Supplementary Material

The following section contains: ***Table S1***: Life cycle inventory data of the Reserve’ agricultural sector; ***Table S2***: Life cycle inventory data of the Reserve’ wild fauna sector; ***Table S3***: Life cycle inventory data of the Reserve’ touristic sector; ***Table S4***: Life cycle inventory data of the Reserve’ office, workshops and canteen sector; ***Table S5***: Life cycle inventory data of the Reserve’ residential sector; ***Table S6***: Life cycle inventory data of the Reserve’ security and vigilances sector; ***Table S7***: Life cycle inventory data of the Reserve’ research activities sector; ***Table S8***: Life cycle inventory data of the Reserve’ forest sector; ***Table S9***: List of the emission factors involved in the Reserve’ carbon footprint; ***Table S10***: List of the equations involved in the study.

**Table S1 Life cycle inventory data of the Reserve’ agricultural sector**

|  |  |  |
| --- | --- | --- |
| ***Data*** | ***Unit*** | ***Amount*** |
| 1Cattle reared | LUs | 286 |
| Horses reared | LUS | 39 |
| 2Horses enteric methane | kg CH4/LU/year | 18 |
| 2Horses manure methane | kg CH4/LU/year | 2.34 |
| 2Horses Nitrogen excreta | kg N/LU/year | 52.2 |
| Ryegrass-clover seeds purchased | kg/year | 10,913 |
| 3Ryegrass-clover seeds packaging - Kraft paper | kg/year | 43 |
| Distance from seed storehouse | km | 212 |
| Beef - concentrate feed | kg/year | 30,100 |
| 3Beef concentrate feed packaging - Kraft paper | kg/year | 181 |
| Horses - concentrate feed | kg/year | 40,792 |
| 3Horse concentrate feed packaging - Kraft paper | kg/year | 245 |
| Distance Reserve-to-feed’ storehouse | km | 321 |
| Gasoline for agricultural machineries | kg/year | 23,907 |
| Gasoline for motor pumps | kg/year | 17,600 |
| 3Distance Reserve-to-recycling plant | km | 50 |
| 3Distance Reserve-to-fuel pumps | km | 75 |
| 3Transport involved in fuel | Type | lorry (7.5-16t) |
| 3Transport involved for all others raw materials | Type | lorry (3.5-7.5t) |
| Tractors dedicated to agricultural activities | n | 5 |
| 3Average weight of tractor | kg | 12,000 |
| 3Lifespan of tractor | years | 30 |
| Agricultural buildings - sheds | mq | 150 |
| Agricultural buildings - barns | mq | 300 |

1Further data available in Grossi et al., (2020); 2IPCC, (2019); 3Estimate; LUs = Livestock units

