governance and state fragility by country. A country's fragility is closely associated with its state capacity to manage conflict; make and implement public policy; and deliver essential services and its systemic resilience in maintaining system coherence, cohesion, and quality of life; responding effectively to challenges and crises, and continuing progressive development. Their Global Reports included the State Fragility Index (SFI) which rates each country according to its levels of fragility in both effectiveness and legitimacy across four performance categories: conflict security, political governance, economic development, and social development. The SFI matrix scores show fragility in 167 countries annually from 1995 to 2008. These scores are assessed using objective and comparable measures from publicly available data sources.

Minority Rights Group International publish their State of the World's Minorities and Indigenous Peoples, Report. Their index, Peoples Under Threat, provided data for 70 countries based on ten indicators representing self-determined conflicts, major armed conflicts, prior genocide/politicize, massive movement of refugees and IDPs, legacy of

vengeance, rise of fractionalized elites, voice and accountability, political stability and rule of law.

The last source used for this social subcategory is the UN Refugee Agency's Global Trends Report, which provided quantitative data on refugees, asylum seekers, and internationally displaced and stateless persons by country of origin.

Sources:

Source Citation	Full Citation
Heidelberg Institute for International Conflict Research, 2017	Heidelberg Institute for International Conflict Research. (2017). Conflict Barometer. Retrieved from https://hiik.de/2018/02/28/conflict-barometer-2017/?lang=en
The UN Refugee Agency, 2018	The UN Refugee Agency, Global Trends Report (2018). Refugees and International Displaced Persons, Retrieved from: http://www.unhcr.org/en-us/figures-at-a-glance.html
Center for Systemic Peace, 2017	Center for Systemic Peace. (2017). Global Report on Conflict, Governance and State Fragility, Retrieved from: http://www.systemicpeace.org/globalreport.html

Minority Rights Group International, 2018	Minority Rights Group International. (2018). Peoples Under Threat 2018. Retrieved from https://minorityrights.org/publications/peoplesundertthreat2018/
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Risk level assessment rules:

Based on each of the four above-mentioned sources risks levels were determined and a weighted average was used to determine the level of risk of high conflict at the country level. Additionally, a modest assessment was performed at the sector level. Sectors directly affected by or are causing conflict, such as land use for mining, or in the financial sector in case military and arms funding are prominent are considered to be at a higher risk than the overall country risk.

For the Heidelberg Conflict Barometer New Earth B decided to determine risk based on:

- The # of conflicts,
- The maximum intensity and
- The overall (sum) change of all conflicts in a country compared to the previous year.

The risk levels were determined as follows;

- Very High: When there are ≥ 6 conflicts with a max intensity of ≥ 3 , risk.
- High: For any number of conflicts < 6 , if the max intensity is ≥ 4 , irrespective of the change Risk is also high for < 6 conflicts, where the max intensity is < 4 but the change is > 0 (worsening).
- Medium: for ≤ 2 conflicts with a 3 max intensity and < 2 change Risk is also medium where there are > 2 conflicts with ≤ 3 max intensity and ≤ 0 change (staying the same or improving).
- Low: When there are < 3 conflicts with ≤ 2 max intensity and ≤ 1 change.

The Center for Systemic Peace developed their State Fragility Index (SFI) and ranges from 0 = "no fragility" to 25 = "extreme fragility." New Earth B decided to determine risk levels as follows;

- Very High: 20-25
- High: 16-20
- Medium: 8-15
- Low: < 8

For the Minority Rights Group's People Under Threat Index, if the overall score of a country is higher than 15 than the SHDB will assign Very High risk level. Below 15 than a High risk level is assigned.

The Total Population of Concern according to The UN Refugee Agency Global Trends Report was characterized as >100,000 people = Very High, 10,000-100,000 = High, 500-10,000 = Medium, <500 = Low.

A weighted average of all four sources was determined to calculate an overall potential social impact regarding conflicts in a country. The risk levels were assigned a 1 for low risk, 2 for medium, 3 for High and 4 for Very High. Heidelberg was the best source found, and was assigned a weight of 30%; the number of refugees is of lesser weight (15%) because it does not necessarily indicate conflict; Center of Systemic Peace is a comprehensive source, but seems to underestimate level of conflict, so it was assigned a weight of 25%, and the Minority Rights Group only measure conflict in a limited list of countries so it was weighted 15%. To determine the final characterization factor, Low is where the weighted average is 1, Medium is >1 and <2, High is >2 and <3 and Very High is >=3.

What is new:

The current version of the SHDB no longer uses a fifth source to determine the risk levels. This source, Conflicts Without Borders - Sub-national and Transnational Conflict-Affected Areas of Africa (2007–2008) indicating levels of armed conflict, intercommunal strife, political violence, targeted attacks, pirate attacks, food riots, and disputed border conflicts within the African continent, had not been updated and was only covering African countries. The sector risks were outdated and not updated yet and therefore not included in the current 2018 SHDB version.



