

Supplementary Materials

S1. Detailed Methods

This Supplementary Material section describes the detailed methodology for the analysis of social burdens embodied in trade and footprint calculations. This section is divided in two sections. This section presents the model used, the undesired labor conditions (or “bad labor”) indicators and data sources, and trade-linking of social burdens to sectors and regions in the model.

S.1.1. Model and Data

Social impacts embodied in consumption were calculated using EXIOBASE (version 2), a fully integrated multi-regional input-output (MRIO) database developed in the European Union (EU)-funded project EXIOPOL [1], and recently updated in the also EU-funded project CREEA [2].

The model represents the world economy for 2007, and comprises 163 industries and 200 products traded in and between 43 countries and 5 broad Rest of the world (RoW) regions (EU-27 plus 16 countries: Norway, Switzerland, United States, Canada, Australia, Japan, South Korea, Taiwan, Turkey, Russia, Mexico, Brazil, South Africa, China, Indonesia, and India, and RoW regions Asia and the Pacific, Latin America and the Caribbean, Africa, Middle East, and Other Europe). Monetary data sources and trade flows were mainly obtained by national accounts and SUTs and IOTs for each country.

Primary sources for labor inputs were national labor force surveys, gathered from the International Labour Organization (ILO) LABORSTA Database [3], and a combination of labor force and industrial surveys in national accounts, obtained from the Organisation for Economic Co-operation and Development (OECD)’s STAN Database [4]. Labor data from ILO consist of 39 economic sectors, whereas STAN’s data cover up to 60 industries, which provide better allocation to economic output in the MRIO sectors. Labor inputs were disaggregated from broad economic sectors into industries in the MRIO according to the compensation of employees from the model. The disaggregation was made under the assumption that, inside a broad economic sector industry, average wages and hours worked would be similar between all workers.

We used the industry model for this study. Although the use of the product model delivers lower uncertainty in trade flows, the industry model delivers lower uncertainty to the industry allocation of employment data.

S1.1.1. Bad Labor Indicators

We calculated bad labor conditions embodied in consumption, what we called “Bad Labor Footprint”. It accounts for all undesirable labor conditions embodied in the production of goods and services. Undesirable labor conditions—bad labor—indicators assessed in the current study are occupational health, vulnerable employment, gender inequality, predominance of low-skilled labor, child labor, and forced labor. Footprints for each of the bad labor conditions were calculated through the Equation (1) below.

$$BLF^r = BL_i \text{diag}(L \times y^r) \quad (1)$$

where:

BLF^r = Bad Labor Footprint of region r .

BL = vector containing direct coefficients of bad labor indicator per unit of output for each industry and region.

L = Leontief inverse matrix, which reflects the relation between production and output of each industry, and allows the estimate of direct plus indirect input requirements from each sector to produce each unit of final demand.

y^r = total consumption of a region, which is domestic production to domestic final demand and imports from every other region to both final demand and interindustry of region r .

All bad labor conditions indicators were linked to total employment embodied in trade. The underlying assumption is that bad labor conditions are equally spread among domestic- and exports-oriented industries. The results presented account for both intra- and inter-regional trade. Goods and services produced and consumed inside a same country or traded between countries in the same region (for example, from the United States to Canada) are considered intra-region trade. Alternatively, traded products between countries in different regions account for inter-region flows. All footprints were calculated for the full MRIO model, detailed in 163 sectors and 48 regions. Results were then re-aggregated into seven regions and eight consumption categories. The regions of the study and the consumption categories are presented in Table S.1.1. The trade-linking and allocation methods are explained in Section S.1.2.2.

Table S.1.1. Regions and consumption categories in the study.

Region		Consumption Category	
1	Africa	1	Food
2	Middle East	2	Clothing
3	North America	3	Shelter
4	Latin America	4	Construction
5	Asia and Pacific	5	Manufactured products
6	Europe OECD	6	Mobility
7	Other Europe	7	Services
		8	Trade

(a) Occupational Health Damage

In order to facilitate a comparative risk assessment between economic sectors, the burden of disease per sector output was estimated. The burden of disease with regard to population health can be quantified with various measures, e.g., years of life lost (YLL), years of life live disabled (YLD), quality-adjusted life years (QALY), disability-adjusted life expectancy (DALE), healthy life years, and disability-adjusted life years (DALY) [5–8]. Here, we used DALY, which is the most commonly used. DALY measures the gap between the current situation and an ideal situation in which everyone lives up to the standard life expectancy in perfect health. It is one measure combining the time lived with disabilities (YLD) and the time lost due to premature mortality (YLL). DALYs are a function of the value of time lived at different ages, the severity of morbidity, and a discount rate for years of health benefit. We followed the methodology of the World Health Organization (WHO), as described in detail by Nelson *et al.* [9]. We refer to a paper by Murray [10] for the technical basis of the DALY. The year 2000 was taken as a reference, since up to 2000 the most detailed statistics have been reported [11–13]. For the Global

Burden of Disease 2000 study, the WHO applied the default 3% time discount rate to years of life lost in the future, and non-uniform age weighting [9,10]. The latter means that they valued a year of life in young adulthood more than a year in old age or infancy.

We focused on seven types of health risks: (1) cancer of the trachea, bronchus or lung (from now on referred to as lung cancer); (2) leukemia; (3) asthma; (4) chronic obstructive pulmonary disease (COPD); (5) noise-induced hearing loss (NHL); (6) low back pain (LBP); and (7) occupational injuries.

The consequences of occupational exposure within an economic sector for the population health were quantified in attributable fractions (AF). These express the fraction of the morbidity and/or mortality of a disease that can be attributed to a specific risk factor, for example, occupational exposure within an economic sector (Equation (2)).

$$AF = \frac{\sum_{i=0}^k f_i (RR_i - 1)}{\sum_{i=0}^k f_i (RR_i - 1) + 1} \quad (2)$$

where:

f_i = the proportion of a population exposed to the risk factor at k levels of exposure

RR_i = the relative risk of morbidity and/or mortality from a specific adverse health effect due to that exposure.

The AFs per economic sector were used to distribute the region-specific DALYs reported by the WHO over the economic sectors (Equation (3)):

$$DALY_{s_{occ,s}} = \frac{AF_{occ,s}}{\sum_{s=1}^n AF_{occ,s}} \times DALY_{s_{occ,tot}} \quad (3)$$

where:

$AF_{occ,s}$ = the attributable fraction of occupational exposure for a specific disease in economic sector s .

$DALY_{s_{occ,s}}$ = the number of DALYs for a specific disease attributable to occupational exposure in economic sector s

$DALY_{s_{occ,tot}}$ = the total number of DALYs for a specific disease attributable to occupational exposure.

n = the number of sectors.

The World Health Organization (WHO) distinguishes 14 regions based on the basis of levels of child mortality under 5 years of age and 15–59-year-old male mortality [9]. The 14 WHO regions were aggregated into 7 regions used in this study (Table S.1.2):

Table S.1.2. Correspondence between regions in the WHO data [9] and regions in the current study.

	Study Region	WHO Regions
1	Africa	AFR-D, AFR-E
2	Middle East	EMR-B, EMR-D
3	North America	AMR-A
4	Latin America	AMR-B, AMR-D
5	Asia and Pacific	SEAR-B, SEAR-D, WPRO-A, WPRO-B
6	Europe OECD	EUR-A
7	Other Europe	EUR-B, EUR-C

Disease burdens associated with work were allocated to employment inputs to each of the 163 sectors in the MRIO model sector, explained in detail in Section A.2.2. Occupational health burdens were calculated as rates of DALYs per thousand employees in each of the regions for 2000, and applied to the number of employees in the MRIO model for 2007. We assumed no change in DALYs rates per person between 2000 and 2007. For all diseases, we distributed DALYs per disease per region provided by Concha-Barrientos *et al.* [11] by using the calculated AF as weighting factor. The assumptions for calculating the AF for each of the specific diseases are presented below. Table A.4, at the end of this methods section, summarizes these assumptions.

- *Lung Cancer and Leukemia*

Concha-Barrientos *et al.* [11] provide the mean proportions of workers exposed to selected carcinogens, by economic sector and subsector, in the European Union, and assumed that the proportion of workers exposed to a particular carcinogen in a specific economic subsector was constant throughout the world. We used the same data to calculate the proportions of the population exposed to selected carcinogens, per economic sector. We take into account the occupational turnover and exposure level. We used exposure level-specific RR to calculate the attributable fraction. Partitioning into low or high exposure depends on the region. For developed regions (*i.e.*, A-regions), 10% of the exposed workers have low exposures (at or below the permissible exposure limit—PEL), and 90% of the exposed workers have high exposures (above the PEL). For developing regions (B-, C-, D-, and E-regions), 50% of the exposed workers have low exposures, whereas 50% of the exposed workers have high exposures. For regions composed of multiple WHO-regions, we used the weighted average.

