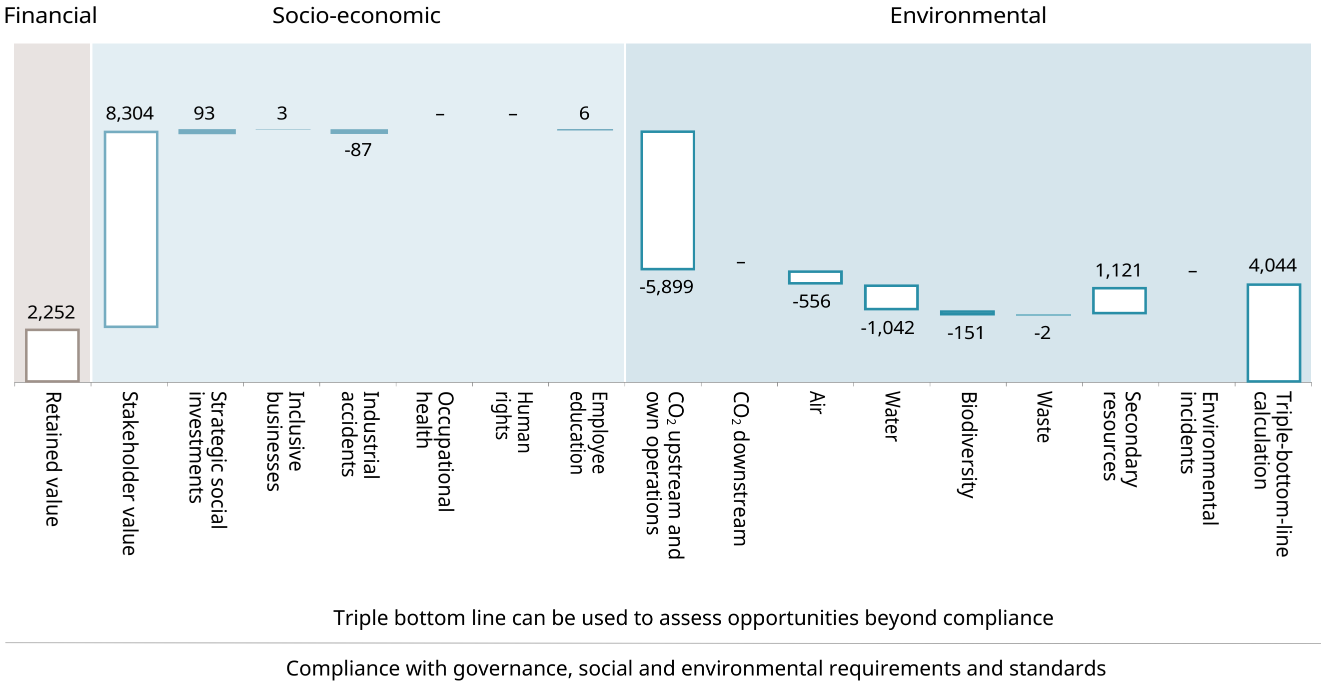
LAFARGEHOLCIM INTEGRATED PROFIT AND LOSS STATEMENT 2016

ASSUMPTIONS USED IN THE IP&L CALCULATION

LafargeHolcim



Year: 2016
Scope: LafargeHolcim Global
Results in: million CHF

The IP&L statement is not part of LafargeHolcim's financial reporting or projections. The IP&L is intended to raise awareness of externalities that may or may not affect LafargeHolcim's business, and to assess their relative importance. It contains preliminary considerations which may be subject to change. Furthermore, the IP&L may also change, for example, as valuation techniques and methodologies evolve. It should be considered as indicative and it neither represents any final factual conclusions nor is intended to assert any factual admission by any person regarding the impact of LafargeHolcim or any of its related parties on environment or society.