**Table S2 Life cycle inventory data of the Reserve’ wild fauna sector**

|  |  |  |
| --- | --- | --- |
| ***Data*** | ***Unit*** | ***Amount*** |
| Fallow deer | n | 1,020 |
| Deer | n | 40 |
| Wild boar | n | 3,354 |
| 1Goat (EF) | kg CH4/head/year | 5 |
| 1Deer (EF) | kg CH4/head/year | 20 |
| 1Swine (EF) | kg CH4/head/year | 1.5 |
| 2Fallow deer (Mw) | kg of LW/head | 40 |
| 2Deer (Mw) | kg of LW/head | 60 |
| 2Wild boar (Mw) | kg of LW/head | 40 |
| 1Goat (Md) | kg of LW/head | 40 |
| 1Deer (Md) | kg of LW/head | 120 |
| 1Swine (Md) | kg of LW/head | 300 |
| Fallow deer (Efa) - enteric methane | kg CH4/head/year | 5 |
| Deer (Efa) - enteric methane | kg CH4/head/year | 11.9 |
| Wild boar (Efa) - enteric methane | kg CH4/head/year | 0.3 |
| 3Fallow deer | kg N/head/year | 10 |
| 1Deer | kg N/head/year | 13.7 |
| 1Wild boar | kg N/head/year | 8 |
| 1Fallow deer and deer - EF3PRP | kg N2O-N/kg N | 0.01 |
| 1Boar - EF3PRP | kg N2O-N/kg N | 0.02 |
| 1FracLEACH | kg N leached or runoff/kg N | 0.3 |
| 1FracGASM | kg N volatized/kg N | 0.2 |
| 1EF4 | kg N2O-N/(kg N volatilised) | 0.01 |
| 1EF5 | kg N2O-N/(kg N leached) | 0.0075 |
| 1Goat (fallow deer) - manure | kg CH4/head/year | 0.17 |
| 1Deer - manure | kg CH4/head/year | 0.22 |
| 1Swine (wild boar) -manure | kg CH4/head/year | 0.5 |
| Monitoring/check points | n | 87 |
| 2Average distance between check points | km | 0.7 |
| Length of the foraging activities | days/year | 32 |
| Corn grains provided | kg/day | 400 |
| 2Capacity of the corn grains paper bag | kg grains/pack | 50 |
| 1Weight of the paper bag | kg paper/pack | 0.15 |
| 2Distance between park and storehouse | km | 50 |
| 2Transport involved in purchasing corn | type | lorry (3.5-7.5t) |
| 2Distance park to recycling plant | km | 50 |
| 2Transport involving waste management | type | lorry (3.5-7.5t) |
| 2Staff members for foraging activities | n | 1 |
| Staff members for census activities | n | 12 |
| 2Distance staff’ houses-to-Reserve (both way) | km | 40 |
| 2Transport involved | Type | car |
| 2Staff member per car | members/car | 1 |
| 2Tot. out-boundary distance driven | km | 3,040 |

1IPCC, (2019); 2Estimate; 3Velthof, (2014); EF = Emission factor; Mw = Body mass of target animal; Md = Standardized IPCC body mass for domestic animal; Efa = Emission factor adjusted for wild animal; EFPRP = Emission factor for urine and dung deposited on pasture; FracLEACH = Leached fraction; FracGASM = Volatilized fraction; LW = Live Weight

**Table S3 Life cycle inventory data of the Reserve’ touristic sector**

|  |  |  |
| --- | --- | --- |
| ***Data*** | ***Unit*** | ***Amount*** |
| Tourists visiting the Reserve | people/year | 7,983 |
| Disabled enjoying the summer centre | people/year | 1,734 |
| Public events organized in the Reserve | events/year | 26 |
| Participants per events | people/event | 50 |
| 1In-boundarydistance driven by the shuttlebus | km/day | 50 |
| 1Cars entering the Reserve per event | cars/event | 20 |
| 1In-boundary distance driven by cars (both way) | km/car | 10 |
| 2Weight of the average meal | kg/meal | 0.54 |
| 1Type of transport involved in meals’ ingredients | type | lorry <3.5t |
| Distance between park gate and canteen (both way) | km | 8 |
| 1Natural gas canteen - cooking | mc/year | 1,081 |
| 1Natural gas canteen - heating | mc/year | 1,167 |
| Natural gas (castle + offices) | mc/year | 10,980 |
| 3Rome HDD for 21°C | dimensionless  | 2,161 |
| 4HD of the office area | kWh/mq/year | 36.4 |
| 1Natural gas needed to heat the office | mc gas/mq/year | 3.66 |
| Building area occupied by the offices | mq | 1,040 |
| Area of the castle | mq | 700 |
| 1Tot natural gas attributed to the office | mc/year | 3,804 |
| 1Tot natural gas attributed to the castle | mc/year | 7,176 |
| Area occupied by the archeologic museum | mq | 600 |
| Area occupied by the castle (no offices included) | mq | 700 |
| Area occupied by the carriage’s hall | mq | 200 |
| Area occupied by the naturalistic museum | mq | 450 |
| 1Tot. number of air conditioning involved | n | 33 |
| 5C - 6x - t | kg - % - year | 1.6 - 10 - 1 |
| RFRGlks | kg R32/year | 5.2 |
| Electricity used by the archeologic museum | kWh/year | 40,093 |
| Electricity used by the naturalistic museum | kWh/year | 38,987 |
| Electricity used by the carriage’s hall | kWh/year | 1,352 |
| 7Electricity used by the castle - offices not included | kWh/year | 46,738 |
| 7Electricity used by the canteen - allocation based on tourists’ canteen meals | kWh/year | 19,574 |
| 1Tot. canteen meals consumed by tourists visiting the park | meals/year | 5,291 |
| 1Tot. homemade meals consumed by tourists visiting the park | meals/year | 3,991 |
| 8Meals paper waste | kg/meal | 0.005 |
| 8Meals waste LDPE | kg/meal | 0.005 |
| 8Meals leftovers | kg/meal | 0.077 |
| 9Sandwiches waste: Paper; LDPE | kg/sandwich | 0.041; 0.017 |
| 9Sandwiches leftover | kg/sandwich | 0.043 |
| 1Distance between park and recycling plant | km | 50 |
| 1Transport involved in waste management | type | lorry (3.5-7.5t) |
| 1Tour buses (30p) needed for transports | buses/year | 266 |
| 1Tot. Distance driven by the minibuses | km/year | 4,550 |
| 1Distance driven by the meals’ raw materials | km/meal | 70 |
| 1Transport involved for meal’ raw material purchased | type | lorry <3.5t |

