



LIFE BIODIVERSITY OFFSETTING FOR EVENTS

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OBJECTIVE

The purpose of this Reference Document is to establish the methodological parameters and guidelines applicable to the calculation of the Biodiversity Pressure Index (BPI) and the measurement of the Biodiversity Minimum Performance (BMP), based on measured or estimated data, as well as to the offsetting of biodiversity pressure at events, within the scope of the LIFE Methodology.

To this end, it compiles and systematises international reference values relating to waste generation, water consumption, energy consumption and greenhouse gas emissions, which support the application of the Biodiversity Pressure Index (BPI) where measured data are not available. No estimates are applied for land use, as the event venue will represent the physical business unit being assessed and must comply with the established evidence criteria described in Technical Guide 01 (TG01).

Furthermore, it sets out guidelines for offsetting the BMP through the purchase of LIFE Biodiversity Credits (LBC), ensuring consistency, comparability and transparency in the assessment and mitigation of impacts associated with the staging of events.

APPLICATION

This applies to event organisers, companies, producers, certification bodies and other stakeholders involved in the application of the LIFE Methodology to events.

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1. INTRODUCTION

The LIFE Business and Biodiversity Methodology requires organisations and producers to assess their environmental pressures based on five aspects: waste generation, water use, energy use, greenhouse gas (GHG) emissions and land use.

These pressures are measured using the Biodiversity Pressure Index (BPI), a tool used to calculate and monitor the environmental impacts associated with different production contexts. The BPI result, together with the assessed organisation's turnover, forms the basis for defining the Biodiversity Minimum Performance (BMP), which corresponds to the positive score required to offset the identified pressure.

This Reference Document consolidates international reference values and methodological guidelines complementary to Technical Guide 01 (TG01), applicable specifically to events. Its aim is to provide standardised parameters for estimating impacts when primary data are not available, ensuring consistency, comparability and transparency in the application of the methodology.

Where available, primary data should be prioritised and entered into LIFE Key, accompanied by the relevant evidence in the specific fields on the platform. In the absence of primary data, estimates should be made based on the parameters set out in this document, and this should be explicitly stated in the comments field of LIFE Key for each associated Pressure Indicator (PI).

The application of the LIFE Methodology to events does not constitute an organisational certification process. It involves using the LIFE Key platform to calculate the Biodiversity Pressure Index (BPI), based on measured or estimated data, and to define the event's Biodiversity Minimum Performance (BMP). Thus, the BMP obtained may serve as a basis for negotiations regarding LIFE Biodiversity Credits (LBC), enabling the purchase of the credits required to offset the pressure caused by the event.

The calculation of the BPI and the BMP must be submitted for verification by a Certifying Body (CB), as set out in this document, with the aim of ensuring the proper application of the methodological criteria and parameters, as well as enabling the issuance of a verification certificate before the event takes place. This certificate attests that the pressure on biodiversity associated with the event has been measured in accordance with the **LIFE Events Methodology** and offset through the acquisition of LIFE Biodiversity Credits (LBC), enabling the results to be communicated to stakeholders.

It should be noted that the referred **Event Verification Certificate** is not to be confused with the **LIFE Business and Biodiversity Certificate**, as it applies exclusively to events.

2. INITIAL PREMISES FOR EVENTS

2.1 EVENT CATEGORIES

To ensure methodological standardisation of the estimates applied to the environmental aspects considered in the calculation of the Biodiversity Pressure Index (BPI) for events, four categories of events have been defined: small corporate events, conferences and medium- to large-scale corporate events, sporting events, and festivals/concerts.

The categorisation was established based on the operational characteristics, size, infrastructure requirements and resource consumption profile associated with each type of event, with a view to ensuring greater consistency and comparability in the application of the estimation parameters.

The categories adopted are aligned with the international benchmarks and references used in this Reference Document, including guidelines and studies developed by initiatives such as the GHG Protocol (WRI; WBCSD, 2004), Julie's Bicycle (2012), A Greener Festival (2020), Net Zero Carbon Events, CESAER (2023), Xuan et al. (2024) and Goldblatt (2023), which differentiate events according to their size, operational complexity and environmental impact profile.

The definitions of the event categories adopted by the LIFE Methodology are set out in Table 1 below.