HUMAN HEALTH, NON-COMMUNICABLE AND HEALTH ISSUES

Overview:

Global health focuses on improving health and achieving equality in health for all people around the world. The SHDB includes the number of cases of communicable and non-communicable diseases as well as countries' mortality rates. The communicable human health impact subcategory represents the risks related to the rate of occurrence of infectious diseases such as HIV, malaria, dengue fever, cholera, diphtheria, Japanese encephalitis, leprosy, measles, meningitis, mumps, pertussis, poliomyelitis, rubella and tetanus. The non-communicable disease indicator includes undernourishment, digestive diseases, diabetes, cardiovascular and cerebrovascular diseases, neuropsychiatric conditions, malignant neoplasms, respiratory diseases, obesity, pollution and natural disasters. Together, these two subcategories provide a comprehensive summary of the current global health status.

Data Collection:

In many countries, statistical and health information systems are weak, and data may not be available or of a reliable quality. The sub-category human health; non-communicable and health issues is made up of many other indicators.

Data was mainly collected from WHO World Health Organization, Global Health Observatory (GHO) data. The GHO data repository is the WHO's main health statistics for its 194-member states. The age-standardized mortality rates are used to look at mortality rates for different locations without being affected by difference in age distributions. Age-standardized mortality rates adjust for differences in the age distribution of the population and are a weighted average of the age-specific mortality rates per 100 000 people.

The SHDB includes risk levels regarding the following social indicators related to non-communicable diseases and health issues:

- Life expectancy at birth (years)
- Under-five mortality rate (probability of dying by age 5 per 1000 live births)
- Age-standardized mortality rates for non-communicable diseases (per 100 000 population)
- Age-standardized mortality rates for injuries (per 100 000 population)
- Digestive diseases, Estimated Age Standardized Death Rate (per 100,000)
- Diabetes (mellitus) Estimated Age Standardized Death Rate (per 100,000)
- Cardiovascular diseases, Estimated Age Standardized Death Rate (per 100,000) (not updated)

- Cerebrovascular disease, Estimated Age Standardized Death Rate (per 100,000)
- Neuropsychiatric conditions, Estimated Age Standardized Death Rate (per 100,000) (not updated)
- Malignant neoplasms, Estimated Age Standardized Death Rate (per 100,000)
- Respiratory diseases, Estimated Age Standardized Death Rate (per 100,000)
- Estimated Obesity (BMI ≥ 30 kg/m²) Prevalence, Aged 18+, Males (not updated)
- Estimated Obesity (BMI ≥ 30 kg/m²) Prevalence, Aged 18+, Females (not updated)
- Dengue Fever, Incidence rate of DF cases per 100 000 population (not updated)
- Deaths due to indoor and outdoor air and water pollution, per million people (replaced by)
- Replaced by an indicator combining; Mortality rate attributed to household and ambient air pollution (per 100 000 population), Mortality rate attributed to exposure to unsafe WASH services (per 100 000 population) and Mortality rate attributed to unintentional poisoning (per 100 000 population)
- Data related to population affected by natural disasters (not updated)
- Notified cases of malaria per 100,000 population (not updated)
- Percentage of the population below minimum level of dietary energy consumption (undernourished).
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Sources used:

Sources	Full Reference
WHO World Health Statistics, 2018	Global Health Estimates 2016: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2016. Geneva, World Health Organization; 2018 WHO Global Health Observatory (GHO) data http://www.who.int/gho/en/
World Bank Group	Prevalence of undernourishment (% of population) https://data.worldbank.org/indicator/SN.ITK.DEFC.ZS

Risk level assessment rules:

Determination of the risk levels (characterization) of the non-communicable diseases (SDG 3.4) and health issues are based on the Individual distributions of all indicators except for Risk of Undernourishment, which was based on levels defined in the report by FAO as used in the former version of the SHDB.

Risk of low Life Expectancy:

>75 = low, >65 and <75 = medium, >55 and <65 = high, <55 = very high

Risk of a High Under-Five Mortality Rate:

>150 people per 1,000 = very high, >100 and <150 = high, >20 and <100 = medium, <20 = low

Risk of Mortality from Non-Communicable Diseases:

>1,000 people per 100,000 = very high, >750 and <1,000 = high, >500 and <750 = medium, <500 = low

Risk of Mortality from Injury:

>200 people per 100,000 = very high, >100 and <200 = high, >50 and <100 = medium, <50 = low

Risk of Contracting Digestive Diseases:

>75 people per 100,000 = very high, >50 and <75 = high, >25 and <50 = medium, <25 = low

Risk of Diabetes (mellitus):

>75 people per 100,000 = very high, >50 and <75 = high, >25 and <50 = medium, <25 = low

Risk of Cardiovascular Diseases:

>500 people per 100,000 = very high, >400 and <500 = high, >200 and <400 = medium, <200 = low

Risk of Cerebrovascular Disease:

>150 people per 100,000 = very high, >100 and <150 = high, >50 and <100 = medium, <50 = low

Risk of Neuropsychiatric Conditions:

>50 people per 100,000 = very high, >35 and <50 = high, >25 and <35 = medium, <25 = low

Risk of Malignant Neoplasms:

>150 people per 100,000 = very high, >125 and <150 = high, >100 and <125 = medium, <100 = low

Risk of Respiratory Diseases:

>100 people per 100,000 = very high, >75 and <100 = high, >25 and <75 = medium, <25 = low

Risk of Obesity (BMI \geq 30 kg/m²), Aged 15+, Males:

>50 % = very high, >30 and <50 = high, >15 and <30 = medium, <15 = low

Risk of Obesity (BMI \geq 30 kg/m²), Aged 15+, Females:

>50 % = very high, >20 and <50 = high, >10 and <20 = medium, <10 = low

Risk of Death due to indoor and outdoor air and water pollution:

>4,000 people per million = very high, >2,000 and <4,000 = high, >1,000 and <2,000 = medium, <1,000 = low

Potential for Population to be affected by natural disasters:

>50,000 people per million = very high, >20,000 and <50,000 = high, >2,000 and <20,000 = medium, <2,000 = low

Risk of undernourishment:

The FAO report assigns its own "risk" categories (proportion of the population undernourished in 2005-07): [1] < 5% undernourished, [2] 5-9% undernourished, [3] 10-19% undernourished, [4]

20-34% undernourished and [5] 35% undernourished. Risk of Undernourishment (Characterized based on FAO report):

≥35 = very high, ≥20 and <35 = high, ≥5 and <20 = medium, "-" = low

Indicators included in Social Hotspot Index Methodology for the sub indicator human health issues related to non-communicable diseases and other health risks are:

- Age-standardized mortality rates for non-communicable diseases (per 100 000 population) (weighted 70%)
- Age-standardized mortality rates for injuries (per 100 000 population) (weighted 10%)
- Deaths due to household and ambient air pollution, to exposure to unsafe WASH services and attributed to unintentional poisoning (per 100 000 population) (weighted 20%)

What is new:

All underlying indicators for this sub-category have been updated for the SHDB 2018 version except for estimated obesity rates because the current data (age 18+) differs from what was integrated in the SHDB so far (age 15+) and the following indicators:

- Cardiovascular diseases, Estimated Age Standardized Death Rate (per 100,000)
- Neuropsychiatric conditions, Estimated Age Standardized Death Rate (per 100,000)
- Dengue Fever, Incidence rate of DF cases per 100 000 population (not updated)
- Data related to population affected by natural disasters

Deaths due to indoor and outdoor air and water pollution, per million people was no longer provided by the UNDP and replaced and updated by an indicator combining the mortality rate attributed to household and ambient air pollution, to exposure to unsafe WASH services and attributed to unintentional poisoning (per 100 000 population) provided by the WHO.



HUMAN HEALTH: COMMUNICABLE DISEASES

Overview:

Global health focuses on improving health and achieving equality in health for all people around the world. The SHDB includes the number of cases of communicable and non-communicable diseases as well as countries' mortality rates. The communicable human health impact sub category represents the risks related to the rate of occurrence of infectious diseases such as HIV, malaria, dengue fever, cholera, diphtheria, Japanese encephalitis, leprosy, measles, meningitis, mumps, pertussis, poliomyelitis, rubella and tetanus. The non-communicable disease indicator includes undernourishment, digestive diseases, diabetes, cardiovascular and cerebrovascular diseases, neuropsychiatric conditions, malignant neoplasms, respiratory diseases, obesity, pollution and natural disasters. Together, these two sub-categories provide a comprehensive summary of the current global health status.

Data Collection:

In many countries, statistical and health information systems are weak and data may not be available or of a reliable quality. The data collected for this sub-category comes from reliable sources that have looked closely at the quality of data using statistics to ensure that biases are reduced and accuracy is maximized. This sub-category is made up of many other indicators.

Data was mainly collected from WHO World Health Organization, Global Health Observatory (GHO) data. The GHO data repository is the WHO's main health statistics for its 194 member states. The age-standardized mortality rates are used to look at mortality rates for different

locations without being affected by difference in age distributions. Age-standardized mortality rates adjust for differences in the age distribution of the population and are a weighted average of the age-specific mortality rates per 100 000 people.

The SHDB includes risk levels regarding;

- Age-standardized mortality rates from communicable diseases (per 100 000 population)
- Prevalence of HIV (per 1000 adults 15-49 years) (not updated)
- Prevalence of Tuberculosis (per 100 000 population)

Sources used:

<u>Sources</u>	<u>Full Reference</u>
WHO World Health Statistics, 2018	Global Health Estimates 2016: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2016. Geneva, World Health Organization; 2018 WHO Global Health Observatory (GHO) data. http://www.who.int/gho/en/
World Bank Group	Prevalence of undernourishment (% of population) https://data.worldbank.org/indicator/SN.ITK.DEFC.ZS

Risk level assessment rules:

Human Health Impact (communicable diseases (including infectious and parasitic diseases) sub-category

For the risk and prevalence of communicable diseases:

- Low risk: if the number of cases per million population is 0
- Medium risk: if ≤ 100 per million (0.001%)
- High risk: if > 100 per million (0.001%) and ≤ 1000 per million (0.01%)
- Very high risk: if > 1000 per million.

The following diseases are all characterized in this way:

- Prevalence of HIV (SDG 3.3)
- Incidence or Prevalence of Tuberculosis (SDG 3.3)
- Prevalence of Malaria (SDG 3.3)
- Risk of Dengue Fever

The overall risk of mortality from communicable diseases is determined as follows:

- Low: if ≤ 1000 per million (0.01%),
- Medium; if $\leq 5,000$ per million (0.005%),
- High: if $\leq 10,000$ per million (0.001%),

- Very high: if >10,000 (0.001%).

