



Explanatory notes to the information reported  
in the report “Sustainability at Infineon” –  
supplementing the Annual Report 2019

These explanatory notes refer to the sustainability information and data published in the report “Sustainability at Infineon” (hereinafter called Report). KPMG AG Wirtschaftsprüfungsgesellschaft has provided independent limited assurance on this information in accordance with the International Standard on Assurance Engagements 3000. The independent assurance report can be found here [www.infineon.com/CSR\\_reporting](http://www.infineon.com/CSR_reporting).

## Reporting standards

Infineon Technologies (hereinafter called Infineon) applies the Sustainability Reporting Guidelines GRI Standards of the Global Reporting Initiative, according to the “Core” option and as reporting criteria for the sustainability information published in the Report. This reporting standard is supported by internal guidelines, too.

For the determination of the Infineon CO<sub>2</sub> footprint we have developed an own approach which became further refined during the 2019 fiscal year. This approach is generally oriented towards ISO 14000 and substantiated by PAS (Publicly Available Specification) 2050:2008, a guideline for product carbon footprints, issued by the BSI (British Standards Institution).

For external reporting we follow the “Greenhouse Gas Protocol” classification of Scope 1, Scope 2 and Scope 3 emissions. The Scope 2 Protocol has been considered, too.

For the determination of the indicator “CO<sub>2</sub> savings enabled through our products” we have used internal criteria.

## Organizational boundaries

Our reporting includes all our own production sites and corporate headquarters, R&D sites, sites for service functions, sales centers and small production sites.

The information reported on the chapters “Protection of our employees” and “Environmental sustainability” as well as on the section “The Infineon CO<sub>2</sub> footprint” of the chapter “Contribution through sustainable products” includes all our own production sites and corporate headquarters, which are part of our certified IMPRES<sup>1</sup> management system. This scope was selected based on the impact of the activities performed on those sites and comprises 95 percent of the total Infineon employees worldwide.

External companies operating at some of our sites, in which Infineon has no operational control, and which have no influence on Infineon’s production, are not included in the reported KPIs.

## Determination of the Key Performance Indicators (KPIs)

### a. Energy

#### **Energy consumption per revenue:**

As a reference for the calculation of this KPI we have used the GRI Standards definitions. We have taken into account the following energy sources: Electricity, district heating, firewood, natural gas, LPG, gasoline/petrol, diesel and heating oil. The revenue figures used for the calculation are taken from the respective annual reports of the last years.

#### **Total energy consumption:**

As a reference for the calculation of this KPI we have used the GRI Standards definitions. We have taken into account all our energy sources:

- Infineon’s energy consumption is made of electricity, district heating, firewood, natural gas, LPG, gasoline/petrol, diesel and heating oil.
- The individual energy consumption of our production sites is included in our reporting tool quarterly and automatically converted into the energy reference unit by the tool itself. The conversion factors included in our reporting tool in order to calculate the final energy consumption originate from the following sources:

<sup>1</sup> Infineon Integrated Management Program for Environment, Energy, Safety and Health

- UK Carbon Trust
- National Energy Board, Government of Canada
- Claverton Energy Research Group
- FNR (Fachagentur Nachwachsende Rohstoffe) – German central coordinating institution for research, development and demonstration projects in the field of renewable resources.
- UK Ministry – Department for Environment, Food & Rural Affairs (Defra)

**Specific energy consumption:**

Based on the normalization factor “cm<sup>2</sup> manufactured wafer”, the electricity consumption’s benchmark reported by the World Semiconductor Council (WSC) includes only the data of the worldwide Frontend sites included in IMPRES.

**Energy consumption outside the organization:**

Information is reported in CO<sub>2</sub>-equivalents. The reporting was based on the definitions of the indicator GRI 302-2:

- Upstream emissions are the ones incurred in connection with the provision of materials.
- Downstream emissions are the ones directly derived from production processes as well as and from internal and external transport.