- *Chronic Obstructive Pulmonary Disease (COPD)*

Concha-Barrientos *et al.* [11] provide the proportion of the population exposed to agents causing COPD, by sub-region, sex, and level of exposure (background, low, or high). We use exposure level-specific RR to estimate the AF:

- I. Background exposure: people not in the workforce and workers in utility, trade, finance, and services;
- II. Low exposure: workers in agriculture, manufacturing, and transportation;
- III. High exposure: workers in mining and construction activities.

The RR also differs between developed and developing regions. For developed regions (A), RR is on average 1.3 for the low exposure group (average between men, 1.4, and women, 1.2), and 1.6 for the high-exposure one (1.8 for men and 1.4 for women). For developing regions (B-E), RR is on average 1.15 for the low exposure group (1.2 for men and 1.1 for women), and 1.6 for the high exposure one (1.8 for men and 1.4 for women). For regions composed of multiple WHO-regions, we used the weighted average.

- *Asthma*

Regarding asthma, the WHO considers more important WHAT people do (*i.e.*, occupational category) than WHERE they perform their activities (*i.e.*, economic sector). The RRs are based, therefore, on occupational categories. We suppose that the majority of workers in a particular economic sector work in similar occupation categories, and we base the calculations on the assumption that all workers in

the same economic sectors perform the same type of job (*i.e.*, are in the same occupational category). See Table A.4 below for more details. As occupational category can be a proxy for exposure to asthmagens, we applied occupational category-specific RR to estimate the AF.

- *Noise-Induced Hearing Loss (NHL)*

For NHL, the WHO also considers more important WHAT people do than WHERE they perform their activities. We therefore use the same assumptions as in the asthma case. We applied occupational category-specific prevalence data (see Table S.1.3) to calculate the proportion of workers exposed for each exposure level (85–90 dBa, and higher than 90 dBa). The prevalence of noise exposure in occupational categories differs between developed (A) and developing (B–E) regions. Small differences can be found in occupational categories “agriculture”, “mining”, and “manufacturing”. For regions composed of multiple WHO-regions, we used the weighted average.

The RR was applied to estimate the AF. Whilst relative risks for noise differ between age groups, we used an average RR for workers aged 15–69 years, covered by labor force surveys. For exposure level of 85–90 dBa, average RR used was of 1.9, and for levels higher than 90 dBa, average RR was 5.1.

- *Low Back Pain (LBP)*

For LBP, the WHO also considers more important WHAT people do than WHERE they perform their activities. We therefore use the same assumptions as in the previous two cases. We applied occupational category-specific RR to estimate the AF (see Table S.1.3).

- *Injuries*

The global burden due to occupational injuries was difficult to quantify due to the limited availability of data. We used injury incidence rates per economic sector from the EU-15 [12], and worked under the assumption that the proportion of workers getting involved in an accident in a specific economic sector was constant throughout the regions. For mining and services, no incidence values are available. For all mining sectors same incident rate as for manufacturing were applied. For services, we applied the same incidence rate as for trade. Incidence rates for more than three days of absence and fatal injuries were summed to estimate the total proportion of workers being injured per economic sector.

Concha-Barrientos *et al.* [13] provide AFs for all WHO regions for occupational injuries. We used the proportion of workers with injuries per economic sector as a weighting factor to distribute the AFs over the economic sectors in the model. For regions composed of multiple WHO-regions, we used the average AF.

Table S.1.3. Assumptions for DALYs calculations.

Economic Sector	Lung Cancer and Leukemia	COPD	Asthma	Noise-Induced Hearing Loss	Low Back Pain	Injuries
	Exposure Based on WHO Economic Sector	RR Based on WHO Exposure Level	RR Based on WHO Occupational Category	Prevalence of Noise Exposure Based on WHO Occupational Category	RR Based on WHO Occupational Category	RR Based on EU-15 Economic Sector
1 Agriculture, Hunting and Forestry	Agriculture	Low	Agriculture	Agriculture	Agriculture	Agriculture
2 Fishing, operating of fish hatcheries and fish farms; service activities incidental to fishing	Agriculture	Low	Agriculture	Agriculture	Agriculture	Agriculture
3 Mining and Quarrying	Mining	High	Mining	Production	Service and production workers	Manufacturing
4 Manufacture of Food Products and Beverages	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of food products; beverages and tobacco
5 Manufacture of Tobacco Products	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of food products; beverages and tobacco
6 Manufacture of Textiles	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of textiles and textile products
7 Manufacture of Wearing Apparel; Dressing and Dyeing of Fur	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of textiles and textile products
8 Tanning and Dressing of Leather; Manufacture of Luggage, Handbags, Saddlery, Harness and Footwear	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of leather and leather products
9 Manufacture of Wood and Products of Wood and Cork, except Furniture; Manufacture of articles of Straw and Plaiting Materials	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of wood and wood products
10 Manufacture of Paper and Paper Products	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of pulp, paper and paper products; publishing and printing
11 Publishing, Printing and Reproduction of Recorded Media	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of pulp, paper and paper products; publishing and printing
12 Manufacture of Coke, Refined Petroleum Products and Nuclear Fuel	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of coke, refined petroleum products and nuclear fuel
13 Manufacture of Chemicals and Chemical Products	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of chemicals, chemical products and man-made fibers

Table S.1.3. Cont.

Economic Sector	Lung Cancer and Leukemia	COPD	Asthma	Noise-Induced Hearing Loss	Low Back Pain	Injuries
	Exposure Based on WHO Economic Sector	RR Based on WHO Exposure Level	RR Based on WHO Occupational Category	Prevalence of Noise Exposure Based on WHO Occupational Category	RR Based on WHO Occupational Category	RR Based on EU-15 Economic Sector
14 Manufacture of Rubber and Plastic Products	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of rubber and plastic products
15 Manufacture of Other Non-Metallic Mineral Products	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of other non-metallic mineral products
16 Manufacture of Basic Metals	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of basic metals and fabricated metal products
17 Manufacture of Fabricated Metal Products, except Machinery and Equipment	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of basic metals and fabricated metal products
18 Manufacture of Machinery and Equipment <i>n.e.c.</i>	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of machinery and equipment <i>n.e.c.</i>
19 Manufacture of Office, Accounting and Computing Machinery	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of electrical and optical equipment
20 Manufacture of Electrical Machinery and Apparatus <i>n.e.c.</i>	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of electrical and optical equipment
21 Manufacture of Radio, Television and Communication Equipment and Apparatus	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of electrical and optical equipment
22 Manufacture of Medical, Precision and Optical Instruments, Watches and Clocks	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of electrical and optical equipment
23 Manufacture of Motor Vehicles, Trailers and Semi-Trailers	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of transport equipment
24 Manufacture of other Transport Equipment	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacture of transport equipment
25 Manufacture of Furniture; Manufacturing <i>n.e.c.</i>	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacturing <i>n.e.c.</i>
26 Recycling	Manufacturing	Low	Manufacturing	Production	Service and production workers	Manufacturing <i>n.e.c.</i>

Table S.1.3. Cont.

		Lung Cancer and Leukemia	COPD	Asthma	Noise-Induced Hearing Loss	Low Back Pain	Injuries
		Exposure Based on WHO Economic Sector	RR Based on WHO Exposure Level	RR Based on WHO Occupational Category	Prevalence of Noise Exposure Based on WHO Occupational Category	RR Based on WHO Occupational Category	RR Based on EU-15 Economic Sector
27	Electricity, Gas and Water Supply	Electrical	Background	Electricity	Professional and technical workers	Service and production workers	Electricity, gas, steam and hot water supply
28	Construction	Construction	High	Construction	Professional and technical workers	Service and production workers	Construction
29	Wholesale and Retail Trade; Repair of Motor Vehicles, Motorcycles and Personal and Household Goods	Trade	Background	Trade	Sales	Clerical or sales workers	Wholesale and retail repairs
30	Hotels and Restaurants	Trade	Background	Trade	Sales	Clerical or sales workers	Hotels and restaurants
31	Transport, Storage and Communications	Transport	Low	Transport	Clerical workers	Clerical or sales workers	Transport, storage and communication
32	Financial Intermediation	Finance	Background	Finance	Administration	Managers and professionals	Financial intermediation; real estate, renting and business activities
33	Real Estate, Renting and Business Activities	Finance	Background	Finance	Administration	Managers and professionals	Financial intermediation; real estate, renting and business activities
34	Public Administration and Defense; Compulsory Social Security	Services	Background	Services	Service workers	Service and production workers	Wholesale and retail repairs/Hotels and restaurants
35	Education	Services	Background	Services	Service workers	Service and production workers	Wholesale and retail repairs/Hotels and restaurants
36	Health and Social Work	Services	Background	Services	Service workers	Service and production workers	Wholesale and retail repairs/Hotels and restaurants
37	Other Community, Social and Personal Service Activities	Services	Background	Services	Service workers	Service and production workers	Wholesale and retail repairs/Hotels and restaurants
38	Private Households with Employed Persons	Services	Background	Services	Service workers	Service and production workers	Wholesale and retail repairs/Hotels and restaurants
39	Extra-Territorial Organizations and Bodies	Services	Background	Services	Service workers	Service and production workers	Wholesale and retail repairs/Hotels and restaurants

(b) Vulnerable Employment

In several developing countries, over half of the workforce is employed in conditions of vulnerability, without proper coverage of labor regulations and guarantees. Guaranteeing decent work conditions for all, including women and young people, is at the core of poverty-reducing goals in the United Nations Millennium Development Goals. We use ILO's definition of vulnerable employment, which comprises unpaid contributing family workers and own-account workers [14]. We assume that most of workers that are not in formal paid employment, that is, are not classified as paid employees, are potentially in a vulnerable employment condition, especially those in developing countries. The ILO [3] and the OECD [4] provide sector-level data on both employment and paid employees for all countries in the study. For the Rest of the World regions, we adopted a weighted average ratio of paid employees per total employment for countries in the region for three broad sectors: agriculture, industry, and services.