Indicators included in Social Hotspot Index Methodology for the sub indicator human health issues related to communicable diseases is:

- *Risk of Mortality from Non-Communicable Diseases: (weighted 100%)*

What is new:

Some indicators were based on absolute numbers and not providing insights into the magnitude of the problem and therefore these are no longer available in the SHDB. This has no consequences for the SHI methodology because these indicators were never included in the methodology. These indicators are:

- Cholera number of reported cases
- Diphtheria number of reported cases
- Japanese encephalitis number of reported cases
- Leprosy number of reported cases
- Measles number of reported cases
- Meningitis number of reported cases
- Mumps number of reported cases
- Pertussis number of reported cases (no updates data yet)
- Poliomyelitis number of reported cases (no updates data yet)
- Rubella number of reported cases
- Total tetanus number of reported cases
- And dengue

All other indicators have been updated for the SHDB 2018 version except for:

- Prevalence of HIV (per 1000 adults 15-49 years)



LEGAL SYSTEM

Overview:

There are three major legal systems in the world today - civil law, common law and religious law. Common law, also known as case law, is law developed by judges through decisions of courts and similar tribunals. Civil law is a legal system inspired by Roman law, the primary feature of which is that laws are written into a collection, codified, and not (as in common law) determined by judges. Both common and civil law were considered in this sub category. The Rule of Law indicator used by several sources provides information on the extent to which an independent judiciary exists, including indicators such as the separation of powers and how independent the judiciary is from control of other sources, such as another branch of the government or the military. Law enforcement and the way in which people abide by the rules of society constitute other important indicators that were necessary in evaluating the legal systems in countries.

The World Justice Project, the most representative source for the purposes of this sub category (yet not the most complete with data for only 35 countries) lays out the following principles in their 2009 Rule of Law Index Report:

- The government and its officials and agents are accountable under the law;
- The laws are clear, publicized, stable and fair, and protect fundamental rights, including the security of persons and property;
- The process by which the laws are enacted, administered and enforced is accessible, fair and efficient;

- Competent, independent, and ethical adjudicators, attorneys or representatives provide access to justice, and judicial officers who are of sufficient number, have adequate resources, and reflect the makeup of the communities they serve.

These principles are derived from a wide array of international sources that offer broad acceptance across countries with vastly differing social, cultural, economic, and political systems. The Legal System sub category developed for the SHDB provides an overview of legal systems per country and GTAP regions and aims at characterizing the fragility of the judiciary and legal system on the basis of data from several sources and indicators. Data is not applicable at the sector level for this table.

Data Collection:

The World Bank's "Worldwide governance Indicators for Rule of Law" capture perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence by ranking countries from 1-100. The World Bank Governance Indicators were developed using a vast number of other sources measuring Rule of Law, including the Bertelsmann transformation index, the CIRI human rights database, and the Global integrity index. These three were separated out for this sub category because they were quite representative for this sub category.

The "Rule of law" indicator in the Bertelsmann transformation Index includes separation of powers, independence of judiciary, prosecution of office abuse, and civil rights, ranking the overall independence of countries' judiciary from 1-10. The CIRI human rights data project indicates the extent to which the judiciary is independent of control from other sources, such as another branch of the government or the military. A score of 0 indicates "not independent", a score of 1 indicates "partially independent" and a score of 2 indicates "generally independent". The Global integrity index ranked the indicators of judicial accountability, rule of law and law enforcement from 1-100, where >90% means very strong, >80% means strong, >70% moderate, >60% weak and <60% very weak. A weighted average of the three indicators provides an overview of the legal system of countries.

An additional indicators from the World Justice Project Rule of Law Index rated 15 indicators between 0.00 – 1.00 for 35 countries listed individually and then averaged for a final score to be included in the Overall Characterization, described below.

References:

<u>Sources</u>	<u>Full Citation</u>
World Bank Worldwide Governance Indicators, 2011	World Bank. (2011). <i>Worldwide Governance Indicators</i> . http://info.worldbank.org/governance/wgi/sc_country.asp

Bertelsmann Stiftung, 2012	Bertelsmann Stiftung. (2012). <i>Transformation Index BTI</i> . http://www.bertelsmann-stiftung.de/
CIRI Human Rights Data Project, 2010	The CIRI Human Rights Data Project. (2010). http://ciri.binghamton.edu
Global Integrity Index, 2011	Global Integrity Report. (2011). http://www.globalintegrity.org/report
World Justice Project, 2011	The World Justice Project. (2011). http://www.worldjusticeproject.org

Rules for Characterization:

For the five individual indexes risk levels were determined as Very High (score of 4), High (score of 3), Medium (score of 2), and Low risk (score of 1) as follows:

World Governance Indicators (WGI)

- *Very High: <20%*
- *High: 20-50%*
- *Medium: 50-80%*
- *Low: =>80%.*

Bertelsmann transformational index

Very High: <7

High: 7-8

Medium: 9-10

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Cingranelli-Richards Human Rights Dataset (CIRI)

- *Very High: 0*
- *High: 1*
- *Medium: 2*

Global Integrity Index (GII)

- *Very High: <60%*
- *High: 60-70%*
- *Medium: 70-80%*
- *Low: >80%*

World Justice Project (WJP)

- *Very High: <20%*
- *High: 20-50%*
- *Medium: 50-80%*
- *Low: = >80%*

To develop the final risk level, a weighted average of the individual indexes above was calculated using the scores obtained for each. The Weighted Average of all indicators per source was based on representativeness and completeness resulting in a 30% weight for the World Governance Indicators and 30% for the World Justice Project (WJP), 15% for the Bertelsmann transformational index and 15% for the Global integrity index and 10% for the Cingranelli-Richards human rights dataset, which has a limited ranking of just 0, 1, and 2. The World Governance Indicators and the World Justice Index received the highest weights because of their completeness (# of countries with data) and representativeness (closest to the intentions of this Legal System SHDB sub category), respectively.