**b. Water**

**Water withdrawal:**

The water withdrawal includes own well water as well as drinking and non-drinking water provided by third-parties (e.g. municipal waterworks).

**Specific water consumption:**

In the water consumption benchmark reported by the World Semiconductor Council (WSC), cooling water is not considered. Based on to the normalization factor “cm<sup>2</sup> manufactured wafer”, such benchmark includes only the data of the worldwide Frontend sites included in IMPRES.

**Water reused and recycled:**

Infineon defines water reused or recycled as the water which is used either without or with further treatment and which can be used in order to meet the water demand without using fresh water:

- Following water types are considered within reused wastewater:
  - Recovered wastewater for recycling in the same process
  - Recovered wastewater from a different process, but within the same facility
  - Wastewater, which is reused in another Infineon site
- Following water types are considered within reused ultrapure water:
  - Recovered ultrapure water for recycling in the same process
  - Recovered ultrapure water from a different process, but within the same facility
  - Ultrapure water, which is reused at another Infineon site

**Water discharge:**

The KPIs and targets related to water discharge include wastewater and other water discharges. Municipal wastewater and evaporated water are excluded.

Wastewater is classified as follows:

- Direct discharge: effluent discharged by the site without the need of prior-external treatment.
- Indirect discharge: water which is not allowed to be directly discharged or which needs prior treatment.

**Water-stressed areas:**

The determination of which sites are place in water-stressed areas was made by using the definition according to the WBCSD (World Business Council for Sustainable Development): “a water shortage exists when the total volume of renewable water

resources available in a given area per capita is lower than 1,700 cubic meters per year". We performed a country-based analysis in February 2017 based on the so-called „Global Water Tool 2015" of the WBCSD<sup>2</sup>.

### c. PFCs<sup>3</sup>

PFCs are essential for the production of semiconductors in the Frontend sites. These are used in wafer-etching processes for structuring wafers as well as for cleaning production equipment. This includes Perfluorinated Compounds (PFCs), namely fluorinated and polyfluorinated carbon compounds, sulfur hexafluoride (SF<sub>6</sub>) and nitrogen trifluoride (NF<sub>3</sub>). These greenhouse gases cannot be replaced by another class of substances and account for around 86 percent of Scope 1 emissions.

The reported PFCs figures refer to the amounts consumed during the respective fiscal year by Infineon.

The conversion of PFCs in CO<sub>2</sub> equivalents is based on a worldwide predetermined algorithm which must be used within the semiconductor industry. The conversion to CO<sub>2</sub>-equivalents is based on a globally predetermined algorithm that must be applied within the semiconductor industry. Its calculation methodology is based on the scientific assessments of the IPCC<sup>4</sup> and the calculations for GWP<sup>5</sup>. The distribution of this algorithm is carried out annually by the competent organizations.

The calculation of the NER (normalized emission rate) is carried out as a normalization of PFC emissions in CO<sub>2</sub>-equivalents divided by the manufactured wafer area.

### d. Other emissions

Under "other emissions" we considered the following emissions:

- Sulphur oxide (SO<sub>x</sub>): SO<sub>2</sub> and SO<sub>3</sub> expressed as SO<sub>2</sub>-equivalent
- Nitrogen oxide (NO<sub>x</sub>): NO and NO<sub>2</sub> expressed as NO<sub>2</sub>-equivalents
- Volatile Organic Compounds (VOC): organic compound having an initial boiling point exceeding 250°C at a standard pressure of 101.3 kPa (Directive 2004/42/EC)
- Persistent Organic Pollutants (POPs): according to the Stockholm Convention
- Fine particulate matter (PM): Particles with a diameter of 10 or less micrometers (PM10)
- Carbon monoxide (CO): Carbon monoxide is produced from the partial oxidation of carbon-containing compounds with insufficient oxygen supply.

Only direct emissions (derived from Infineon activities) have been included in the reporting of this indicator. Resulting from a change in the calculation model, the data basis and the reported emissions were improved.

