

## Methodology for calculating our societal impact

At Philips Lighting, sustainability is central to our company vision, strategy and purpose. Our aim is to balance economic, social and environmental considerations. We strive to maximize long-term value-creation along these three dimensions.

To guide our efforts and measure our progress, we have made our approach towards long-term value creation more transparent by preparing our annual report in line with key-elements of the International Integrated Reporting Council's (IIRC) Integrated Reporting framework.

At the core is the value creation model. This model shows how our business activities draw on various financial, environmental, and social resources that get converted to outputs. Our activities and its outputs lead to outcomes in terms of the impact made on our stakeholders and society at large.

By expressing these impacts in monetary terms, we can better compare the financial, social, and environmental effects of our business. This enables more effective and efficient decision making and gives a holistic view on our most prominent risks and opportunities. It also provides further transparency to our stakeholders on our company performance.

This document explains the methodology, variables, and assumptions made to determine the impacts of our business activities as depicted

in the value creation model that is included under section 3.1 of our 2017 annual report.

### Methodology

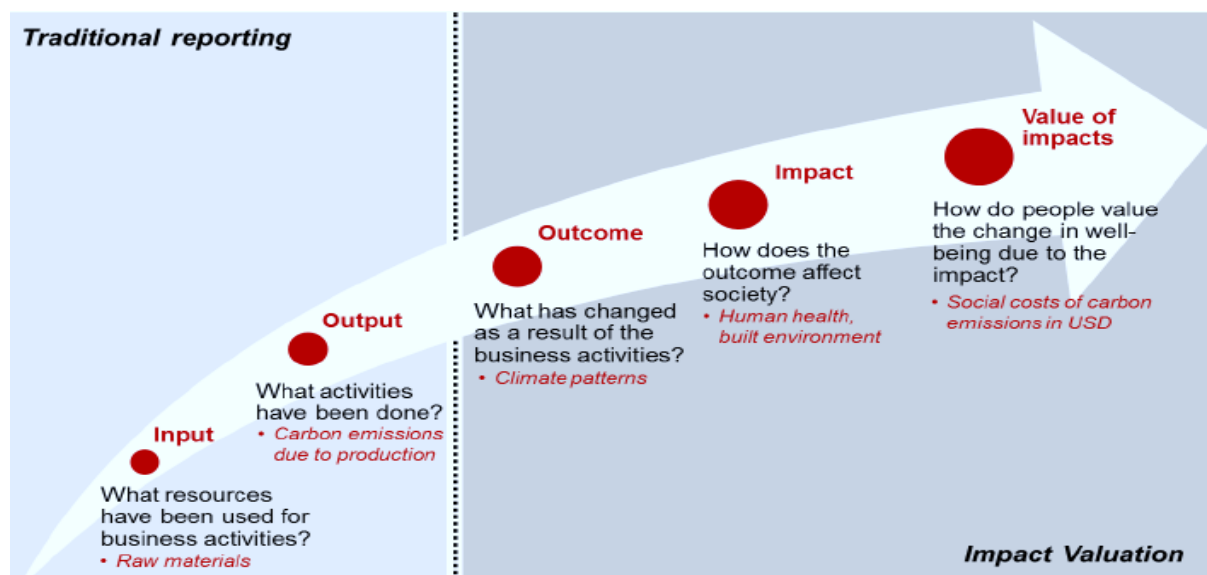
Impact valuation is a way to identify, understand, improve, and demonstrate the value and cost of our business activities on society - such as the *cost to society* of our carbon emissions and the *value to society* of our tax payments.

To facilitate comparability, the impacts and external effects of business activities are measured and valued in monetary terms.

By nature, financial, social, and environmental impacts are positive or negative. By applying shadow prices to the impacts of activities, societal costs and benefits are determined.

Philips Lighting is on a journey to measure all its business impacts along the economic, social, and environmental dimensions. Where possible we aim to extend the scope of our analysis on an annual basis as our insights increase further.

By publishing the results of our analysis and methodology, context and underlying assumptions are made transparent to our stakeholders. With this document we strive to contribute to developing a global standard for impact analysis, as well as through our active participation in the Impact Valuation Roundtable.



**Scope of impact analysis**

The table below shows which metrics were included in our analysis to determine societal impacts

Dimension	Indicator	Summarized consideration	Boundary
Environmental impacts	Carbon emissions	Impact on climate due to emitted greenhouse gas emissions	Own operations
		Impact on climate due to avoided greenhouse gas emissions through our energy efficient LED lamps & luminaires	Products
	Waste disposal	Impact on environment due to waste disposal	Own operations
	Water usage	Impact on water scarcity due to water consumption	Own operations
Social impacts	Injuries & fatalities	Impact on workers & communities due to occupational injuries and fatalities	Own operations
	Training of employees	Impact on human capital due to training & development	Own operations
	Salaries & benefits	Impact on economy through remuneration of employees	Own operations
Financial impacts	Capital returns	Impact on economy through interest payments to suppliers of capital	Own operations
	Taxes	Impact on economy through tax payments in countries where we operate	Own operations
	Capital returns	Impact on economy through shareholder returns to shareholders	Own operations

**Detailed considerations**

The following section highlights per indicator the boundaries to determine shadow prices, references to the academic sources, and the base price that was applied.

**Environmental impacts**

This section explains the different metrics that were included to determine our environmental impact.

**Carbon emissions**

Philips Lighting reports in line with the Greenhouse Gas Protocol (GHGP). The market-

based method of reporting is used as a reference for calculating our carbon footprint.