The weighted average was then characterized in this manner:

≥3.5	Very High
2.5-3.5	High
1.5-2.5	Medium
<1.5	Low

What is new: -



CORRUPTION

Overview:

Corruption can occur in both the public and private sectors. Forms and definitions of corruption vary, but they typically include bribery, extortion, cronyism, bias, patronage, and embezzlement. Corruption may assist criminal enterprises such as drug trafficking, money laundering, and human trafficking, though is not restricted to these activities. The CPI generally defines corruption as "the misuse of public power for private benefit." Corruption undermines democracy and good governance by breaking or undermining formal processes. In elections and in legislative bodies, corruption reduces accountability and distorts representation in policy; in the judiciary, it compromises the rule of law; and in public administration, it results in unequal access to services. Corruption generates economic distortions in the public sector by redirecting public

investment into capital projects where bribes and kickbacks are more plentiful. It also lowers compliance with construction, environmental, or other regulations, reduces the quality of government services and infrastructure, and increases budgetary pressures on government. In the private sector, corruption increases the cost of business through the price of illegal payments, the management cost of negotiating with corrupt officials, and the risk of being caught.

Data Collection:

To determine the sub-category corruption we use indicators that highlight the public perceptions of corruption within countries, illustrating the impact that corruption has on its citizens, economy, and the nation as a whole. It includes data that indicates the perceived extent to which public power is used for private gain and the degree to which corruption is believed to affect the economic performance of businesses in each country. Several sources are used in order to accurately report on the various aspects of corruption within each country. The control of corruption indicator of the World Bank Governance Indicators, the ranking on irregular payments and bribes included in the World Economic Forum Global Competitiveness Report and the Transparency International Global Corruption Barometer.

The World Bank Worldwide Governance Indicators contain a “corruption Index” which captures the perception to what extent public power is used for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests. The lower the Control of Corruption rank of a country, the higher the corruption risks.

The World Economic Forum’s Global Competitiveness Report measures the factors affecting the economic performance of more than 137 countries, including corruption, access to financing, inefficient government bureaucracy, and tax regulations. Each factor is ranked based upon responses by individuals when asked how common it is to make undocumented extra payments or bribes connected with (a) imports and exports; (b) public utilities; (c) annual tax payments; (d) awarding of public contracts and licenses; (e) obtaining favorable judicial decisions. Countries are ranked from 1-7, with 1 being the most problematic. The findings are based on 15,000 interviews with business leaders. What is new

The final indicators used to determine this sub category were found in the Transparency International’s corruption Perception Index. Since 1995, Transparency International (TI) has published the Corruption Perceptions Index (CPI) annually ranking countries “by their perceived levels of corruption, as determined by expert assessments and business people. “Both the 2014 and 2017 Transparency International Corruption Perception Indexes are used to determine and improvement or decline over those three years.

<u>Sources</u>	<u>Full</u>
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Worldwide Governance Indicators, 2016	World Bank. (2016). <i>Worldwide Governance Indicators</i> . Retrieved from http://info.worldbank.org/governance/wgi/#home
World Economic Forum, 2017-2018	World Economic Forum. (2017-2018). <i>The Global Competitiveness Report 2017–2018</i> . Geneva, Switzerland. Retrieved from http://reports.weforum.org/global-competitiveness-index-2017-2018/competitiveness-rankings/#series=BRIBEID
Transparency International, Corruption perceptions Index 2017	Transparency International. (2017). Retrieved from https://www.transparency.org/news/feature/corruption_perceptions_index_2017?gclid=CjoKCQjwre_XBRDVARIsAPf7zZj5i4N2pFZNk1X61eK62L7sYH-4p8eMoMDyiNycOVJaO8ooUQJdwZgaAvZ8EALw_wcB

Sector data is not available for this sub category, although it is possible that corruption may directly affect a particular sector in a country.

References:

Risk level assessment rules:

To determine the risk levels regarding the sub category corruption, the risk levels for the following four main indicators separately were determined and then averaged for a final overall risk for the country.