### e. CO<sub>2</sub> footprint

We assessed the net ecological benefit on our CO<sub>2</sub> footprint considering both: environmental burden and environmental benefits. The data of greenhouse gas emissions are reported in metric tons.

#### **Environmental burden – CO<sub>2</sub> emissions:**

This includes the direct emissions such as PFC, emissions occurring during the deployment process of raw materials, consumables and process, energy and water supply as well as waste and wastewater treatment. Furthermore, it considers the transport of the products to other sites and to distribution centers, as well as flights and Infineon-function cars. Direct and indirect emissions are based on source data from the 2019 fiscal year.

<sup>2</sup> Status as of September 2015

<sup>3</sup> Perfluorinated compounds

<sup>4</sup> Intergovernmental Panel on Climate Change

<sup>5</sup> Global Warming Potential - GWP is relevant for 100 years long

Not included here is the CO<sub>2</sub> emitted during the use-phase of the products and their disposal. Those CO<sub>2</sub>-emissions are not determined due to the varying applications and fields of use Infineon products are subject to.

Infineon uses for its external reporting the final Scope 2 emissions taking into account provider-specific emission factors of the energy sources used. This approach was selected in order to illustrate the implementations achieved so far in terms of regenerative energy supply.

The following official sources were used as data sources for CO<sub>2</sub>-conversion factors:

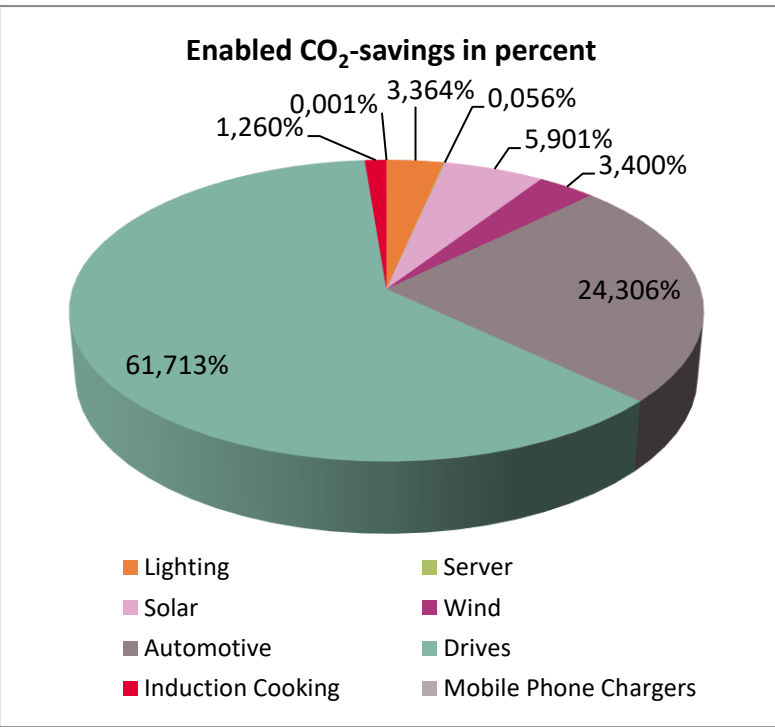
- DEFRA Carbon Factors (energy, transport, waste, water)
- International Energy Agency – Carbon conversion factors (Electricity)
- ProBas Substance Database (Raw materials and supplies)
- IPCC (PFCs)

**Environmental benefit – CO<sub>2</sub> emissions:**

Up to date, for semiconductor products, there is no established external framework or standard defining rules applicable for accounting and reporting of CO<sub>2</sub>-savings enabled through products in the use phase. Therefore we have developed an own methodology to determine the indicator CO<sub>2</sub>-savings enabled through our products. The calculation of the environmental benefit is based on the calendar year 2018, because the products sold in the calendar year 2018 enable reductions just in the use-phase of the end product (after being sold), and are then relevant for the CO<sub>2</sub> footprint 2019.