(c) Gender Equality

Along with poverty eradication through decent labor conditions, gender equality and women empowerment stand as a United Nations Millennium Development Goal. Employment gap between men and women is higher in developing countries, and is an indication of limited opportunities to women in labor force. In 2007, only 49.1 per cent of women in working age were employed, against 74.3 per cent of men [15]. For the gender equality indicator, we consider the share of women in the labor market, compared to total employment. We calculate the share of female workers in each sector. The ILO [3] provide sector-level data on male and female employment for all countries in the study. For the Rest of the World regions, we adopted a weighted average distribution of men and women in total employment for countries in the region for three broad sectors: agriculture, industry, and services.

(d) Low-Skilled Labor

Besides acting as a proxy to both educational attainment of the population and value added in production in a region, the share of low-skilled workers can also reflect the vulnerability of a sector to rapid changes in the economy. That is due to the lower diversity of knowledge and skills of low-skilled workers, who would be most affected to production offshoring to lower labor cost regions. We also consider that low-skilled labor has the potential to concentrate informal and vulnerable employment, and also most of the working poverty. We therefore assume that the worst labor conditions, such as forced and child labor, would happen primarily in low-skilled positions.

Labor inputs in the MRIO model are divided for gender and skill types. We use three skill types (low-, medium-, and high-skilled), based on occupations and educational attainment levels, as presented in Table S.1.4. For occupations, we use the definition from the *International Standard Classification of Occupations* [16] and, for educational attainment, the *International Standard Classification of Education* [17]. The ILO [3] provide sector-level data on occupations for all countries in the study. For the Rest of the World regions, we adopted a weighted average distribution of skill levels in total employment for countries in the region for three broad sectors: agriculture, industry, and services.

Table S.1.4. Correlation between skill types, occupations, and educational attainment levels.

Skill Type	Occupations ^a	Educational Attainment Levels ^b
Low-skilled	9 Elementary occupations	0 Less than primary education
		1 Primary education
		2 Lower secondary education
Medium-skilled	4 Clerical support workers 5 Services and sales workers 6 Skilled agricultural, forestry and fishery workers 7 Craft and related trades workers 8 Plant and machine operators, and assemblers	3 Upper secondary education
		4 Post-secondary non-tertiary education
		5 Short-cycle tertiary education
		6 Bachelor's or equivalent level
		7 Master's or equivalent level
High-skilled	1 Managers 2 Professionals 3 Technicians and associate professionals	8 Doctoral or equivalent level

^a ISCO—2008 [16]; ^b ISCED—2011 [17].

(e) Child and Forced Labor

Three types of labor were calculated for as indicators for the worst labor conditions: child labor, children in hazardous labor, and forced labor. The following definitions used for each type of labor were given by the ILO [18,19] and the U.S. Department of Labor [20]:

- *Child labor*: is a part of children in employment, and it refers to work done by children who are younger than the designated minimum age—usually 13 for light work and 15 for ordinary work. It also includes all children under 18 involved in the worst forms of child labor: (a) all forms of slavery or practices similar to slavery, such as the sale or trafficking of children, debt bondage and serfdom, or forced or compulsory labor, including forced or compulsory recruitment of children for use in armed conflict; (b) the use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic purposes; (c) the use, procuring or offering of a child for illicit activities in particular for the production and trafficking of drugs; and (d) hazardous work.
- *Children in hazardous labor*: Is often treated as a proxy category of the worst forms of child labor. It includes any activity or occupation that, by its nature or type, has or leads to adverse effects on the child's safety, health, and moral development: (a) work that exposes children to physical, emotional or sexual abuse; (b) work underground, under water, at dangerous heights or in confined spaces; (c) work with dangerous machinery, equipment and tools, or that involves the manual handling or transport of heavy loads; (d) work in unhealthy environment, which may, for example, expose children to hazardous substances, agents of processes or to temperatures, noise levels, or vibrations damaging their health; and (e) work under particularly difficult conditions such as work for long hours or during the night, or work that does not allow for the possibility of returning home each day.
- *Forced labor*: all work or service which is obtained from any person under the menace of any penalty for its nonperformance and for which the worker does not offer himself voluntarily, and includes debt bondage. It involves work provided or obtained by force, fraud or coercion,

including: (a) by threats of serious harm to, or physical restraint against any person; (b) by means of any scheme, plan or pattern intended to cause the person to believe that, if the person did not perform such labor or services, that person or another person would suffer serious harm or physical restraint; or (c) by means of the abuse or threatened abuse of law or the legal process. We only account for forced labor exploitation in economic activities by individuals or enterprises, and exclude sexual exploitation and state-imposed forms of forced labor (e.g., forced prison work or work imposed by the state military or by rebel armed forces).

Data on number of persons involved and distribution of these labor types were collected from ILO [19,21]. Data was available for total number of workers involved, general sectorial disaggregation, and regional distribution. Data was disaggregated from ILO regions (Table S.1.5) into the study regions and sectors. We stress that those three forms of worst labor conditions are not exclusive. Some child labor—especially the hazardous type—can also be contained in forced labor, and *vice versa*.

Table S.1.5. Correspondence of regions in ILO statistics and in the study.

ILO Regions—Forced Labor	ILO Regions—Child Labor	Study Regions
Asia and Pacific	Asia and Pacific	Asia and the Pacific
Latin America and the Caribbean	Latin America and the Caribbean	Latin America and the Caribbean
Africa	Sub-Saharan Africa	Africa
Middle East		Middle East
Central and South-Eastern Europe (non-EU) and CIS	Other regions	Other Europe
Developed economies and the EU		Europe OECD
		North America

S.1.1.2. Allocation and Trade-Linking

All the data collected was, when necessary, disaggregated into the full MRIO detail in order to perform the modeling. The footprints were calculated with the disaggregated EXIOBASE model. Results were then re-aggregated into the seven regions and eight consumption categories of the study.

The first round of allocation was for the disaggregation from original data into 163 economic sectors in the MRIO inside the original data regions, and then into the study regions. The allocation in the sectors was done based on total employment, in the case of occupational health, and on low-skilled labor, in the case of child and forced labor (Equation (4)). Indicators were then disaggregated into the MRIO regions according to share of total employment/low-skilled employment in each country relative to the original data region (Equation (5)). Low-skilled labor, women share in labor, and vulnerable employment weren't allocated in the first round, since they were already collected in the same classification as the MRIO original sectors and regions.

$$BL_i^{r*} = BL_{i*}^{r*} \times \frac{L_i^{r*}}{\sum_{i*} L_i^{r*}} \quad (4)$$

$$BL_i^r = BL_{i*}^{r*} \times \frac{L_i^r}{\sum_{r*} L_i^r} \quad (5)$$

where:

r^* = Original data region

i^* = Original data aggregated sectorial classification

i = MRIO disaggregated sectorial classification

$BL_i^{r^*}$ = Bad labor in region r^* and sector i

$BL_i^{r^*}$ = Bad labor in region r^* and sector i^*

BL_i^r = Bad labor in region r and sector i

$L_i^{r^*}$ = Total employment (or low-skilled labor) in region r^* and sector i

L_i^r = Total employment (or low-skilled labor) in region r and sector i

After calculating the footprints using Equation (1), results were then aggregated into the regions in the study (r^+) (Equation (6)):

$$BL_i^{r^+} = \sum_{r^+} BL_i^r \tag{6}$$

S.2. Results

This section presents figures and information to complement the analysis of the manuscript.

Figures S.2.1 to S.2.7 show the share of each consumption category to total labor and to bad labor footprints for each of the regions assessed.

Figure S.2.1. Contribution of each consumption category to total and to bad labor footprints in Africa. Dark bars represent contributions of more than 10%.