For the Worldwide Governance Indicator – corruption control ranking of the World Bank, the risk that a country ranks poorly on their corruption index is determined as follows:

- Very High: > 75
- High: > 50
- Medium: > 25
- Low: <= 25

Based on the WEF survey responses the risk that corruption is a hinder to doing business in a country is determined by a score between 1-7. New Earth B determined the risk levels as follows;

- *Very High:* <=2.4
- *High:* >2.4
- *Medium:* >3.5
- *Low:* >= 5

The Transparency International index ranks 180 countries and territories and uses a scale of 0 to 100, where 0 is highly corrupt and 100 is very clean Risk that a country ranks poorly for corruption perception in 2017 according to Transparency International's survey iVery High: s identified as follows (0-100 is range):

- *Very High:* <=30
- *High:* >30 and <48
- *Medium:* >48 and <67
- *Low:* >67

Risk that corruption is increasing in a country; based on the 3 year trend from 2014-2017 determined by Transparency International is determined as follows:

Characterization Method: If trend ≥ 0 then low, < 0 then medium, < -0.1 then high, ≤ -0.5 then very high

- *Very High:* ≤ -0.5
- *High:* > -0.5 and > -0.1
- *Medium:* > -0.1 and < 0
- *Low:* ≥ 0

Overall Risk of Corruption was determined using an average of the first four indicators where risk values are assigned as: low=1, medium=2, high=3, and very high=4. Based on that average, if average is:

> 2.5 , then "very high", if > 2 , "high", if > 1.5 , "medium", if ≤ 1.5 , "low".

What is new:

@ using the World Economic Forum data; Instead of a percentage of survey respondents that say corruption is the most problematic factor affecting business New Earth B decided to use the indicator on irregular payments and bribes to determine social risks related to corruption. Based on alignment with the former results New Earth B decided to use the following risk levels:

- *Very High:* ≤ 2.4
- *High:* > 2.4
- *Medium:* > 3.5
- *Low:* ≥ 5

@ using the Transparency International data; Instead of ranking the data on a 1-7 scale they started to use a scale of 0 to 100, where 0 is highly corrupt and 100 is very clean. Based on alignment with the former results New Earth B decided to use the following risk levels:

- *Very High:* ≤ 30
- *High:* > 30 and < 48
- *Medium:* > 48 and < 67
- *Low:* > 67



ACCESS TO IMPROVED DRINKING WATER SOURCE

Overview:

Sustainable water resources are essential to human health, environmental sustainability and economic prosperity. Currently more than 2 billion people are affected by water stress. According to the World Health Organization, an improved drinking-water source is one that by the nature of its construction adequately protects the source from outside contamination, in particular from faecal matter. Access to safe drinking water is measured by the percentage of the population using improved drinking-water sources. Drinking water is water used for domestic purposes, drinking, cooking and personal hygiene. Safe drinking water is water considered safe if it meets certain microbiological and chemical standards on drinking water quality. The main indicator for measurement is the proportion of people using “improved” drinking water sources: on premises piped drinking water connections; public standpipe; borehole; protected dug well; protected spring; and rainwater collection. Unimproved drinking water sources include unprotected dug well or spring, surface water (river, dam, lake, pond, stream, canal, irrigation channel), vendor-provided water (cart with small tank/drum, tanker truck), bottled water. SDG 6 is access to safe and affordable drinking water for all in 2030, measuring the proportion of population using “safely managed” drinking water services; an improved water source located on the premises, available when needed and free from contamination. A “basic service” is defined as not being further away than 30 minutes round trip.

In 2015, 71 % of the global population (5.2 billion people) used a **safely managed** drinking water service; that is, one located on premises, available when needed and free from contamination. 89 % (6.5 billion people) used at least a **basic** service; that is, an improved

source within 30 minutes' round trip to collect water. 844 million people still lacked even a **basic** drinking water service.

Data Collection:

Data for access to drinking water came from a single source, the World Health Organization/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene. Sector data is not applicable for this sub category.

Sources used:

Source	Full Citation
World Health Organization and UNICEF, 2017	World Health Organization and UNICEF. (2017). Progress on drinking water, sanitation and hygiene 2017 update and SDG baselines. Retrieved from: http://washdata.org/report/jmp-2017-report-final

Risk level assessment rules:

Similar to the access to the improved sanitation sub category, data from the WHO-UNICEF Report on progress on drinking water, sanitation and hygiene was used to develop risk-level criteria for the access to improved drinking water sub category, as delineated below based on the "basic" level.

	Low	Medium	High	Very High
Rural	>88%	>79	>49	≤49%
Urban	>96%	>88	>83	≤83%
Total	>92%	>89	>61	≤61%

What is new:

The indicator is now based on the new definition of basic drinking water instead of improved access to drinking water. It now includes a requirement that the drinking water should be not further away than 30 minutes round trip.



ACCESS TO IMPROVED SANITATION

Overview:

According to the World Health Organization an improved sanitation facility is one that hygienically separates human excreta from human contact. Many international organizations use hygienic sanitation facilities as a measure for progress in the fight against poverty, disease and death. Access to sanitation is measured by the percentage of the population using improved sanitation facilities. Unimproved sanitation facilities do not ensure a hygienic separation of human excreta from human contact and include pit latrines without slabs or platforms or open pit, hanging latrines, bucket latrines, open defecation in fields, forests, bushes, bodies of water or other open spaces, or disposal of human feces with other forms of solid waste. Shared facilities between two or more households are not considered improved sanitation

Disparities in urban and rural sanitation coverage remain high and the poor are mostly bypassed by improvements in sanitation. In 2016 'basic sanitation service' was introduced covering the use of improved sanitation facilities not shared with other households. Furthermore 'limited sanitation service' refers to improved facilities shared with two or more households. 'Safely managed services' is basic sanitation service where human excreta is safely disposed or transported and treated offsite. The latest update for this indicator dates 2015. In that year, an estimated 4.5 billion people globally have no toilets at home that safely manage excreta. 2.3 billion people around the world or 32% of the world's population, lacked access to an improved sanitation facility. 892 million still defecate in the open, for example in street gutters, behind bushes or into open bodies of water. 600 million share a toilet or latrine with other households. Open defecation is largely a rural phenomenon, most widely practiced in Southern Asian and Sub-Saharan Africa.