Table 1 – Definition of Event Categories

EVENT CATEGORY	DEFINITION
Small corporate events (meetings/workshops/seminars)	Small-scale corporate or institutional events, with up to 100 participants, low operational complexity and minimal infrastructure and resource requirements. These include meetings, workshops, training sessions, lectures and seminars.
Medium to large-scale conferences and corporate events (conferences/symposia/trade fairs/exhibitions)	Corporate or institutional events with more than 100 participants, greater operational complexity and increased demands on infrastructure, logistics and resources. These include congresses, conferences, symposia, trade fairs and exhibitions.
Sporting events	Events organised for the purpose of holding competitive or recreational sporting activities, involving participants and/or spectators, with specific infrastructure and operational requirements.
Festivals/Concerts	Cultural and entertainment events characterised by large crowds, temporary structures and increased energy and logistical demands. These include concerts, music festivals and artistic events in general.

Source: LIFE Institute - 2026

2.2 NUMBER OF PARTICIPANTS

The number of participants is one of the key parameters for estimating the environmental factors considered when calculating the Biodiversity Pressure Index (BPI) for events. Its definition should be based on objective and verifiable criteria, consistent with the characteristics of the event and the information available at the time of calculation.

Factors that may be considered include, amongst others, the venue's maximum authorised capacity, the number of tickets made available for sale, the number of registrations made, the official attendance estimate, the number of confirmed participants, or the occupancy limit set for the event.

3. WASTE GENERATION

3.1 CALCULUS METHODOLOGY

Where no primary data (direct measurements of the weight of waste generated) is available, the total amount of waste generated at events can be estimated based on the number of participants, the duration and the type of event, using the international average values set out in this document. The calculation is based on the following formula:

$$\text{Total Waste (kg)} = (\text{kg/person/day} \times \text{Number of participants} \times \text{Number of days}) \times \text{adjustment factors}$$

The waste is then sorted into four categories: **recyclables**, **organic waste**, **non-recyclable waste** and **hazardous waste**, in line with the average proportions observed in the international studies presented in this document.

3.2 REFERENCE VALUES

Studies carried out by international organisations provide average figures for waste generation at different types of events. These figures have been compiled and summarised in Table 2.

Table 2 - Average waste generation at events (kg per participant per day)

TYPE OF EVENT	TOTAL WASTE (kg/pp/day)	MAIN SOURCES
Small corporate events (meetings/workshops/seminars)	1,0	Estimate based on similarity to small-scale conferences (Terra Tag, 2023)
Sporting events	1,15	Average in the 0.8–1.5 range; extrapolated based on similarity to average festivals (AGF Report 2024)
Medium to large-scale conferences and corporate events (conferences/symposia/trade fairs/exhibitions)	1,5	Average for the 1.0–2.0 range; Terra Tag (2023)
Festivals/Concerts	2,0	Consolidated average figure between the AGF Report 2024 (0.9 kg/person/day) and Julie's Bicycle (2.8 kg/person/day)

Source: LIFE Institute - 2026

Once the average waste generation figures by type of event have been established, it is necessary to detail the composition of this waste and the correction factors applied. Considering the international literature (Julie's Bicycle, 2012; A Greener Festival, 2019; WRAP, 2020; ICLEI, 2009), the following average composition ratio was adopted as a reference where waste sorting takes place:

- 50% recyclables;
- 30% organics;
- 19% landfill waste (non-hazardous) and;
- a residual fraction of 1% hazardous waste.

In accordance with estimates from the European Environment Agency (2016).

For situations where **no waste sorting takes place**, it was assumed that all non-hazardous waste should be classified as **landfill waste**, whilst keeping the proportion of hazardous waste constant. This distinction reflects the difference in efficiency in waste segregation at events with structured environmental management practices.

In addition, a **correction factor of 0.95 was applied to events with waste sorting**, representing the proportional reduction in the total waste sent to landfill, in accordance with guidelines on good practice in solid waste management at events (ICLEI, 2009; WRAP, 2020). For events without waste sorting, the factor remains at 1.0, reflecting the absence of environmental benefits from waste separation.

The calculations were carried out using a **support spreadsheet developed in Excel**, which allows users to select the type of event, the number of participants, the duration and whether or not screening takes place. The spreadsheet automatically estimates the total amount of waste generated and breaks down the figures according to the composition used; **it also allows measured data to be entered** to override the estimates, where available.