MEASURING OUR VALUE

As an important step to achieve its long-term sustainability ambitions and to establish where it needs to focus efforts to enhance the value we add to people, profit, and the planet, LafargeHolcim has endeavored to establish the order of magnitude of its financial impacts across the triple bottom line. The result, the LafargeHolcim Integrated Profit and Loss (IP&L) statement, is shown in the diagram above.

The IP&L is not intended to be a definitive statement of financial account. It is a tool to allow us to understand and share with stakeholders the extent of our impacts and to track progress against the LafargeHolcim 2030 Plan. The tool enhances decision-making processes and sustains value creation in the long term, by raising awareness of risks and opportunities posed by externalities (through quantification), and allows analysis on what the impact could be on the bottom line.

We are working with other leading companies in an impact valuation roundtable to develop this discipline and share best practices with other interested companies. A white paper describing how impact valuation can be practically implemented has recently been finalized by this group and shared with the World Business Council for Sustainable Development (WBCSD) and other parties. The white paper can be found on our website at www.lafargeholcim.com/sustainable-development

ASSUMPTIONS USED IN THE IPL CALCULATION

2016 was the first full calendar year of operation for LafargeHolcim, and the IP&L takes into account the figures and data reported in the LafargeHolcim Annual Report 2016 and the Sustainability Report 2016.

1 FINANCIAL DIMENSION

1.1 Retained value (Mio CHF)

The sum of capital retained in the business calculated by taking EBITDA and subtracting taxes, interest and dividends. The relevant references in the LafargeHolcim Annual Report 2016 are:

- EBITDA: CHF 5 242 –Key figures LafargeHolcim Group, page 172
- Taxes: CHF 860 – Consolidated Statement of Income, page 178.
- Interest: CHF 972 – Financial expenses (CHF 1104 – note 13, page 212) minus interest earned on cash and marketable securities (CHF 132 – note 12, page 212).
- Dividends: CHF 1158 – dividends paid on ordinary shares (CHF 909) plus dividends paid to non-controlling interest (CHF 249) – both from consolidated statement of cash flows, page 178.

2 SOCIO–ECONOMIC DIMENSION

2.1 Stakeholder value – multiplied socio-economic impacts

The multiplier effect of cash transfers to employees (salaries), governments (direct and indirect taxes such as property and municipal taxes), finance cost (interests) and shareholders (dividends) has been reflected at a ratio of 1:1 on 2016 expenditure. This number has been corrected for economic inefficiencies, based on the countries in which LafargeHolcim operates based on the Corruption Perceptions Index.

The figure included for indirect taxes is the same figure as reported in the previous IP&L. This was based on data collected from the seven countries that represented around 60% of the total global indirect tax charge.

We assume that every dollar transferred will be spent and therefore contributes to the (local) economy. Even if not all of the money transferred is spent, the assumption of the 1:1 multiplier is justified due to secondary and tertiary socio-economic ripple effects, caused by the cash transfers through enhanced purchasing power.

2.2 Strategic social investment

Here, we consider the strategic social investment in education projects, community employment projects, community shelter and infrastructure projects, community health projects, community environment projects, and other community development projects. For each dollar invested, an average multiplier effect is added. This multiplier effect is estimated as follows, based on independent sources:

- **Education and community employment projects:** Calculated by multiplying actual amount spent in 2016 on education and community employment projects by a factor of 118%. This figure was derived using the assumptions below.

  Investments in education generate public returns from higher income levels in the form of income taxes, increased social insurance payments and lower social transfers. We calculated a return on investment (ROI) for education by linking the average private returns of primary, secondary or high education to the average capita income for high, middle and low-income (G. Psacharopoulos and H.A. Patrinos, 2004[1]).

  We derived a formula connecting ROI for education with national incomes (GDP). The multiplier for education ROI used in the tool (118%) is based on the average GDP of the countries in which LafargeHolcim operates based on the income in that country.