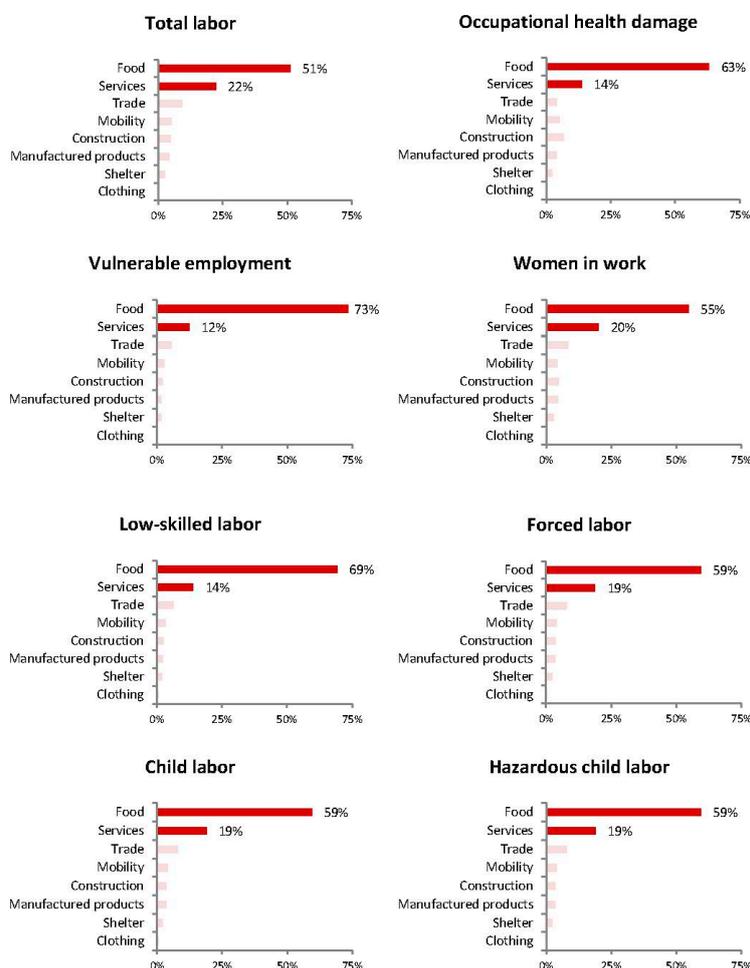


Figure S.2.4. Contribution of each consumption category to total and to bad labor footprints in non-OECD Europe. Dark bars represent contributions of more than 10%.

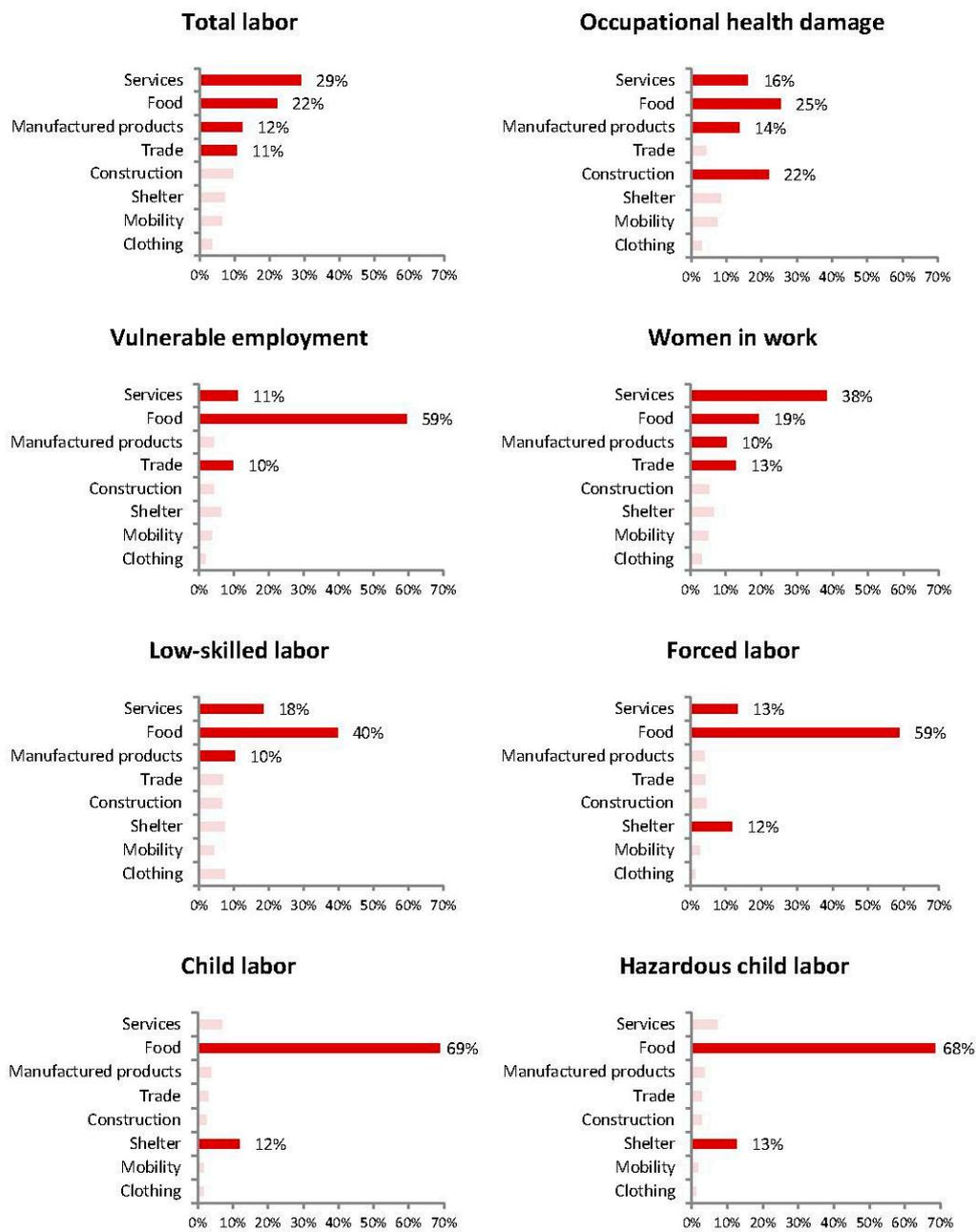


Figure S.2.6. Contribution of each consumption category to total and to bad labor footprints in North America. Dark bars represent contributions of more than 10%.