4. WATER CONSUMPTION

4.1 CALCULUS METHODOLOGY

Where no primary data is available (direct measurements from water meters, supplier records or water bills), total water consumption at events can be estimated based on the number of participants, the duration and the type of event, using international average values. The calculation is based on the following formula:

$$\text{Consumed Water (L)} = \text{number of participants} \times \text{number of days} \times \text{Base price (L/pp/d)} \times \text{catering/camping fee}$$

4.2 REFERENCE VALUES

Table 3 shows average water consumption figures by type of event, based on international reference estimates:

Table 3 – Average water consumption at events (litres per participant per day)

TYPE OF EVENT	AVERAGE CONSUMPTION (L/pp/day)	MAIN SOURCERS
Small corporate events (meetings/workshops/seminars)	15	Estimate based on the Green Venue Report 2017 and analyses of small corporate meetings
Medium to large-scale conferences and corporate events (conferences/symposia/trade fairs/exhibitions)	20	Conservative estimates from the literature and the Green Venue Report 2017
Sporting events	25	Based on a technical memorandum from San Diego City Council regarding NFL matches (~11.4 L/pp/event) and a conservative adjustment
Festivals/Concerts	30	Based in Glastonbury; Night & Day Festival Policy; Julie's Bicycle (2012)

Source: LIFE Institute - 2026

The figures used for average water consumption per person per day have been adjusted to a range that is both understandable and practical for calculations, ranging from 15 L (small corporate events) to 30 L (festivals and concerts). This range was defined on the basis of academic literature and sector-specific reports, including the Green Venue Report 2017 (convention centres), Jules Bicycle – The Show Must Go On (European festivals), Glastonbury and the Night & Day Festival Policy (festivals and concerts), and a technical memorandum from San Diego City Council (sporting events).

In specific situations, it is recommended that additional adjustments be applied: +20% for events involving camping, based on the USFS Campground Design Guidelines; +12.5% where there is intensive food provision or catering (EPA, 2017); and a proportional reduction where reused water or rainwater harvesting is used.

The calculations were carried out using a **support spreadsheet developed in Excel**, which allows the user to select the type of event, the number of participants, the duration and the application of adjustment factors. The spreadsheet also **allows measured data to be entered**, which automatically overwrites the estimates when available, ensuring greater accuracy in the results.

5. ENERGY CONSUMPTION

5.1 CALCULUS METHODOLOGY

Where no primary data is available (electricity bills, direct measurements, records from the event venue or contractual consumption information), the total electricity consumption at events may be estimated based on the number of participants, the duration and the type of event, using international average reference values. The calculation is based on the following formula:

$$\text{Consumed Energy (kWh)} = \text{Number of participants} \times \text{Number of participants} \times \text{Average value (kWh/pp x day)}$$

The average values are applied according to the event category selected in the supporting spreadsheet. Where available, measured data should take precedence over estimated values; it is recommended that estimates be progressively replaced by actual data, with a view to improving the accuracy of the calculation of the Biodiversity Pressure Index (BPI) for events.

For the purposes of entry into the LIFE Key platform, energy consumption must be reported in kW (average power). The supporting spreadsheet developed as part of the LIFE Methodology already automatically converts the estimated total consumption (kWh) to kW, considering the total duration of the event in hours.

However, when data calculated directly in kWh is used (for example, from contractual information or invoices), the conversion to kW must be carried out manually using the following formula:

$$\text{Average Power (kW)} = \text{Total Consumption (kWh)} \div \text{Total number of hours of event}$$

The total number of hours for the event is equal to the number of days multiplied by 24 hours. Example: for a 3-day event, this amounts to 72 hours (3 × 24). The total value in kWh should be divided by 72 to obtain the average power (kW) to be entered into LIFE Key.

5.2 REFERENCE VALUES

Table 4 shows the international average figures for electricity consumption by type of event, expressed in kWh per participant per day (kWh/pp/day).

Table 4 – Average energy consumption at events (kWh per participant per day)

TYPE OF EVENT	AVERAGE CONSUMPTION (kWh/pp x day)	MAIN SOURCES
Small corporate events (meetings/workshops/seminars)	2	Green Venue Report (2017); UNEP & ICLEI (2009)
Festivals/Concerts	4	Goldblatt (2023); Xuan et al. (2025)
Sporting events	8	Net Zero Carbon Events (2022/2023); CESAER (2023); Mannheim & Avató (2025)
Medium to large-scale conferences and corporate events (conferences/symposia/trade fairs/exhibitions)	12	Julie's Bicycle (2020); A Greener Future (2024); The Show Must Go On Report (2020)

Source: LIFE Institute - 2026

The figures used were derived from the international benchmarks cited in the table above (Table 4), which were published in technical reports and academic studies on the environmental impacts of events, considering the aggregate electricity consumption for lighting, air conditioning, audiovisual systems, temporary infrastructure and other operational equipment.