1 Source: G. Psacharopoulos and H.A. Patrinos (2004). *Returns to Investment in Education: A Further Update*. Available at: http://siteresources.worldbank.org/INTDEBTDEPT/Resources/468980-1170954447788/3430000-1273248341332/20100426_16.pdf

- **Community shelter and infrastructure:** Calculated by multiplying the actual amount spent in 2016 on community shelter and infrastructure projects by a factor of 344%. We used the ROIs for infrastructure (250% based on the average factor of a BCG report[2]), low-income housing (231%) and sanitation (550%)[3].

  The multiplier for low income housing was derived from a social ROI on low-income housing evaluated by Salman & Aslam (2009) for a case study in Pakistan[4]. The study evaluates the social purpose benefit flow over five years. It takes into account the economic benefits of low-income housing (savings per family household, additional income due to access to mortgage finance, value of new employment generated and potential gains from income-generation programs), but also values social benefits (savings on medical bills due to improved water access, waste management) as well as environmental benefits (cost saving by waste water treatment). The net present value (NPV) of social and environmental benefits was compared to that of project costs (operational and capital costs) to derive the benefit cost ratio ROI of 231%.

  For sanitation projects, a study of the WHO (2012) was used which provides insights into the costs and benefits of providing drinking-water supply and sanitation interventions.

- **Community environment:** Calculated by multiplying the actual amount spent in 2016 on community environment projects by a factor of 250% which is the ROI for infrastructure multiplier. This multiplier was chosen because most of the community environment projects are related to provision of infrastructure.

- **Other community development projects:** Calculated by multiplying the actual amount spent in 2016 on community development and other projects, contributions to the LafargeHolcim foundation for Sustainable Construction, and other donations, by a factor of 267%. This factor was derived using the assumptions below.

  To measure the ROI for community development projects, we used the ROIs for infrastructure (250%), education (118%), low-income housing (231%) and sanitation (550%). A weighted average was calculated assuming that education and infrastructure projects account for 30% of community development project. Further we assumed that sanitation and low income housing account for 20%. The resulting multiplier we used for community development ROI is 267%.

For these calculations, we assumed that the benefits of these investments are directly earned in the year of investment. In reality, benefits for society are distributed over several years, but if we assume that these investments occur regularly, then we believe this approach best reflects the social returns.

For future calculations, we are considering developing a methodology based on the number of direct beneficiaries as an input factor. This would allow for a more accurate reflection of efficiency gains in strategic social investments and be better aligned with the LafargeHolcim 2030 Plan (aiming to improve 75 million lives by 2030).

2.3 Inclusive business

Calculated by multiplying the actual amount spent in 2016 on low income housing projects by 231%, sanitation project by 550% and other inclusive business by 267%. These figures were derived using the assumptions below.

For low income housing projects and sanitation projects the same factors were used as described previously in the section on community shelter and infrastructure projects.

The multiplier for other inclusive business is based on the same multiplier and assumptions as other community development in the strategic social investment section.

For future calculations, we are considering developing a methodology based on the number of low-income customers or partners as an input factor.

2 BCG. The cement sector: a strategic contributor to Europe's future. Available at: http://www.cembureau.be/sites/default/files/documents/The Cement Sector - A Strategic Contributor to Europe's Future.pdf
3 G. Hutton (2012). Global costs and benefits of drinking-water supply and sanitation interventions to reach the MDG target and universal coverage. Available at: www.who.int/water_sanitation_health/publications/2012/globalcosts.pdf
4 A. Salman & J. Aslam (2009). Property rights: ensuring well-being through low-income housing. Available at: http://acumen.org/wp-content/uploads/2013/03/Property-rights-for-low-income-housing.pdf

2.4 Occupational injuries

Calculated by multiplying the number of fatalities by CHF 822,482 and lost time injuries by CHF 35,622. These figures were derived using the assumptions below.

The figure calculated reflects the economic costs due to injury or loss of life. Costs include social cost for the person affected such as loss of current and future income, and medical costs. Further, we have included the costs for community, including lost revenue, social welfare payments and rehabilitation costs.

Costs for the employer were not taken into account, since these are already reflected in the financial section of the IPL.

