TÜV NORD CERT standard for the verification of greenhouse gas statements and carbon neutrality (TN-CC 020)

TÜV NORD CERT GmbH
Am TÜV 1, 45307 Essen
TÜV®

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Note

Introduction

This standard defines requirements for the verification of greenhouse gas statements and carbon neutrality (net zero emissions) for a variety of entities by TÜV NORD CERT GmbH.

In addition, steps and requirements for issuing a certificate and a test mark under this standard are covered.

This standard only applies for greenhouse gas statements that have been calculated on the basis of an internationally recognized greenhouse gas accounting and reporting standard. Therefore, the user of this standard has to comply with the requirements specified in this standard and the requirements of the accounting standard used. In the event of contradictions between the respective standards, the approach that yields the more conservative greenhouse gas values shall be used.

1. Basic requirements for verification

1.1. Level of assurance

The level of assurance applied shall be reasonable.

1.2. Reduction and compensation of greenhouse gas emissions

In general, greenhouse gas emissions should be avoided and reduced. Only when emissions can no longer be avoided and reduced can there compensation be considered.

While compensation through investments in climate protection projects (CO_2 certificates) is recognized according to this standard, the following compensation measures are not recognized:

- Forests including creation and renaturation as well as afforestation measures through land use and land use changes
- Revitalization of forest moors
- Carbon capture and storage (CO_2 sequestration and CCS)
- Sequestration in the soil

The compensation can be done **ex-post**, i.e. after verification of the carbon footprint or **ex-ante**, based on an extrapolation of the available data.
In case of an ex-ante compensation, an uncertainty surcharge of 5% must be added to the calculated amount of greenhouse gas emissions in order to avoid an underestimation of the emissions. **In addition, it must be ensured that the greenhouse gas emissions have been fully offset in the reporting period as soon as historical data and information is available. Even if the contractual basis of the verification between TÜV NORD CERT GmbH and the client is terminated, this is ensured by a retrospective verification before the termination of the contractual relationship.**

If the follow-up verification reveals that a lower amount of greenhouse gas emissions was offset than actually emitted, the difference must be offset by further compensation. In the event that a higher amount of greenhouse gas emissions has been offset, this excess of certificates can be credited for the upcoming follow-up verification(s), provided that the requirements for certificates are still met.

1.3. Uncertainty surcharge

In order to avoid any underestimation, an uncertainty surcharge must be added to the total greenhouse gas emissions in all cases in which

- a certain uncertainty remains with regard to the materiality threshold or
- carbon neutrality is claimed ex-ante

Generally this surcharge is 5%.

1.4. Greenhouse gas or documentation report

The client shall submit a greenhouse gas or documentation report for the verification. The report shall contain the following information:

- name of the organization
- reporting period and accounting standard used
- objective(s) and scope of the verification (including considered emissions sources and emission categories, locations, if applicable, **products**)
- justification of excluded emissions (if applicable)[1]
- methodologies applied (for data gathering/evaluation/analysis)
- **product** launch date (if applicable)
- description and justification of the **product** emission factor (so-called functional or declared product unit, if applicable)
- description of any forecasts and assumptions (if applicable)
- information on secondary data used (e.g. emission factor sources)
- greenhouse gas emission results, shown as one number and shown as emissions broken down by Scope (according to the applied accounting and reporting standard)
- uncertainty assessment (if applicable)
- List and description of the measures to avoid and reduce greenhouse gas emissions **(mandatory when preparing the initial balance)**
- Description and type of CO_2 compensation (if applicable)

1.5. CO_2 certificates

A large number of CO_2 certificates and climate protection projects for offsetting greenhouse gas emissions are offered in the compliance market. For this standard, only certificates that have verified by an independent third party and are subject to a quality standard[2] are accepted as compensation.

In addition, for certificates with identification of a year (vintage) or assigned serial number, it applies that they shall **not be older than 10 years**, starting from the reporting period claimed as carbon neutral (with full years). If there is only a period instead of a fixed year and an allocation to a specific year is not possible, the middle of the period is defined as the corresponding year for the certificate (rounded down if necessary), example: period 2015 to 2020; relevant year according to this standard: 2017.

Below is an overview of the quality standards, certificates and project types that are accepted for compensation, including any restrictions:

[1] Emission sources estimated to constitute less than 1 % may be excluded on that basis alone; however, the quantified carbon footprint shall cover at least 95 % of the emissions from the subject.

[2] Ensures that the reduction of greenhouse gas is permanent, real, measurable, unique, additional and that double counting is avoided.