- Scope 1 – direct CO<sub>2</sub> emissions – is based on direct emissions from our industrial and non-industrial sites in full.
- Scope 2 – indirect CO<sub>2</sub> emissions – is based on indirect emissions from our industrial and non-industrial sites in full.
- Scope 3 – other CO<sub>2</sub> emissions related to activities not owned or controlled by Philips Lighting is based on business travel and distribution activities.
- Scope 4 – avoided CO<sub>2</sub> emissions – is based on use of our LED lamps & luminaires, and the

resulting reduced electricity consumption compared to conventional lighting

The CO<sub>2</sub> emissions calculation includes all six Kyoto gasses (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>).

**Shadow price considerations:** the costs of changes in net agricultural productivity, human health, property, damages from increased flood risk due to climate change

**Shadow price sources:** EPA's SC-CO<sub>2</sub> (2017)

**Base price applied:**

€100 per tonne CO<sub>2</sub>

### Waste disposal

Data consists of manufacturing waste that is delivered for landfill, or incineration. Due to the residual value of recycling, this method of waste disposal is excluded from our calculations.

**Shadow price considerations:** amenity costs (odor, visual impact, noise), and costs from emissions to air affecting global warming, health, damage to buildings and materials, and loss of agricultural production.

**Shadow price sources:** *Rabl et al (2008)*, adjusted for inflation.

**Base price applied:**

€25 per tonne waste to landfill

€40 per tonne waste to incineration

### Water usage

Data consists of water usage in our operations, both purchased and extracted from groundwater wells.

**Shadow price considerations:** water scarcity costs, impacting human health, net agricultural productivity, and environmental deterioration

**Shadow price sources:** Together with TruCost Philips Lighting calculated the societal water price per location of its operations for the coming 10 years, taking into account water scarcity levels and societal implications of water usage in those locations.

**Base price applied:**

€4.30 per m<sup>3</sup> water (on average)

## Social impacts

This section explains the different metrics that were included to determine our social impact.

### Work-related lost-time injuries

Lost-time injuries are occurrences where the injured employee is unable to work one or more days. These work-related injuries and illnesses predominantly occur in manufacturing operations and Field Services. All lost-time injury cases are reported for Philips Lighting staff and contractors working under the supervision of Philips Lighting.

**Shadow price considerations:** the costs of loss of current and future income, medical costs, costs for community, incl. lost revenue, social welfare payments, rehabilitation

**Shadow price sources:** The cost of work-related injury and illness for Australian employers, workers, and the community, 2012–13, adjusted for inflation.

**Base price applied:**

€49,982 per work-related lost-time injury

### Work-related fatalities

Fatalities are reported for contractors working under the supervision of Philips Lighting and all Philips Lighting staff.

**Shadow price considerations:** the costs of loss of current and future income, costs for community, incl. lost revenue, social welfare payments

**Shadow price sources:** The cost of work-related injury and illness for Australian employers, workers, and the community, 2012–13, adjusted for inflation.

**Base price applied:**

€1,626,561 per work-related fatality

### Learning & development of employees

Data covers all employees, including temporary employees and is based on the learning & development spend of the organization as registered through our center of excellence, the Philips Lighting University.

**Shadow price considerations include:** personal returns for employees: future wage-increase, due to skill development at Philips Lighting. Social returns include: increased productivity and spill-over effects of human capital to others

in surroundings.

**Shadow price sources:** Venniker (2000)

**Base price applied:**

€1.14 per €1 spend on learning & development

### Salaries & wages paid to employees

**Shadow price considerations:** enhanced purchasing power positively influences economic environment

**Base price applied:** Cash transfers to employees (salaries) are reflected at a ratio of 1:1. We assume that every Euro 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 cash transfers through enhanced purchasing power.

### Financial impacts

Economic impacts quantify the positive financial externalities of Philips Lighting. This consists of more than our own net profits, as we contribute to GDP in countries where we operate. Considering our Gross Value Add, Philips Lighting considers the following categories to be most relevant due to their direct increase in purchasing power: tax revenues for governments, interest payments to providers of capital, and shareholder returns to Philips Lighting's owners (through dividend payments and share buy-back).

Philips Lighting has reflected these contributions at a ratio of 1:1. We assume that every Euro transferred will be spent and therefore contributes to the (local) economy. Even if not all of the money that is transferred gets 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.

## Annex A: details on avoided emissions from LED lamps & luminaires

To calculate the avoided emissions from LED lamps & luminaires, the following is determined:

- The number of LED lamps & luminaires sold in a period [LED]
- The global average energy usage per socket for conventional lighting technologies [SOCKET A] and LED lighting technologies [SOCKET B]
  - These are determined by Market Intelligence specialists based on:
    - Installed base per lighting technology, split by 5 different regions;
    - Average annual burn hours per technology, broken down per segment
    - Average wattage per technology, broken down per segment
    - Combined, the burn hours and wattage determine electricity usage per socket.
- The energy savings per LED sale are calculated (socket conventional – socket LED) and expressed in TWh
- The global carbon emission factor per TWh is taken from the 2015 IEA publication [CEF]
- The societal cost of 1 tonne carbon emissions is based on a study from the Environmental Protection Agency [CP]

The following formula is applied to determine the avoided carbon emissions:

$[LED] * ([SOCKET A - SOCKET B]) * [CEF] * [CP] = \text{societal value through avoided carbon emissions.}$