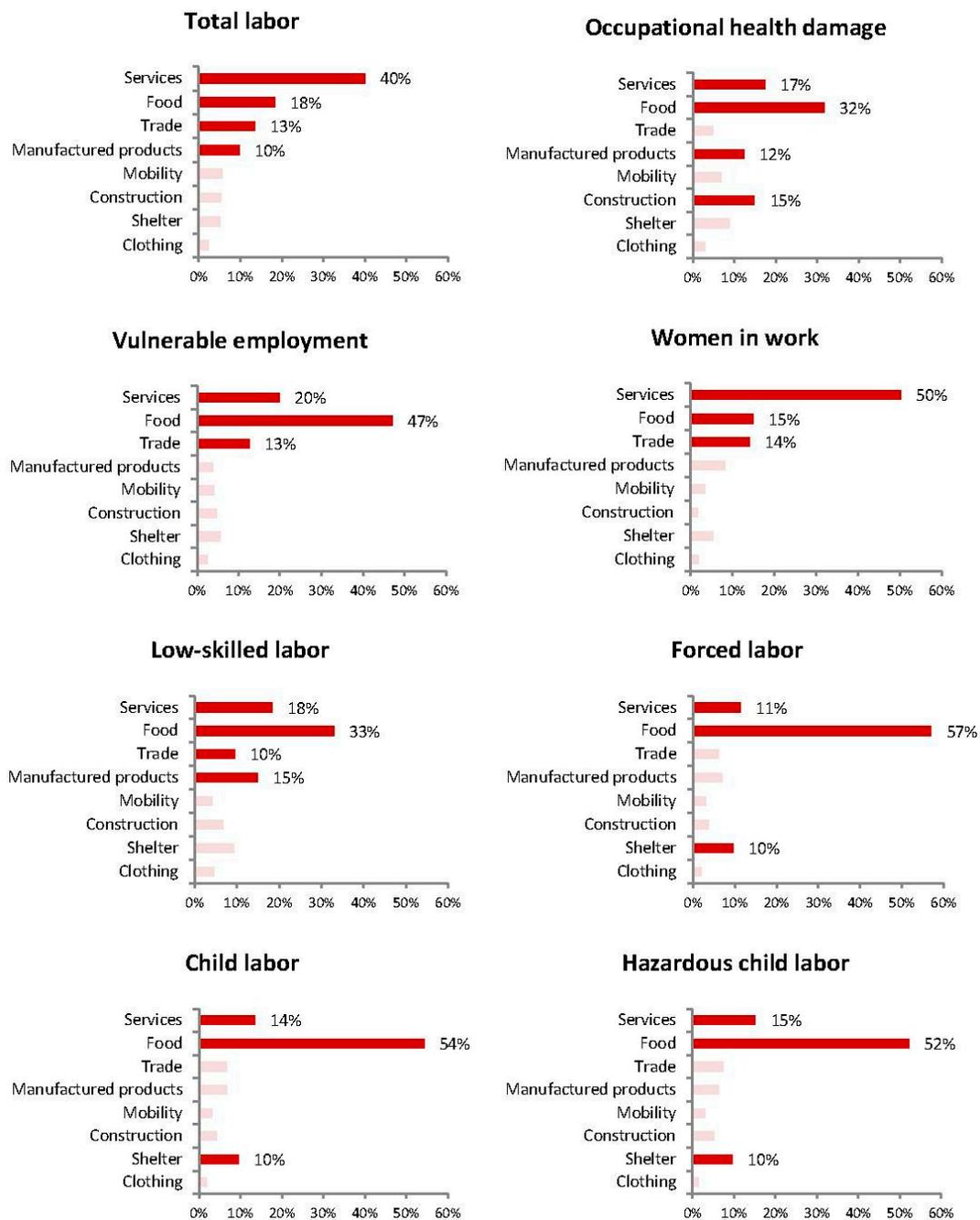
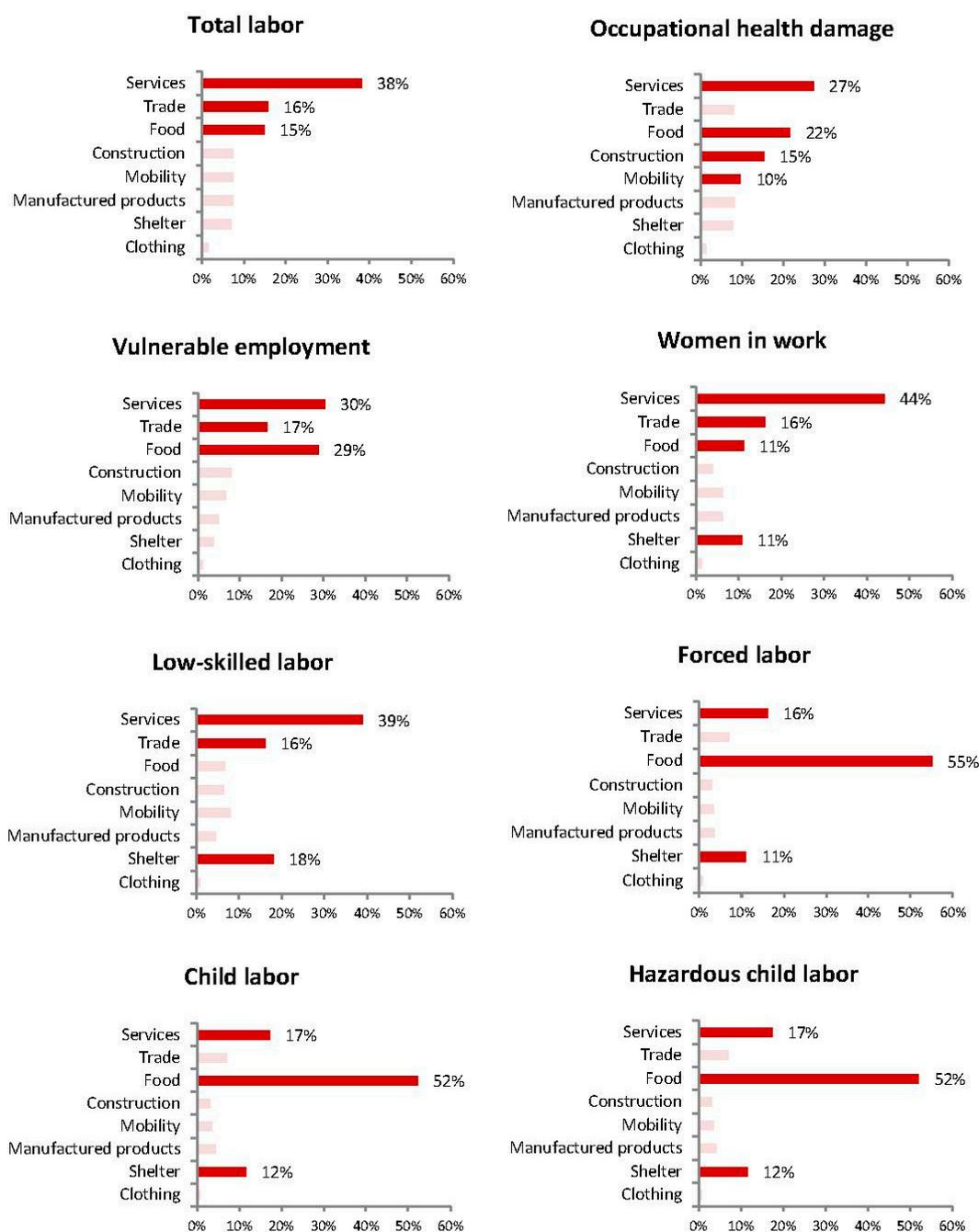


Figure S.2.7. Contribution of each consumption category to total and to bad labor footprints in Latin America and the Caribbean. Dark bars represent contributions of more than 10%.



Tables S.2.1 and S.2.2 rank the bad labor footprints for regions and consumption categories for absolute footprints and for relative footprints (per 1000 p-yeq), respectively.

Table S.2.3 show gross flows of bad labor embodied in traded products between regions.

Table S.2.1. Absolute footprints for each sector and region ranked from higher to lower.

	Total Employment			Vulnerable Employment			Low-Skilled Labor			Occupational Health			Child Labor			Hazardous Child Labor			Forced Labor		
	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value
1	AP	Food	649,667	AP	Food	298,121	AP	Food	448,848	AP	Food	6441	AP	Food	60,095	AP	Food	26,029	AP	Food	4206
2	AP	Serv	393,853	Af	Food	109,352	AP	Serv	72,596	AP	Cons	3400	Af	Food	25,574	Af	Food	15,216	EU	Food	1276
3	AP	Trade	161,805	AP	Serv	79,946	AP	Cons	66,315	Af	Food	2409	EU	Food	18,213	EU	Food	11,542	Af	Food	996
4	NA	Serv	136,175	EU	Food	77,790	AP	Shelt	55,813	AP	Serv	1761	AP	Serv	9185	Af	Serv	4844	AP	Serv	667
5	EU	Serv	133,640	AP	Trade	63,862	Af	Food	52,695	EU	Food	1503	Af	Serv	8136	NA	Food	4315	AP	Cons	566
6	Af	Food	133,508	AP	Shelt	39,063	EU	Food	49,703	AP	Shelt	1215	AP	Cons	7845	OE	Food	4080	OE	Food	527
7	EU	Food	124,396	NA	Food	36,416	AP	Man	47,195	AP	Man	977	AP	Shelt	7268	AP	Serv	3943	NA	Food	514
8	AP	Shelt	115,829	AP	Mob	25,053	AP	Trade	37,913	AP	Mob	877	NA	Food	7133	AP	Cons	3342	AP	Shelt	509
9	AP	Cons	114,089	LA	Serv	19,454	AP	Mob	26,586	NA	Food	680	OE	Food	5520	LA	Food	3312	LA	Food	401
10	AP	Man	93,697	EU	Serv	19,131	NA	Food	22,905	AP	Trade	546	LA	Food	5028	AP	Shelt	3249	AP	Trade	356
11	AP	Mob	89,781	Af	Serv	18,570	EU	Serv	16,260	Af	Serv	526	AP	Trade	4943	AP	Trade	2146	Af	Serv	316
12	LA	Serv	74,029	LA	Food	18,493	LA	Serv	14,389	EU	Cons	467	Af	Trade	3431	Af	Trade	2041	AP	Mob	237
13	NA	Food	62,764	OE	Food	16,476	AP	Cloth	13,511	LA	Serv	436	AP	Mob	3322	ME	Food	1606	AP	Man	219
14	Af	Serv	58,438	NA	Serv	15,385	NA	Serv	12,704	EU	Serv	434	AP	Man	2933	EU	Shelt	1550	ME	Food	195
15	EU	Trade	49,009	AP	Cons	14,980	EU	Man	11,379	OE	Food	389	EU	Shelt	2461	EU	Serv	1529	EU	Shelt	153
16	NA	Trade	45,953	EU	Trade	12,639	Af	Serv	10,596	EU	Shelt	378	EU	Serv	2183	AP	Mob	1436	EU	Serv	148
17	EU	Man	43,572	LA	Trade	10,613	NA	Man	10,371	NA	Serv	372	ME	Food	2071	AP	Man	1282	Af	Trade	134
18	OE	Serv	40,652	NA	Trade	9743	OE	Food	10,133	EU	Man	371	NA	Serv	1783	NA	Serv	1254	OE	Serv	119
19	NA	Man	33,025	AP	Man	9155	EU	Shelt	9663	LA	Food	346	Af	Mob	1746	LA	Serv	1103	LA	Serv	117
20	OE	Food	31,021	ME	Food	9057	LA	Shelt	6706	OE	Cons	340	LA	Serv	1661	Af	Mob	1035	OE	Shelt	105
21	LA	Trade	30,582	AP	Cloth	8880	NA	Trade	6627	NA	Cons	319	Af	Man	1505	Af	Cons	895	NA	Serv	102
22	EU	Shelt	30,031	EU	Shelt	8501	NA	Shelt	6467	NA	Man	265	Af	Cons	1504	Af	Man	895	NA	Shelt	87
23	LA	Food	29,080	Af	Trade	8179	LA	Trade	5976	Af	Cons	258	NA	Shelt	1256	NA	Shelt	788	LA	Shelt	81
24	EU	Mob	25,515	ME	Serv	7034	EU	Trade	5750	OE	Serv	248	EU	Man	1120	OE	Shelt	753	EU	Man	72
25	AP	Cloth	25,059	LA	Cons	5054	Af	Trade	4727	LA	Cons	246	LA	Shelt	1117	LA	Shelt	738	Af	Mob	69
26	ME	Serv	24,298	EU	Cons	4918	OE	Serv	4669	AP	Cloth	228	EU	Trade	1006	EU	Man	648	EU	Trade	67
27	Af	Trade	24,269	EU	Mob	4915	NA	Cons	4608	EU	Mob	223	Af	Shelt	953	EU	Trade	619	ME	Serv	64
28	EU	Cons	23,584	LA	Mob	4306	EU	Cloth	4496	OE	Man	211	OE	Shelt	948	NA	Trade	609	NA	Man	63
29	NA	Mob	18,806	NA	Shelt	4280	EU	Mob	4081	Af	Mob	201	NA	Man	884	Af	Shelt	565	AP	Cloth	63

Table S.2.1. Cont.