Data Collection:

Data for Access to Improved Sanitation comes from a single source, the Joint Monitoring Programme for water supply, sanitation and hygiene a co-production of the World Health Organization and UNICEF. Sector data is not applicable for this sub category.

Sources used:

Source	Full Citation
World Health Organization and UNICEF, 2017	World Health Organization and UNICEF. (2017). Progress on drinking water, sanitation and hygiene 2017 update and SDG baselines. http://washdata.org/report/jmp-2017-report-final

Risk level assessment rules :

Data from the WHO-UNICEF Report on drinking water, sanitation and hygiene was used to develop risk-level criteria for this sub category, as delineated below based on the “basic sanitation service” level.

Level	Urban > (%)	Rural > (%)	Total > (%)
Low	95	93	95
Medium	79	47	75
High	43	23	30
Very High	0	0	0

What is new: updated



CHILDREN OUT OF SCHOOL

Overview:

An approximate measurement of children's likely involvement in work beyond an appropriate family contribution is those children not attending school. Labor often interferes with children's education. Ensuring that all children go to school and that their education is of good quality are keys to preventing child labor. Furthermore, education brings wide-ranging benefits to both individuals and societies. Education is considered so important to individual development that the right to primary education is legally guaranteed in most countries of the world. Moreover, international human rights conventions also recognize the right to education. This right has been established by a succession of UN Conventions, from the Universal Declaration of Human Rights (1948) to the Convention on the Rights of the Child (1989), which acquired the status of international law in 1990. According to Article 28 of the Convention, governments have the responsibility of making primary education compulsory and available free to all.

However, still about 263 million children and youth are out of school including 63 million children of primary school age, 61 million of lower secondary school age and 139 million of upper secondary age (2016). In 2015 the Sustainable Development Goal for quality education was formulated; "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. By 2030 all boys and girls complete free primary and secondary schooling".

Data Collection:

UNESCO Institute of Statistics data is used to determine the risk levels related to this sub category. The sub category provides country level data on the percentage of male and female children of official primary school age who are not attending primary or secondary schooling-

Sources:

<u>Source Citation</u>	<u>Full Citation</u>
UNESCO, 2017	UNESCO. Institute for statistics(2017). https://tellmaps.com/uis/oosc/#!/tellmap/-528275754

Risk assessment rules:

Using a global distribution of data, the risk levels were determined for primary aged children out of school for male, female and total..

Low: <2% of

Medium: 2-5%

High: 5-20%

Very High: >20%

What is new: Updated





HOSPITAL BED ACCESS

Overview:

According to the OECD, total hospital beds are all hospital beds which are regularly maintained and staffed and immediately available for the care of admitted patients. Included are beds in all hospitals, including general hospitals, mental health and substance abuse hospitals and other specialty hospitals, occupied and unoccupied beds. The World Bank defines hospital beds as inpatient beds available in public, private, general, and specialized hospitals and rehabilitation centers. In most cases beds for both acute and chronic care are included.

There is no global norm for the density of hospital beds in relation to total population. In the European Region, there are 63 hospital beds per 10,000 populations compared with 10 per 10,000 in the African Region. Statistics on hospital bed density are generally drawn from routine administrative records but in some settings only public sector beds are included.

Data Collection:

The majority of data collected for the Hospital Bed Access Table came from the 2018 World Development Indicators published by the World Bank. Sector data is not relevant for this table. For countries missing data from the World Bank, other sources were used, listed below.

Sources used:

<u>Sources</u>	<u>Full Citation</u>
World Bank, 2018	2018 World Development Indicators Report, The World Bank https://data.worldbank.org/indicator/SH.MED.BEDS.ZS
CIA World Fact book 2018	Central intelligence agency (CIA). Library The world fact book https://www.cia.gov/library/publications/resources/the-world-factbook/fields/360.html
OECD, 2015	OECD Data Hospital beds https://data.oecd.org/healthqt/hospital-beds.htm

Risk Characterization Rules:

Certain rough criteria have been developed for the general hospital needs of a population in a fairly developed or advanced country. The estimated requirements range from 3 to 6 short-term beds per 1000 people. When total hospital beds (including psychiatric, chronic diseases, tuberculosis, and geriatric beds) are included, the figures range from 11 to 16 per 1000. The minimum technically efficient size for a hospital with the necessary basic services (such as operating rooms, intensive and critical care units, clinical laboratory, radiology services and delivery service) is between 100 and 150 beds. Hospital beds are used to indicate the availability of inpatient services. There is no global norm for the density of hospital beds in relation to total population. In the European Region, there are 63 hospital beds per 10,000 people compared with 10 per 10,000 in the African Region. Statistics on hospital bed density are generally drawn from routine administrative records but in some settings only public sector beds are included.