Standard	Certificate	Project type	Acceptance
VCS	VCU	renewable energies, energy efficiency, fuel switching, agriculture, transport, forests/forestry	without restrictions
Gold Standard	GS CES, GS VER		
CDM[3]	CER	renewable energies, energy efficiency, fuel switching, agriculture, transport	
		forests/forestry	only if biodiversity and stakeholder participation analogous to VCS and GS
EU-ETS	EUAs	N/A	without restrictions
PlanVivo	PVC	forests/forestry	only ex-post PVCs

A combination of the aforementioned quality standards with so-called additional standards such as Climate, Community and Biodiversity (CCB) is possible and is also accepted. The following project types to offset greenhouse gas emissions, however, will not be accepted:

- nuclear energy
- land use and land use change
- destruction of industrial gas (HFKW-23, N_20)
- palm oil sector and geological CO_2 sequestration

In order to address the risk of double counting of emission reductions or CO_2 certificates, the compensation shall be proven by cancellation of certificates in the relevant registers[4] or by means of decommissioning confirmations.

1.6. CO_2 compensation in the supply chain

A CO_2 compensation in the supply chain can reduce the amount of emissions to be offset. The prerequisite is that the compensation is recognized by the verifier. The compensation has no influence on the quantification of a carbon footprint.

[3] May be replaced by another standard in a post-Kyoto phase by the Paris Agreement.
[4] E.g. Environmental Registry, Gold Standard Impact Registry, Verra Registry, UN Carbon Offset Platform, Union Registry

2. Specific requirements for verification

2.1. Carbon neutral organization/company

In order to be carbon neutral as an organization/company, **at least 95%** of the total greenhouse gas emissions[5] must be taken into account when quantifying the carbon footprint. Direct emissions and indirect emissions of the organization/company are binding.

2.2. Carbon neutral product

In order to claim carbon neutrality for a product, the carbon footprint[6] shall be quantified using one of the following reporting boundaries:

- cradle-to-gate
- cradle-to-grave

Within the selected reporting boundary, only those emission sources are to be accounted for that are directly related to the product and are considered to be material, provided that **at least 95%**[7] of the greenhouse gas emissions are taken into account.
The product carbon footprint must be calculated based on a **product emission factor**. In principle, the factor **has to be recalculated** in the course of each verification. An exception to this principle of recalculation is possible if there are **no significant changes** in the input parameters, the methodologies used and the allocation process for the product-specific inputs and outputs. In this case, an **uncertainty assessment** must be carried out (see Chapter 1.4).

2.3. Carbon neutral service

The requirements for a service are similar to those defined for products, see Chapter 2.2.

2.4. Carbon neutral (natural) gas product

In order to claim carbon neutrality for a gas product, the corresponding carbon footprint must be determined by **selecting one of the following** reporting boundaries:

- gas combustion: Quantification of all emissions with respect to the gas combustion
- gas product: Quantification of all emissions with respect to the gas combustion **as well as** all relevant previous emissions caused by **exploration**, **extraction**, **processing**, **transport, storage** and **distribution**

[5,12] The entire greenhouse gas balance must be submitted, assuming reasonable assumptions are accepted.
[6] Quantity of greenhouse gas emissions produced or consumed during the life cycle of a product.

In the event that a „rolling system“ is used for the annual reading of the consumption meters by the gas supplier, the final consumption figures are only available one year after the end of the reporting period. Therefore, as part of the verification, in addition to the date from the previous reporting period and the forecast for the upcoming period, the final consumption figures for the penultimate reporting period must also be checked. If the gas customer wishes to terminate the contract with the gas supplier, the gas supplier must ensure that the final consumption figures for the respective reporting period can be checked.

2.5. Carbon neutral event

To claim climate neutrality for an event[8], at least **95%** of the event's total greenhouse gas emissions must be taken into account. Direct and indirect emissions as well as **at least** the arrival and departure of the participants, material requirements (e.g. flyers, brochures, posters) and outsourced services (e.g. overnight stays, meals) are binding, if applicable.

If hosting a carbon neutral event is to be used for marketing purposes **before** the event actually takes place, a pre-verification must be carried out **prior to** the date of the event. Therefore, a forecast of the carbon footprint of the event must be calculated using reasonable and conservative assumptions. If this forecast is assessed as reasonable and comprehensible during the pre-verification by TÜV NORD, 120 % of the calculated carbon emissions have to be compensated. If the pre-verification is successful, the test mark Carbon Neutral Event will be awarded to the organizer or client. **After** the event, a new calculation of the carbon footprint must be carried out and submitted for verification in order to ensure the verification of the actual carbon footprint of the event.

2.6. Carbon neutral building

There are five types of verifications for achieving a climate neutral claim in the building sector. The table below contains an overview of the verification cycle for each verification and the associated reporting boundaries.

	Verification cycle	**Reporting Boundary**
Carbon neutral building **construction**	one-time after construction	production of materials
Carbon neutral building **operation**	annual verification	operation of a building over a period of one year
Carbon neutral building **deconstruction**	one-time after deconstruction	demolition of materials incl. their recovery and recycling, the transportation and processes on construction-site
Carbon neutral **building**	see “Carbon neutral building construction” **and** “Carbon neutral building operation”	

[8] Including meeting, fair or workshop

Net-Zero-Emission-Building	one-time verification after completing the detailed design or operated over one year	power maintenance of a planned building that operates as carbon neutral over a period of 1 year

In the following subchapters, the different verification schemes are described in detail.