Total Employment			Vulnerable Employment			Low-Skilled Labor			Occupational Health			Child Labor			Hazardous Child Labor			Forced Labor			
Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	
30	NA	Cons	18,275	Af	Mob	4260	EU	Cons	3286	ME	Serv	200	NA	Trade	875	NA	Man	514	Af	Man	59
31	NA	Shelt	17,772	EU	Man	3729	NA	Cloth	3107	NA	Shelt	190	AP	Cloth	846	LA	Trade	452	Af	Cons	58
32	OE	Man	16,947	EU	Cloth	3679	ME	Serv	2983	ME	Food	189	LA	Trade	681	OE	Serv	430	NA	Trade	55
33	OE	Trade	14,741	NA	Cons	3619	LA	Mob	2957	Af	Man	156	EU	Mob	653	NA	Cons	426	LA	Trade	52
34	LA	Cons	14,521	ME	Trade	3547	NA	Mob	2853	LA	Mob	155	OE	Serv	555	EU	Mob	373	EU	Mob	44
35	LA	Mob	14,350	Af	Cons	3310	ME	Food	2656	Af	Trade	154	NA	Cons	553	AP	Cloth	363	OE	Cons	39
36	LA	Man	14,302	NA	Mob	3155	OE	Man	2618	NA	Mob	146	EU	Cons	484	EU	Cons	334	OE	Trade	39
37	LA	Shelt	13,651	LA	Man	3113	Af	Mob	2475	EU	Trade	139	NA	Mob	429	ME	Serv	271	Af	Shelt	38
38	OE	Cons	13,177	OE	Serv	3031	LA	Food	2440	LA	Man	131	LA	Man	417	LA	Man	269	EU	Cons	35
39	Af	Mob	12,999	NA	Man	2896	LA	Cons	2408	OE	Shelt	129	EU	Cloth	405	NA	Mob	248	OE	Man	34
40	Af	Cons	12,773	OE	Trade	2655	OE	Cloth	1862	LA	Trade	129	LA	Mob	351	LA	Mob	230	NA	Cons	34
41	EU	Cloth	12,394	Af	Man	2551	Af	Cons	1849	LA	Shelt	125	ME	Serv	348	OE	Man	215	EU	Cloth	29
42	ME	Food	12,043	LA	Shelt	2459	OE	Shelt	1831	OE	Mob	114	LA	Cons	297	EU	Cloth	212	NA	Mob	27
43	Af	Man	11,386	Af	Shelt	2455	OE	Trade	1737	NA	Trade	104	OE	Man	295	LA	Cons	197	LA	Man	26
44	OE	Shelt	9970	NA	Cloth	1944	Af	Man	1711	EU	Cloth	101	NA	Cloth	235	OE	Trade	164	LA	Mob	25
45	ME	Trade	9797	OE	Shelt	1760	LA	Man	1697	Af	Shelt	94	OE	Trade	231	OE	Cons	159	ME	Trade	25
46	OE	Mob	9011	ME	Mob	1584	OE	Cons	1651	Af	Cons	93	ME	Trade	223	ME	Trade	135	OE	Mob	23
47	NA	Cloth	7827	ME	Shelt	1258	ME	Trade	1611	ME	Mob	71	OE	Cons	203	NA	Cloth	123	LA	Cons	21
48	Af	Shelt	6616	OE	Cons	1178	Af	Shelt	1533	OE	Trade	63	Af	Cloth	167	ME	Shelt	103	NA	Cloth	19
49	ME	Mob	5435	OE	Man	1173	OE	Mob	1087	NA	Cloth	62	ME	Shelt	165	Af	Cloth	99	ME	Shelt	15
50	OE	Cloth	4619	Af	Cons	1082	ME	Mob	740	ME	Man	51	OE	Mob	139	OE	Mob	95	ME	Mob	13
51	Af	Cons	4604	OE	Mob	1016	ME	Shelt	726	ME	Trade	48	OE	Cloth	135	OE	Cloth	70	OE	Cloth	11
52	ME	Man	3999	LA	Cloth	770	ME	Man	608	OE	Cloth	45	ME	Mob	94	ME	Mob	61	ME	Man	10
53	ME	Shelt	3967	ME	Man	754	Af	Cons	391	ME	Shelt	40	LA	Cloth	80	LA	Cloth	51	Af	Cons	9
54	LA	Cloth	3135	Af	Cloth	471	Af	Cloth	336	LA	Cloth	23	ME	Man	70	ME	Man	47	Af	Cloth	7
55	Af	Cloth	1252	OE	Cloth	470	LA	Cloth	313	Af	Cloth	15	Af	Cons	52	Af	Cons	40	LA	Cloth	5
56	ME	Cloth	487	ME	Cloth	127	ME	Cloth	143	ME	Cloth	5	ME	Cloth	15	ME	Cloth	9	ME	Cloth	1

UNITS: Total employment, vulnerable employment, low-skilled labor, child labor, hazardous child labor, forced labor = 1000 p-yeq; Occupational health = 1000 DALYs.

Regions (Reg): Af = Africa; AP = Asia and the Pacific; EU = Europe OECD; LA = Latin America and the Caribbean; ME = Middle East; NA = North America; OE = Other Europe. Categories (Cat): Cloth = Clothing; Cons = Construction; Man = Manufactured products; Mob = Mobility; Serv = Services; Shelt = Shelter.

Table S.2.2. Bad labor share of total labor footprints for each sector and region ranked from higher to lower.

	Vulnerable Employment			Low-Skilled Labor			Gender Inequality			Occupational Health			Child Labor			Hazardous Child Labor			Forced Labor		
	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value
1	Af	Food	819	AP	Food	691	NA	Cons	123	AP	Cons	29.8	Af	Food	192	ME	Food	133	OE	Food	17.0
2	ME	Food	752	AP	Cons	581	EU	Cons	129	OE	Cons	25.8	OE	Food	178	OE	Food	132	ME	Food	16.2
3	LA	Food	636	AP	Cloth	539	AP	Cons	135	Af	Cons	20.3	LA	Food	173	Af	Food	114	LA	Food	13.8
4	EU	Food	625	AP	Man	504	Af	Cons	196	Af	Cons	20.2	ME	Food	172	LA	Food	114	OE	Shelt	10.5
5	NA	Food	580	LA	Shelt	491	ME	Serv	218	EU	Cons	19.8	EU	Food	146	EU	Food	93	EU	Food	10.3
6	OE	Food	531	AP	Shelt	482	LA	Cons	218	Af	Food	18.0	Af	Shelt	144	Af	Shelt	85	NA	Food	8.2
7	AP	Food	459	OE	Cloth	403	OE	Cons	245	NA	Cons	17.5	Af	Trade	141	Af	Trade	84	Af	Food	7.5
8	AP	Trade	395	EU	Food	400	ME	Man	249	LA	Cons	16.9	Af	Serv	139	Af	Serv	83	AP	Food	6.5
9	Af	Cloth	376	NA	Cloth	397	ME	Mob	250	ME	Food	15.7	Af	Mob	134	Af	Mob	80	LA	Shelt	5.9
10	Af	Shelt	371	Af	Food	395	AP	Mob	259	Af	Mob	15.5	Af	Cloth	134	Af	Cloth	79	Af	Shelt	5.7
11	ME	Trade	362	NA	Food	365	NA	Mob	267	Af	Shelt	14.2	Af	Man	132	Af	Man	79	Af	Trade	5.5
12	AP	Cloth	354	NA	Shelt	364	EU	Mob	270	Af	Man	13.7	Af	Cons	118	OE	Shelt	76	Af	Cloth	5.4
13	LA	Cons	348	EU	Cloth	363	ME	Trade	284	ME	Mob	13.1	NA	Food	114	Af	Cons	70	Af	Serv	5.4
14	LA	Trade	347	OE	Food	327	ME	Cloth	293	OE	Shelt	13.0	OE	Shelt	95	NA	Food	69	Af	Mob	5.3
15	AP	Shelt	337	EU	Shelt	322	EU	Cloth	308	OE	Mob	12.7	AP	Food	93	LA	Shelt	54	Af	Man	5.2
16	Af	Trade	337	NA	Man	314	AP	Cloth	313	ME	Man	12.7	EU	Shelt	82	EU	Shelt	52	EU	Shelt	5.1
17	Af	Mob	328	AP	Mob	296	LA	Food	313	EU	Shelt	12.6	LA	Shelt	82	NA	Shelt	44	AP	Cons	5.0
18	Af	Serv	318	ME	Cloth	293	Af	Mob	319	OE	Food	12.6	NA	Shelt	71	AP	Food	40	NA	Shelt	4.9
19	ME	Shelt	317	Af	Cloth	269	OE	Mob	334	OE	Man	12.5	AP	Cons	69	AP	Cons	29	Af	Cons	4.6
20	LA	Mob	300	EU	Man	261	NA	Food	341	Af	Cloth	12.3	AP	Shelt	63	AP	Shelt	28	AP	Shelt	4.4
21	EU	Cloth	297	NA	Cons	252	EU	Man	343	EU	Food	12.1	ME	Shelt	41	ME	Shelt	26	ME	Shelt	3.7
22	ME	Mob	291	AP	Trade	234	Af	Serv	345	LA	Food	11.9	AP	Mob	37	NA	Cons	23	ME	Cloth	3.0
23	ME	Serv	290	Af	Shelt	232	Af	Trade	350	NA	Food	10.8	AP	Cloth	34	LA	Man	19	OE	Cons	3.0
24	EU	Shelt	283	ME	Food	221	NA	Cloth	350	LA	Mob	10.8	EU	Cloth	33	ME	Cloth	18	OE	Serv	2.9
25	AP	Mob	279	LA	Mob	206	ME	Shelt	350	NA	Shelt	10.7	AP	Man	31	EU	Cloth	17	AP	Mob	2.6
26	LA	Serv	263	LA	Trade	195	ME	Food	355	AP	Shelt	10.5	AP	Trade	31	LA	Cloth	16	ME	Serv	2.6
27	ME	Cloth	260	Af	Trade	195	LA	Mob	356	AP	Man	10.4	NA	Cons	30	LA	Mob	16	OE	Trade	2.6
28	Af	Cons	259	LA	Serv	194	NA	Man	357	ME	Cloth	10.1	NA	Cloth	30	AP	Mob	16	OE	Mob	2.6
29	EU	Trade	258	Af	Mob	190	LA	Man	363	ME	Shelt	10.1	ME	Cloth	30	NA	Cloth	16	AP	Cloth	2.5
30	NA	Cloth	248	AP	Serv	184	OE	Man	364	AP	Food	9.9	LA	Man	29	NA	Man	16	ME	Trade	2.5