6. GREENHOUSE GASES (GHG) EMISSIONS

6.1 CALCULUS METHODOLOGY

Where primary data are not available (such as actual electricity consumption, fuel used in generators or the distance travelled by participants and suppliers), greenhouse gas (GHG) emissions associated with events can be estimated based on the number of participants, the duration and the type of event, by applying international average values reported in the literature.

Studies conducted by various international organisations have sought to establish benchmarks for emissions at events: the GHG Protocol (WRI; WBCSD, 2004) provides the methodological framework for accounting, whilst publications by Xuan et al. (2024) and Golblatt (2023) present estimates for major sporting events by comparing various case studies; Julie’s Bicycle (2012) and A Greener Festival (2020) establish benchmarks for music festivals and concerts, whilst CESAER (2023) and Net Zero Carbon Events provide inventory guidelines for corporate events in different countries. The calculation follows the formula below:

$$\text{Total Emissions (kg CO}_2\text{e)} = (\text{N}^\circ \text{ of participants} \times \text{N}^\circ \text{ of days}) \times \text{Average value (kg CO}_2\text{e/pp} \times \text{day)}$$

6.2 REFERENCE VALUES

For each event category, average emission factors were adopted, expressed in kg CO₂e per participant per day (kg CO₂e/pp per day). Table 5 presents the average reference values for GHG emissions by event type (kg CO₂e/pp per day), including the proportional distribution between Scopes 1, 2 and 3, in accordance with the recommendations of the **GHG Protocol**.

Table 5 – Average reference values for GHG emissions at events (kg CO₂e/person per day)

TYPE OF EVENT	SCOPE 1 (%)	SCOPE 2 (%)	SCOPE 3 (%)	TOTAL (kg CO ₂ e/pp/day)	MAIN SOURCES
Small corporate events (meetings/workshops/seminars)	20	20	60	3	Green Venue Report (2017); UNEP & ICLEI (2009)
Festivals/Concerts	15	15	70	6	Goldblatt (2023); Xuan et al. (2025)
Sporting events	20	15	65	10	Net Zero Carbon Events (2022/2023); CESAER (2023); Mannheim & Avató (2025)
Medium to large-scale conferences and corporate events (conferences/symposia/trade fairs/exhibitions)	10	10	80	15	Julie's Bicycle (2020); A Greener Future (2024); The Show Must Go On Report (2020)

Source: LIFE Institute - 2026

The allocation of emissions by scope follows the approach set out in the GHG Protocol (2004), which classifies emissions into three categories:

- **Scope 1:** direct emissions linked to the use of fossil fuels in generators, official vehicles or heating;
- **Scope 2:** indirect emissions from purchased energy, such as electricity consumed at event venues;
- **Scope 3:** indirect emissions not included in the previous scopes, particularly those related to the transport of participants and suppliers, air travel and the consumption of goods and services.

At small corporate events, the contribution from Scopes 1 and 2 is relatively higher, as journeys are short and often undertaken using local transport. At festivals and sporting events, however, although energy consumption is significant, the greatest proportion falls under Scope 3, associated

with travel and logistics. At medium- and large-scale conferences, particularly international ones, Scope 3 emissions account for up to 80% of the total, reflecting the significant contribution of air travel.

The **supporting spreadsheet** developed allows for the automatic application of these distribution factors but also offers the option of substituting them with measured data, where available. This ensures methodological consistency and greater accuracy in the accounting used to calculate this aspect of the BPI.

The input data (yellow rows) to be entered into the supporting spreadsheet for calculating the GHG estimate consist of the event category, the number of participants and the duration in days. The results broken down into Scopes 1, 2 and 3 are highlighted in green and are already formatted for upload to the LIFE Key platform.

7. LAND USE

In accordance with the logic set out in Technical Guide 01 (TG01) of the LIFE Methodology, the LIFE Key must include the total built-up area used for the event (ha), as well as the ecoregion corresponding to its location.

This data is essential for calculating the Biodiversity Pressure Index (BPI), as it allows the intensity of land use to be related to the ecological sensitivity of the region in which the event takes place.

8. ENTERING ESTIMATED DATA (WASTE GENERATION, WATER CONSUMPTION, ENERGY CONSUMPTION, GREENHOUSE GAS EMISSIONS) INTO THE LIFE KEY PLATFORM

In the **LIFE Key 'Pressure on Biodiversity' module**, estimated data on waste generation, water consumption, energy consumption, GHG emissions and land use are entered separately. In the supporting spreadsheets, all data entries are **highlighted in yellow cells**, whilst the **results** – which must be reported in **LIFE Key** – are **highlighted in green cells**.

It is essential to enter the **units of measurement correctly** in the software and to set the **period as 'Year'**, in line with the logic used to calculate the total pressure of the event.