For fatalities and injuries, the data was based on an Australian research group (Safe Work Australia 2012)[5]. The data was adjusted for GDP, based on the countries LafargeHolcim operates in.

2.5 Occupational health

This element was not quantified in 2016.

For future calculations, we aim to develop a methodology to account for lost income-generating capacity based on occupational health impacts (e.g. stress-related diseases, ergonomics).

2.6 Human rights

Not quantified in 2016.

The objective of this category is to account for any potential adverse human rights impacts. A methodology needs to be developed, taking into account the results of internal human rights assessments and reports received through processes such as an integrity line. Positive human rights impacts (e.g. human rights education for subcontractors) can also be included here.

2.7 Skills out

Calculated by multiplying the total training spend in 2016 by the annual turnover rate and the social return rate on education.

This approach enables us to estimate the wider social benefits of training (i.e. social benefits felt by our former employees). The benefits of training felt by those people who remain at LafargeHolcim will be visible internally through efficiency gains and increased revenues.

3 ENVIRONMENTAL DIMENSION

3.1 CO_2 upstream and own operations

Calculated by multiplying the tonnes of absolute gross CO_2 emissions by USD 30 (CHF 30). This figure was derived using the assumptions below.

The amount of CO_2 considered corresponds to our absolute gross emissions (Scope 1, 2 and 3) over a full calendar year. The total tonnes (t) of CO_2 are multiplied by its societal value, which we assumed to be 30 USD/tonne in 2016.

We acknowledge that there are a large range of estimates of the CO_2 societal value. We based our figure on a combination of reports, including the Stern report (assuming 25 USD/t in 2007), analysis made by the Environmental Protection Agency (29 USD/t with a discount rate of 3% and inflation), combined with prevalent assumptions used by governments that internalize the cost of CO_2.

Notably, for the purposes of comparison, we considered that, in its impact assessment of the Emission Trading Directive, the European Commission assumes a price of CO_2 of 30 €/t in 2020.

5 Safe Work Australia, The Cost of work-related injury and illness for Australian employers, workers and the community: 2008-2009, 2012, https://www.safeworkaustralia.gov.au/system/files/documents/1702/cost-of-work-related-injury-and-disease-2012-13.docx.pdf

3.2 CO_2 downstream

Not quantified in 2016.

We aim to develop a methodology to account for CO_2 savings along the value chain related to the use of our product compared to mainstream solutions.

3.3 Air

The damage costs of air pollutants were retrieved from studies that measure the relationship between the concentration of a pollutant and its impacts on affected receptors (social and environmental) and monetize the damages.

The social and damage costs of emissions were calculated as follows:

- **Air emissions (non-metal):** Calculated by multiplying the emissions in 2016 by a monetary figure derived using the assumptions below. The respective values used can be found in the annex. The damage costs of non-metal air emissions (e.g. PM, SOx, NOx, VOC, Dioxins and furans) were based on two studies6,7.

  The TruCost study (for PM, SOx, NOx and VOC) considers five impacts: negative health effects; reduced crop yields; material corrosion; effects on timber; and acidification of waterways. The numbers are based on global assumptions, using global averages for emission factors, without taking into account the varied dispersion of air pollutants, differences in ambient air pollution levels or local specific factors.

  The damage costs of dioxins and furans were determined from a study evaluating damage costs based on national averages for 32 countries, related to health effects from ingestion and inhalation. The assumptions on this study are found in the heavy metal emissions section.

- **Heavy metal emissions:** Calculated by multiplying the emissions in 2016 by a monetary figure derived using the assumptions below. The respective values used can be found in the annex.

  The damage costs of heavy metal emissions (Hg, Pb, Cd, As, Cr and Ni) were determined from a study evaluating damage costs based on national averages for 32 countries, related to health effects from ingestion and inhalation (cancers but also neuro-toxic effects leading to IQ loss, as well as subsequent loss of earnings potential for Pb and Hg)[8].

  The analysis quantified burden, dispersion and exposure (deposition velocities) to assess uptake by plants and animals and the impact on the human body (via consumption of tap water, agricultural crops or animal products).