To avoid environmental impacts other than greenhouse gas emissions and to guarantee a maximum level of quality and user acceptance, in addition to the general requirements in this standard a certified building needs to meet the following conditions:

1. Reduction or avoidance of materials, mixtures and products that contain or release substances with a potential risk to the environment (groundwater, surface water, soil and air).[9]
2. Preferred use of wood from national or sustainable forestry.
3. Reduction of water demand and the disturbance of the natural water cycle.
4. Indoor hygiene, taking into account the prevention of formation of volatile organic compounds and the reduction of hazardous fire gases and indoor air quality.
5. Minimization or avoidance of adverse environmental impacts through the construction process.[10]

To avoid a reduction of emissions through a disproportionate use of insulation materials, the greenhouse gas emissions for the production of the insulation material must be lower than the forecast emissions saved during the future construction use period.

2.6.1 Carbon neutral building construction

Greenhouse gas emissions include: all materials within building construction and building technical installations[11], the building without external plants and installations, including their production and installation or deconstruction and utilisation or recycling processes on construction-site including excavation works.

2.6.2 Carbon neutral building operation

Greenhouse gas emissions include: heating, hot water, auxiliary energies, ventilation, air conditioning and lighting including auxiliary energy for renewable energy production including domestic power use. If applicable, maintenance and repair of equipment and technical installations[12] should be included additionally.

[9] E.g. halogenated or partially halogenated refrigerants and foaming agents, heavy metals, organic solvents, and substances and mixtures according to Biocide Directive and CLP-/REACH-Regulation
[10] With reference to local laws such as KrW-/AbfG, BImSchG and BBodSchG
[11] E.g. DIN 276: KGR 300 and KGR 400
[12] E.g. DIN 18960: KGR 310, 330, 350, 410 and 420

2.6.3 Carbon neutral building deconstruction

Greenhouse gas emissions include: all materials within building construction and building technical installations, the building without external plants and installations, including their production and installation or deconstruction and utilization or recycling processes on construction-site including excavation works.

2.6.4 Carbon neutral building

This verification comprises Carbon neutral building construction and Carbon neutral building operation.

2.6.5 Net Zero Emissions building

Greenhouse gas emissions include: heating, hot water, auxiliary energies, ventilation, air conditioning and lighting including domestic power use and auxiliary energy for renewable energy production.

If the verification is carried out before the building has been in operation for a year, the households' energy consumption will be determined according to local regulations. In order to avoid that the calculations forecast a high proportion of energy sold in order to increase their emission sinks, the coverage of the energy demand of certain consumers must be based on conservative assumptions[13], unless other figures can be considered as appropriate. The reduction of emissions from operation to 0 kg/a is only possible through avoidance (energy efficiency) and substitution (own production of renewable energy = purchase or share of wind energy or photovoltaics, etc.).

A verification of a "Net Zero Emissions Building" taking into account the purchase of CO_2 certificates from emission reduction projects is not possible.

[13] E.g. coverage of the entire electricity demand by self-generated electricity is to be assumed to be at least 90%

3. Verified CO_2 offsetting

Various companies in the climate protection market offer carbon offsetting on behalf of third parties as a service. In order to ensure that these offsets have taken place, TÜV NORD CERT offers the verification „Verified CO_2 Offsetting“. The verification does **not** include checking the calculated amount of greenhouse gas emissions to be offset.

In order to be verified, a Compensation Service Provider has to meet the following requirements:

- **complete compensation** of the emissions requested for compensation on behalf of third parties, i.e. it must be ensured that the compensation process is completely transparent and verifiable
- **documentation** of all process steps such as inquiries, customer profiles, contracts, invoices, payment notifications

The Service Provider's monitoring report submitted for the preliminary test must contain at least the following information:

- company profile
- description of the offsetting process, the documentation system and software used
- type of credits and registries used for offsetting
- description of any exceptional cases, not covered by the standard procedure (if applicable)

In addition, the Service Provider must draw up a list of all compensation processes within the last reporting period. This list should contain all orders/ inquiries received during this period with the current status of the process. In addition, this list must contain all processes that were started within the previous reporting period but not completed in order to document that these processes have now been finally completed.

In order to avoid double counting of CO_2 certificates, the offsetting must be proven by deleting the certificate in the relevant registers or by means of decommissioning confirmations. Evidence can also be provided by setting up (read) access for TÜV NORD CERT for each register used.

Annex A – Overview of test marks

For the below listed test marks, the General Conditions for Test Marks and Certificates ISO 14064-3, TN-CC 020 apply.[14]

- Carbon Neutral Organization
- Carbon Neutral Company
- Carbon Neutral Product
- Carbon Neutral Gas Product
- Carbon Neutral Gas Combustion
- Carbon Neutral Service
- Carbon Neutral Event
- Carbon Neutral Building
- Carbon Neutral Building Construction
- Carbon Neutral Building Operation
- Carbon Neutral Building Deconstruction
- Verified CO_2 Offsetting

[14] To be found online under www.tuev-nord.de