The methodology for the determination of the CO<sub>2</sub>-emission reductions enabled is based on the framework conditions described here:

- Consideration of the following Infineon products: Automotive electronics, industrial drives, servers, lighting<sup>6</sup>, photovoltaic, mobile phone chargers and wind energy as well as induction cookers.



- The calculation is based on the potential energy savings our semiconductors enable in the end technologies where they are installed.
- For the calculation, we consistently used worldwide average emission factors of the calendar year 2017.
- For the calculation we considered the market share of Infineon as well as the percentage of semiconductors in the end-products and the lifetime of the technologies which was based on internal and external expert estimations.

Life-cycle assessments can be subject to imprecision due to the complex issues involved. We continually strive to refine and improve our carbon footprint methodology.

<sup>6</sup> From the fiscal year 2018 on, products for commercial LED lighting systems are included.

## f. Waste

Reported waste is classified in the categories hazardous/non-hazardous as defined by the local/national regulations in that context.

The information reported in the “Environmental sustainability” chapter is based on the officially communicated treatment methods by the waste management companies. Per our definition waste is reported independently whether it is compensated or not.

### **Specific waste generation:**

Based on the normalization factor “cm<sup>2</sup> manufactured wafer”, the waste generation’s benchmark reported by the World Semiconductor Council (WSC) includes just the worldwide Frontend sites included in IMPRES.

## g. Occupational safety

### Accidents

The calculations of the Injury Rate (IR) and the Lost Day Rate (LDR) are based on the GRI Standards 403-2 definitions.

Only work-related accidents with at least one day work-absence are considered. The day of the accident is not counted. The base for the determination of lost days is “calendar days”. Way-to-work accidents and near accidents are not included.

The working hours are the weekly hours as stipulated in employee contracts. This includes holidays and public holidays. The reporting of lost days concludes at the end of each fiscal year.

### Training hours

The determination of the “training hours” is based on the training and continuing education for our specialized experts worldwide in the areas of occupational safety and health as well as in fire prevention.

## Data Quality

We continually strive to improve the quality of our data via the implementation of policies, systems, procedures and internal controls at Group and site level.

In case of business acquisitions/sales, the figures of those would be adjusted in conformity with the organizational boundaries mentioned above. In those cases the numbers will not be retrospectively included in the Report.

In individual cases data of quarter four may be estimated in accordance with the internal estimation policies.

In case a significant error in the fiscal year (meaning greater than 5 percent at Group level) was found in the data, it would be corrected. In case a significant error which does not indeed affect the reporting period but still affects the information of the previous years was found, it would be corrected.

Published by  
Infineon Technologies AG  
85579 Neuberg, Germany

© 2019 Infineon Technologies AG.  
All Rights Reserved.

### **Please note!**

THIS DOCUMENT IS FOR INFORMATION PURPOSES ONLY AND ANY INFORMATION GIVEN HEREIN SHALL IN NO EVENT BE REGARDED AS A WARRANTY, GUARANTEE OR DESCRIPTION OF ANY FUNCTIONALITY, CONDITIONS AND/OR QUALITY OF OUR PRODUCTS OR ANY SUITABILITY FOR A PARTICULAR PURPOSE. WITH REGARD TO THE TECHNICAL SPECIFICATIONS OF OUR PRODUCTS, WE KINDLY ASK YOU TO REFER TO THE RELEVANT PRODUCT DATA SHEETS PROVIDED BY US. OUR CUSTOMERS AND THEIR TECHNICAL DEPARTMENTS ARE REQUIRED TO EVALUATE THE SUITABILITY OF OUR PRODUCTS FOR THE INTENDED APPLICATION.

WE RESERVE THE RIGHT TO CHANGE THIS DOCUMENT AND/OR THE INFORMATION GIVEN HEREIN AT ANY TIME.

### **Additional information**

For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices please contact your nearest Infineon Technologies office ([www.infineon.com](http://www.infineon.com)).

### **Warnings**

Due to technical requirements, our products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life endangering applications, including but not limited to medical, nuclear, military, life critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.