The damage costs were then calculated by multiplying physical impacts by the appropriate cost:

- the unit cost for cancer includes medical expenses, wage and productivity losses, and the willingness to pay to avoid the pain and suffering inflicted by the disease
- the unit cost for IQ includes expenses associated with remedial learning and loss in potential lifetime earnings (costs are discounted at 3% but without consideration given to increases in willingness to pay with economic growth in future years).

The study does not consider the effects of groundwater contamination, adjustment of ingestion dose to account for food preparation and the implementation of remedial strategies (e.g. filtration for tap water) or the potential contribution of heavy metals and organic-micro pollutants to other impacts of fine particulate matter. Therefore, total impact attributed to these pollutants can be underestimated, but data from this study is used as an approximation to value their impacts.

6 Trucost Plc (2013). Natural Capital at Risk: The Top 100 externalities of business. Available at: http://valuecsr.com/wp-content/uploads/2013/05/TEEB-Final-Report-web-SPv2.pdf
7 EEA (2011). *Revealing the cost of air pollution from industrial facilities in Europe*. Available at: www.eea.europa.eu/publications/cost-of-air-pollution
8 EEA (2011). *Revealing the cost of air pollution from industrial facilities in Europe*. Available at: www.eea.europa.eu/publications/cost-of-air-pollution

3.4 Water

Calculated by multiplying the amount of water consumed in own operations by CHF 10.8/m^3 and the amount of water harvested by CHF 10.8/m^3. These costs were derived using the assumptions below.

The societal cost of water is calculated based on scarcity level of the location where water is consumed or harvested. The (site-specific) scarcity price is provided by a 2013 Trucost report and the local scarcity level is determined by the Aquastat tool from the Food and Agriculture Organization[9]. Since water is withdrawn and harvested in different locations, the resulting average cost per cubic meter is different.

3.5 Biodiversity

Calculated by multiplying the net amount of hectares impacted (either disturbed or rehabilitated) by CHF 4,982/ha. These figures were derived using the assumptions below.

The net area rehabilitated or disturbed is calculated by subtracting the total hectares of rehabilitated land from the total hectares of disturbed land.

These figures do not apply to the changes observed in the reporting year, but to the total number of hectares under company responsibility. The evaluation is based on an estimated distribution of habitats: in forests; shrublands/woodlands; grasslands; ruderal habitats; bare rocks; wetlands; rivers/streams; lakes/ponds; mangroves; salt marshes; coastal zones; and cultivated land.

Based on a 2009 Economics of Ecosystems and Biodiversity (TEEB) report[10], and estimated habitat distribution of impacted land, the weighted average estimated annual restoration benefits are between USD 1,010/ha and USD 73,900/ha.

3.6 Secondary resources and waste

Secondary resources are calculated by multiplying the amount of alternative fuels and raw materials used by CHF 22/t and industrial mineral components (IMC) and alternative aggregates by CHF 20/t. These figures were derived using the assumptions below.

This category includes alternative fuels and raw materials, mineral components (MIC), and reported alternative and recycled materials from ready-mix concrete (RMX) and aggregates, including asphalt.

To value the environmental impact of these secondary resources, the weighted average of the external cost of waste incinerated (CHF 27/t) and waste landfilled (CHF 20/t) (assuming 80% landfill and 20% incineration) was used for alternative fuels and raw materials, and the external cost of waste landfilled to value industrial MIC and alternative aggregate (Rabl, Spadaro and Zoughaib, 2008)[11].

3.7 Environmental incidents

Not quantified in 2016.

The objective of this category is to account for any environmental incidents related to our operations (such as spills or fires) in the reporting year. A valuation methodology will be developed.