All supporting spreadsheets must be requested from the LIFE Institute's technical team.

For events, the base year is the year in which the event takes place. In LIFE Key, the year indicated after the "/" must be selected. Thus, for events taking place in 2026, for example, the base year 2025/2026 must be used before entering the data into the system.

8.1 TURNOVER

The definition of the Minimum Biodiversity Minimum Performance (BMP) should consider the event's gross revenue converted into US dollars (USD), based on the exchange rate in force on 1 January of the base year corresponding to the year in which the event takes place.

In cases where the event does not generate direct revenue, such as free events, the total amount of funds contributed by sponsors and supporters should be considered as a proxy for revenue for the purposes of applying the methodology.

It should be noted that the total cost of the event does not constitute gross revenue and cannot be used in isolation to determine it; the calculation must consider the revenue generated by the event, as well as any financial contributions from sponsors and supporters.

An estimate of the number of participants at the event should also be entered in the comments section of the revenue field.

9. OFFSETTING THE PRESSURE ON BIODIVERSITY AT EVENTS

Following the DMB assessment, the organisation responsible for the event must offset the identified pressure on biodiversity, in an amount equivalent to the required positive score.

Offsetting must take place exclusively through the purchase of LIFE Biodiversity Credits (LBCs), derived from projects that have been previously audited and certified under the LIFE Methodology, thereby ensuring the environmental integrity, traceability and credibility of the mechanism.

Given that event-based offsetting constitutes a one-off, non-recurring strategy, unrelated to organisational certification, the requirement to allocate at least 30 per cent of the offsetting within

the same ecoregion as the calculated pressure on biodiversity does not apply. This flexibility recognises the episodic nature of such events and aims to facilitate efficient offsetting without compromising the environmental robustness of the system, given that the credits used originate from audited and certified projects.

10. ASSESSMENT OF THE APPLICATION OF THE LIFE METHODOLOGY AT EVENTS

The application of the LIFE Methodology for events must be submitted for verification by a Certifying Body (CB) accredited by the LIFE Institute, with the aim of ensuring the correct application of the criteria, parameters and procedures set out in this Reference Document. The verification must be carried out remotely.

The verification must cover exclusively the Biodiversity Pressure Index (BPI) module in the LIFE Key software, including an analysis of the consistency of the data entered, the assumptions made and the correct application of reference values where estimates are used.

The evidence used to determine the number of participants must be entered into LIFE Key alongside the evidence of the event's gross turnover. It shall be the responsibility of the Certifying Body (CB) to assess the consistency and appropriateness of the evidence submitted, validating its sufficiency for the application of the methodology.

With regard to waste generation, water consumption, energy consumption and greenhouse gas (GHG) emissions, the CO must verify that the estimated data have been calculated in accordance with the methodology described in this document, as well as the presence of the respective supporting spreadsheets used as evidence, duly entered into LIFE Key for each Pressure Indicator (PI).

Regarding land use (area), the OC must verify the evidence relating to the area occupied by the project and the corresponding ecoregion, in accordance with the criteria set out in Technical Guide 01 (TG01); the use of estimates is not permitted for this aspect.

In addition, the OC must assess the traceability of the biodiversity pressure offset, verifying that the calculated Biodiversity Minimum Performance (BMP) corresponds to the LIFE Biodiversity

Credits (LBC) acquired. To this end, the organisation must inform the OC of the title of the credits used for offsetting and the terms of acquisition, which must be considered when finalising the verification.

The organisation responsible for the event must provide the CO with all the data and evidence necessary for verification in good time before the event takes place, to enable the audit process to be carried out and the corresponding documents to be issued.

As a result of the verification process, the CO must issue:

- (I) an audit report from LIFE Key, containing an analysis of the data, technical comments, any requirements for improvement and the conclusion of the verification, assessing only the Biodiversity Pressure Index module; and
- (II) an event-specific verification certificate, attesting that the calculation of the Biodiversity Pressure Index (IPB) and the Biodiversity Management Balance (DMB) offsetting were carried out in accordance with the LIFE Events Methodology, as described in this Reference Document.

The audit report will be generated directly by the LIFE Key platform, based on a standardised template previously established by the LIFE Institute. It should be noted that this process consists of the technical validation of the application of the methodology for events, carried out remotely through the analysis of the information and evidence entered the system; it does not constitute a full organisational certification audit process.

The Certificate must follow the template provided by the LIFE Institute, upon request from the Certification Body (CB).

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NOTES ON THE DEVELOPMENT OF THIS DOCUMENT

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