Table S.2.2. Cont.

Vulnerable Employment			Low-Skilled Labor			Gender Inequality			Occupational Health			Child Labor			Hazardous Child Labor			Forced Labor			
Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	Reg	Cat	Value	
31	LA	Cloth	245	OE	Shelt	184	LA	Cloth	365	AP	Mob	9.8	OE	Cloth	29	OE	Cloth	15	ME	Man	2.5
32	NA	Shelt	241	ME	Shelt	183	AP	Trade	370	OE	Cloth	9.7	NA	Man	27	LA	Serv	15	OE	Cloth	2.4
33	Af	Cons	235	Af	Serv	181	Af	Cons	372	LA	Shelt	9.2	EU	Man	26	EU	Man	15	NA	Cloth	2.4
34	Af	Man	224	LA	Cons	166	EU	Food	377	LA	Man	9.1	EU	Mob	26	LA	Trade	15	ME	Mob	2.3
35	LA	Man	218	ME	Trade	164	AP	Man	381	AP	Cloth	9.1	LA	Cloth	25	EU	Mob	15	AP	Man	2.3
36	NA	Trade	212	EU	Mob	160	AP	Shelt	381	Af	Serv	9.0	LA	Mob	24	AP	Cloth	14	EU	Cloth	2.3
37	EU	Cons	209	OE	Man	154	OE	Food	382	EU	Mob	8.8	AP	Serv	23	EU	Cons	14	AP	Trade	2.2
38	AP	Serv	203	ME	Man	152	Af	Cloth	388	EU	Man	8.5	NA	Mob	23	ME	Trade	14	OE	Man	2.0
39	NA	Cons	198	NA	Mob	152	Af	Man	389	ME	Serv	8.2	ME	Trade	23	AP	Man	14	Af	Cons	2.0
40	EU	Mob	193	Af	Man	150	AP	Food	400	EU	Cloth	8.2	LA	Serv	22	LA	Cons	14	NA	Man	1.9
41	ME	Man	189	Af	Cons	145	OE	Shelt	400	NA	Man	8.0	LA	Trade	22	AP	Trade	13	NA	Cons	1.9
42	LA	Shelt	180	NA	Trade	144	OE	Cloth	402	NA	Cloth	7.9	EU	Trade	21	NA	Trade	13	LA	Man	1.8
43	OE	Trade	180	EU	Cons	139	Af	Food	409	NA	Mob	7.8	EU	Cons	21	NA	Mob	13	LA	Mob	1.7
44	OE	Shelt	177	ME	Mob	136	AP	Serv	417	LA	Cloth	7.3	LA	Cons	20	OE	Man	13	EU	Mob	1.7
45	NA	Mob	168	OE	Cons	125	EU	Shelt	428	Af	Trade	6.4	NA	Trade	19	EU	Trade	13	LA	Trade	1.7
46	EU	Serv	143	ME	Serv	123	EU	Trade	432	OE	Serv	6.1	ME	Man	18	OE	Cons	12	AP	Serv	1.7
47	AP	Cons	131	EU	Serv	122	LA	Trade	432	LA	Serv	5.9	OE	Man	17	ME	Man	12	EU	Man	1.6
48	NA	Serv	113	OE	Mob	121	NA	Shelt	433	ME	Trade	4.9	ME	Mob	17	EU	Serv	11	LA	Cloth	1.6
49	OE	Mob	113	LA	Man	119	Af	Shelt	438	AP	Serv	4.5	EU	Serv	16	ME	Mob	11	LA	Serv	1.6
50	OE	Cloth	102	OE	Trade	118	NA	Trade	439	OE	Trade	4.3	OE	Trade	16	ME	Serv	11	EU	Cons	1.5
51	AP	Man	98	EU	Trade	117	LA	Serv	487	LA	Trade	4.2	OE	Mob	15	OE	Trade	11	NA	Mob	1.4
52	OE	Cons	89	OE	Serv	115	EU	Serv	523	AP	Trade	3.4	OE	Cons	15	OE	Serv	11	LA	Cons	1.4
53	NA	Man	88	LA	Cloth	100	NA	Serv	527	EU	Serv	3.2	ME	Serv	14	OE	Mob	11	EU	Trade	1.4
54	EU	Man	86	NA	Serv	93	OE	Trade	532	EU	Trade	2.8	OE	Serv	14	AP	Serv	10	NA	Trade	1.2
55	OE	Serv	75	Af	Cons	85	OE	Serv	578	NA	Serv	2.7	NA	Serv	13	NA	Serv	9	EU	Serv	1.1
56	OE	Man	69	LA	Food	84	LA	Shelt	644	NA	Trade	2.3	Af	Cons	11	Af	Cons	9	NA	Serv	0.8

UNITS: Vulnerable employment, low-skilled labor, gender inequality, child labor, hazardous child labor, forced labor = $p\text{-}y_{eq}$ in bad labor per 1000 $p\text{-}y_{eq}$ in total employment; Occupational health = DALYs per 1000 $p\text{-}y_{eq}$ in total employment. Regions (Reg): Af = Africa; AP = Asia and the Pacific; EU = Europe OECD; LA = Latin America and the Caribbean; ME = Middle East; NA = North America; OE = Other Europe. Categories (Cat): Cloth = Clothing; Cons = Construction; Man = Manufactured products; Mob = Mobility; Serv = Services; Shelt = Shelter.

Table S.2.3. Flows of bad labor between regions.