The risks regarding access to a hospital bed is determined as follows:

- High: <3 beds/1000
- Medium >3-5 beds/1000 and < 5 beds/1000
- Low >5 beds/1000



OLD TEXT NOT YET UPDATED

5. SMALLHOLDER VS. COMMERCIAL FARMS TABLE

Overview:

A smallholder is a farmer who has limited resource endowments compared to other farmers throughout a sector. The standards that qualify a farmer as a smallholder vary between countries and agro-ecological zones. In areas with a high population density and favorable farming conditions, smallholders will usually cultivate less than one hectare (ha) of land, but in dry desert-like locations with sparse populations and unfavorable conditions they may farm up to 10 ha of land or manage 10 head of livestock. There is usually no specific cutoff between what constitutes a smallholder and a commercial farmer. In many developing nations smallholder farmers make up a large number of the holdings and they have increased over the past few years.

It is not only the size of the farm that varies between smallholders but also their resources to food, fuel, chemicals, water, cash crops, livestock, hired labor, and commercial markets. Smallholders are extremely vulnerable to economic and climate disturbances and shocks, as well as policy changes. Smallholder farms should be looked at as a unit within the local economy, community and agricultural environment. Smallholders have been found to contribute significantly to economic growth, poverty reduction and the food security of the local population when presented with initiative from their local governments and communities.

Commercial farms work to obtain maximum profits through economies of scale, specialization, capital intensive farming techniques, and high yields through the use of synthetic and natural resources like fertilizers, hybrid seed and advanced irrigation techniques. Many commercial farms find it more profitable to specialize in one or two crops. There are three types of commercial farms: intensive, extensive, and plantation agriculture. Intensive commercial farms are common in places where high population restricts the amount of farmland and large amounts of labor or capital are focused in these smaller locations to produce high yields. This type of farming is common in India. Extensive commercial farming is where small amounts of labor and capital are focuses onto large areas of land. Most of the labor is mechanized on these farms and the land is typically located far from market places and on less fertile land. Common crops grown on these farms are sugar cane, wheat and rice. Plantation agriculture farms are typical in the tropic regions where crops are grown for foreign consumption and typically not sold for local consumption. One of the problems related to smallholder farms and larger commercial farms is pricing. Many smallholder farms cannot compete with the larger commercial farms in regards to crop processes and are often times priced out of the market. This makes it very difficult for local smallholder farms to make a living.

Data Collection:

The Smallholder vs. Commercial Farms table used two different indicators: size of landholdings by the Food and Agriculture Organization (FAO) and Percentage of Family and Commercial Labor by the International Labor Organization (ILO). FAO provided quantitative data on the hectares of land that are cultivated by a single landholder. The exact threshold for small and large farms varied based on data availability. The values of hectares (ha) vary from country to country due to different census practices. Farms reporting less than 1 ha or less than 2 ha are classified as small. Those farms that are greater than 3 to 5 ha are classified as large or commercial. The Information Brief, "Small Farms: Current Status and Key Trends" prepared by Oksana Nagayets for the Future of Small Farms Research Workshop at Wye College in 2005 and the Eurostat Farm Sample Survey are two additional sources used on this table to fill in data where it was not available.

For the Percentage of Family and Commercial Labor table, the single source of data was ILO Laborsta's Table 1C Economically Active Population by Industry and Status in Employment. Only data from the Agriculture sector was used for this table. The ILO data that is used shows the percent of family and own-account workers per the economically active population versus employee and employer workers (ie., commercial) per the economically active population for these sectors.

Risk Characterization Rules:

Land Holdings Size Table

The percentage of small and large holdings is evenly distributed. The prevalence of small and large holdings is characterized using 5 groups with equal ranges:

- Very High $\geq 80\%$
- High $\geq 60\%$ and $<80\%$
- Medium $\geq 40\%$ and $<60\%$
- Low $\geq 20\%$ and $<40\%$

- Very Low <20%

The characterization of small holding size per agricultural sector was determined using the Small Holding % indicator. The characterization of large holding size per agricultural sector was determined using the Large Holdings % indicator. This data is only relevant for Agricultural sectors.

Family v. Commercial Labor ILO Table

The percentage of family and commercial labor is evenly distributed. The percentage of family and commercial labor is characterized using 5 groups with equal ranges:

- Very High $\geq 80\%$
- High $\geq 60\%$ and $<80\%$
- Medium $\geq 40\%$ and $<60\%$
- Low $\geq 20\%$ and $<40\%$
- Very Low $<20\%$

The characterization of family labor per agricultural sector was determined using Family Labor indicator. The characterization of commercial labor per agricultural sector was determined using Commercial Labor indicator. This data is only relevant for Agricultural sectors.

References:

<u>Indicator</u>	<u>Source Citation</u>	<u>Full Citation</u>
Family v. Commercial Labor	ILO Laborsta, 2011	ILO Laborsta. (2011). Economically Active Population by Industry and Status in Employment - Table 1C. Retrieved from: http://laborsta.ilo.org/data_topic_E.html
Size of Landholdings	FAO, 2000	FAO. (2010). World Census of Agriculture. Retrieved from: http://www.fao.org/docrep/013/i1595e/i1595e00.ht
	Nagayets, O., 2005	Nagayets, O. (2005). Small Farms: Current Status and Key Trends. Retrieved from: http://www.ifpri.org/publication/future-small-farms
	Eurostat, 2011	Eurostat (2011). Retrieved from: http://epp.eurostat.ec.europa.eu/portal/page/portal/agriculture/data/database