9 www.naturalcapitalcoalition.org/js/plugins/filemanager/files/TEEB_Final_Report_v5.pdf15
10 http://www.teebweb.org/wp-content/uploads/Study%20and%20Reports/Additional%20Reports/TEEB%20climate%20Issues%20update/TEEB%20Climate%20Issues%20Update.pdf
11 Rabl, J. V. Spadaro and A. Zoughaib (2008) *Environmental Impacts and Costs of Solid Waste: A Comparison of Landfill and Incineration*. Available at: www.stefanomontanari.net/sito/images/pdf/spadaro.pdf

4 VALUES USED IN THE IP&L

4.1 Socio-economic

Topic	Indicator	Base price/ multiplier	Unit	Base year	Inflation factor*	Price/ multiplier adjusted for inflation	Price/ multiplier used in CHF**
Industrial accidents	Number of fatalities	905,106	AUD/#	2008	1.240	1,122,230	822,482
	Number Lost Time Injuries	39,200	AUD/#	2008	1.240	48,604	35,622
Inclusive business	Low income housing projects	231%	%	N/A	1	231%	2.31
	Sanitation projects	550%	%	N/A	1	550%	5.50
	Other inclusive business	267%	%	N/A	1	267%	2.67
	Education projects	118%	%	N/A	1	118%	1.18
	Community development projects (employment)	118%	%	N/A	1	118%	1.18
	Community shelter/ infrastructure projects	344%	%	N/A	1	344%	3.44
	Community Health projects	550%	%	N/A	1	550%	5.50
	Community environment projects	250%	%	N/A	1	250%	2.50
	Community other projects including donations and LafargeHolcim foundation	267%	%	N/A	1	267%	2.67
Skills out	Trainings of employees	15.0%	%	N/A	1	15.0%	0.150
Stakeholder Value	Salary	100%	%	N/A	1	100%	1
	Finance cost	100%	%	N/A	1	100%	1
	Tax	100%	%	N/A	1	100%	1
	Indirect tax	100%	%	N/A	1	100%	1
	Dividend	100%	%	N/A	1	100%	1

* Costs and benefits were adjusted for inflation

** USD converted at CHF 0.986, Euro converted at CHF 1.09 and AUD at 0.73

4.2 Environmental

Topic	Indicator	Base price/ multiplier	Unit	Base year	Inflation factor*	Price/ multiplier adjusted for inflation	Price/ multiplier used in CHF**
CO_2 upstream & own operations	CO_2 upstream & own operations	25	USD/t	2007	1.200	30	30
Air	PM	8,080	USD/t	2009	1.125	9,090	8,958
	SOx	1,445	USD/t	2009	1.125	1,626	1,602
	NOx	1,325	USD/t	2009	1.125	1,491	1,469
	VOC	845	USD/t	2009	1.125	951	937
	Dioxins and furans	27,000	€/g	2009	1.125	30,374	29,933
	Hg	1,885,000	€/t	2009	1.099	2,070,968	2,257,562
	Cd	29,000	€/t	2009	1.099	31,861	34,732
	As	349,000	€/t	2009	1.099	383,431	417,978
	Pb	965,000	€/t	2009	1.099	1,060,204	1,155,728
	Cr	38,000	€/t	2009	1.099	41,749	45,511
	Ni	3,800	€/t	2009	1.099	4,175	4,551
Water	Water Consumed – own operations	9.8	USD/m³	2009	1.125	10.4	10.8
	Water harvested	9.8	USD/m³	2009	1.125	11.0	10.8
Biodiversity	Hectares disturbed	4,211	USD/ha	2007	1.200	5,055	4,982
	Hectares rehabilitated	4,211	USD/ha	2007	1.200	5,055	4,982
Waste	Waste landfilled	18	USD/t	2008	1.168	21	20
	Waste incinerated	23	USD/t	2008	1.168	27	27
Secondary resources	Alternative Fuels and raw materials	19	USD/t	2008	1.168	22	22
	Industrial Mineral Components	18	USD/t	2008	1.168	21	20
	Alternative Aggregates	18	USD/t	2008	1.168	21	20

* Costs and benefits were adjusted for inflation

** USD converted at CHF 0.986, Euro converted at CHF 1.09 and AUD at 0.73

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