Total Employment (1000 p-yeq)								
from\to	Africa	Middle East	Europe OECD	Other Europe	Asia and the Pacific	North America	Latin America	Total Production
Africa	251,769	1893	53,902	5121	16,408	18,978	2921	350,992
Middle East	371	43,796	4939	937	5007	3651	338	59,039
Europe OECD	1393	2018	215,504	4419	7283	6106	2044	238,767
Other Europe	507	959	12,466	102,082	3919	2068	2774	124,774
Asia and the Pacific	5695	14,581	136,046	24,662	1,601,117	95,966	6348	1,884,415
North America	827	576	4148	294	4234	202,304	654	213,036
Latin America	679	807	15,136	2623	5813	11,525	178,572	215,155
Total Consumption	261,241	64,629	442,142	140,138	1,643,781	340,597	193,651	3,086,179
Vulnerable employment (1000 p-yeq)								
from\to	Africa	Middle East	Europe OECD	Other Europe	Asia and the Pacific	North America	Latin America	Total Production
Africa	146,080	1208	37,008	3616	10,882	12,343	1758	212,896
Middle East	141	16,139	2093	422	1733	1441	124	22,094
Europe OECD	221	398	37,600	844	1063	926	369	41,421
Other Europe	55	166	1856	13,490	432	231	307	16,537
Asia and the Pacific	2331	6140	49,115	8103	522,032	32,253	1973	621,947
North America	64	74	527	33	598	25,477	70	26,843
Latin America	255	317	7102	1250	2319	4766	59,661	75,670
Total Consumption	149,147	24,443	135,302	27,759	539,060	77,436	64,262	1,017,409
Low-skilled employment (1000 p-yeq)								
from\to	Africa	Middle East	Europe OECD	Other Europe	Asia and the Pacific	North America	Latin America	Total Production
Africa	73,287	600	18,004	1756	5313	6059	869	105,889
Middle East	37	4752	484	96	481	361	34	6245
Europe OECD	129	192	22,947	412	686	575	172	25,112
Other Europe	53	109	1352	11,455	426	222	288	13,904
Asia and the Pacific	2245	4020	59,859	11,579	760,666	38,609	2595	879,573
North America	81	63	436	32	452	22,520	73	23,656
Latin America	91	122	1537	259	752	1297	32,855	36,914
Total Consumption	75,923	9858	104,618	25,589	768,777	69,642	36,885	1,091,293
Female work (1000 p-yeq)								
from\to	Africa	Middle East	Europe OECD	Other Europe	Asia and the Pacific	North America	Latin America	Total Production
Africa	96,518	763	21,532	2051	6527	7406	1136	135,931
Middle East	81	9238	1142	221	1055	813	73	12,623
Europe OECD	558	755	94,405	1573	2833	2277	869	103,270
Other Europe	202	437	4973	47,234	1773	889	1463	56,971
Asia and the Pacific	1989	5373	50,618	9302	594,292	36,265	2385	700,223
North America	374	252	1651	114	1772	91,079	269	95,512
Latin America	255	309	5229	929	2115	4064	75,619	88,519
Total Consumption	99,978	17,127	179,549	61,423	610,366	142,793	81,813	1,193,048

Table S.2.3. Cont.

Occupational Health Damage (1000 DALYs)								
from\to	Africa	Middle East	Europe OECD	Other Europe	Asia and the Pacific	North America	Latin America	Total Production
Africa	3743	32	940	88	287	312	48	5450
Middle East	6	542	77	14	81	54	5	778
Europe OECD	5	7	1045	22	29	26	7	1141
Other Europe	6	11	177	1163	46	26	21	1449
Asia and the Pacific	47	97	1208	225	14,927	823	58	17,385
North America	2	1	14	1	13	777	2	812
Latin America	7	7	155	27	61	119	1 449	1824
Total Consumption	3814	697	3616	1540	15,444	2138	1590	28,838
Child Labor (1000 p-yeq)								
from\to	Africa	Middle East	Europe OECD	Other Europe	Asia and the Pacific	North America	Latin America	Total Production
Africa	42,635	339	9738	933	2930	3363	503	60,442
Middle East	20	2049	354	75	215	220	17	2951
Europe OECD	28	48	7102	160	155	160	35	7687
Other Europe	16	59	592	5316	130	75	50	6238
Asia and the Pacific	254	476	6720	1263	92,301	4116	268	105,399
North America	11	9	92	9	105	3746	12	3983
Latin America	53	56	1927	268	601	1470	8747	13,121
Total Consumption	43,016	3037	26,524	8025	96,437	13,149	9632	199,821
Hazardous Child Labor (1000 p-yeq)								
from\to	Africa	Middle East	Europe OECD	Other Europe	Asia and the Pacific	North America	Latin America	Total Production
Africa	25,383	202	5798	555	1744	2002	300	35,984
Middle East	17	1730	299	63	182	186	14	2492
Europe OECD	23	40	5997	135	131	135	30	6491
Other Europe	13	50	500	4489	110	63	42	5268
Asia and the Pacific	108	202	2849	536	39,131	1745	114	44,684
North America	9	8	77	8	88	3163	10	3364
Latin America	35	38	1287	179	401	982	5843	8766
Total Consumption	25,589	2270	16,807	5966	41,788	8276	6352	107,049
Forced Labor (1000 p-yeq)								
from\to	Africa	Middle East	Europe OECD	Other Europe	Asia and the Pacific	North America	Latin America	Total Production
Africa	1647	13	376	36	113	130	19	2335
Middle East	3	266	42	9	29	27	2	379
Europe OECD	2	5	684	16	13	14	3	737
Other Europe	2	8	75	724	20	11	10	849
Asia and the Pacific	18	34	480	90	6590	296	19	7528
North America	1	1	8	1	9	305	1	325
Latin America	4	4	156	22	48	119	673	1027
Total Consumption	1678	332	1822	897	6822	901	728	13,180

References

1. Tukker, A.; de Koning, A.; Wood, R.; Hawkins, T.; Lutter, S.; Acosta, J.; Rueda Cantuche, J.M.; Bouwmeester, M.; Oosterhaven, J.; Drosdowski, T.; *et al.* Exiopol—Development and illustrative analyses of a detailed global MR EE SUT/IOT. *Econ. Syst. Res.* **2013**, *25*, 50–70.
2. CREEA. Available online: <http://creea.eu> (accessed on 23 October 2014).
3. ILO. LABORSTA—Database on Labour Statistics. Available online: <http://laborsta.ilo.org/> (accessed on 7 January 2013).
4. OECD. STAN Indicators Rev. 3, 2011; 2011. Available online: http://www.oecd-ilibrary.org/industry-and-services/data/stan-oecd-structural-analysis-statistics/stan-indicators_data-00561-en (accessed on 7 January 2013).
5. Hyder, A.A.; Rotllant, G.; Morrow, R.H. Measuring the burden of disease: Healthy life-years. *Am. J. Public Health* **1998**, *88*, 196–202.
6. Murray, C.J.; Lopez, A.D. *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries, and Risk Factors in 1990 and Projected to 2020*; Global Burden of Disease and Injury Series; Harvard University Press: Cambridge, MA, USA, 1996.
7. Murray, C.J.; Salomon, J.A.; Mathers, C. A critical examination of summary measures of population health. *Bull. World Health Organ.* **2000**, *78*, 981–994.
8. Weinstein, M.C.; Stason, W.B. Foundations of Cost-Effectiveness Analysis for Health and Medical Practices. *N. Engl. J. Med.* **1977**, *296*, 716–721.
9. Nelson, D.I.; Concha-Barrientos, M.; Driscoll, T.; Steenland, K.; Fingerhut, M.; Punnett, L.; Prüss-Ustün, A.; Leigh, J.; Corvalan, C. The global burden of selected occupational diseases and injury risks: Methodology and summary. *Am. J. Ind. Med.* **2005**, *48*, 400–418.
10. Murray, C.J. Quantifying the burden of disease: The technical basis for disability-adjusted life years. *Bull. World Health Organ.* **1994**, *72*, 429–445.
11. Concha-Barrientos, M.; Nelson, D.I.; Driscoll, T.; Steenland, K.; Punnett, L.; Fingerhut, M.; Prüss-Ustün, A.; Leigh, J.; Tak, S.; Corvalan, C. Selected occupational risk factors. In *Comparative Quantification of Health Risks: Global and Regional Burden of Disease Attributable to Selected Major Risk Factors*; World Health Organization: Geneva, Switzerland, 2004.
12. European Commission. Theme 3—Population and Social Conditions, 2003 ed. In *Work and Health in the EU: A Statistical Portrait, Data 1994–2002*; Office for Official Publications of the European Communities: Luxembourg, Luxembourg, 2004.
13. Concha-Barrientos, M.; Nelson, D.I.; Fingerhut, M.; Driscoll, T.; Leigh, J. The global burden due to occupational injury. *Am. J. Ind. Med.* **2005**, *48*, 470–481.
14. ILO. *Guide to the Millennium Development Goals Employment Indicators*, 2nd ed.; International Labour Office, Employment Sector: Geneva, Switzerland, 2013.
15. ILO. *Global Employment Trends: January 2008*; International Labour Organization: Geneva, Switzerland, 2008.
16. ILO. *International Standard Classification of Occupations: ISCO-08*; ILO: Geneva, Switzerland, 2012.

17. UNESCO. *International Standard Classification of Education ISCED 2011*; UNESCO Institute for Statistics: Montreal, PQ, Canada, 2012.
18. ILO. *Children in Hazardous Work What We Know, What We Need to Do*; International Labour Office: Geneva, Switzerland, 2011.
19. ILO. *Accelerating Action against Child Labour: Global Report under the Follow-Up to the ILO Declaration on Fundamental Principles and Rights at Work: Report of the Director-General*; International Labour Organization: Geneva, Switzerland, 2010.
20. U.S. DOL. *List of Goods Produced by Child Labor or Forced Labor 2012—Report Required by the Trafficking Victims Protection Reauthorization Act of 2005*; U.S. Department of Labor: Washington, DC, USA, 2012.
21. ILO. *ILO Global Estimate of Forced Labour: Results and Methodology*; International Labour Office: Geneva, Switzerland, 2012.

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