1Estimate; 2To et al., (2019) 3De Rosa et al (2016); 4Moreci et al., (2016); 5Product datasheet; 6Cowan et al., (2010); 7Tjandra et al., (2016); 8Hanssen et al., (2017); 9Espinoza-Orias and Azapagic, (2018); HDD = Heating degree days; HD = Heating demand; C = refrigerant capacity of the equipment; x =leaks rate in percent of capacity; t = years used for the reporting period; RFRGlks = Refrigerant leaks; LDPE = Low density polyethylene

**Table S4 Life cycle inventory data of the Reserve’ office, workshops and canteen sector**

|  |  |  |
| --- | --- | --- |
| ***Data*** | ***Unit*** | ***Amount*** |
| Employees of: Offices; Carpentry; Garage; Canteen | n | 19; 5; 7; 3 |
| Working days | days/year | 250 |
| 1Rate of employees using personal car | (0-1) | 0.75 |
| 1Rate of employees using public transportation | (0-1) | 0.25 |
| 1In-boundary commuting (both way) | km/employ/working day | 8 |
| 1Tot. meals consumed by employees | meals/year | 8,500 |
| 2Weight of the average meal | kg/meal | 0.54 |
| 1Transport involved in meals’ ingredients | type | lorry <3.5t |
| Distance from park gate-to-canteen (both way) | km | 8 |
| Natural gas consumed by the carpentry | mc/year | 3.7 |
| Natural gas consumed by the garage | mc/year | 2.7 |
| 1Natural gas consumed by the canteen - heating | mc/year | 1,876 |
| 1Natural gas consumed by the canteen - cooking | mc/year | 1,737 |
| Air conditioners: office; canteen | n | 17; 1 |
| 3C air conditioners | kg | 1.6 |
| 4x air conditioner | % | 10 |
| t air conditioner | year | 1 |
| Office - air conditioners RFRGlks | kg R32/year | 2.72 |
| Canteen - air conditioners RFRGlks | kg R32/year | 0.16 |
| Fridge within the canteen | n | 1 |
| 3C fridge cell | kg | 10 |
| 5x fridge cell | % | 5 |
| t fridge cell | year | 1 |
| Canteen - fridge cell RFRGlks | kg R404a/year | 0.5 |
| 6Electricity used by the offices | kWh/year | 54,275 |
| Electricity used by the carpentry | kWh/year | 14,024 |
| Electricity used by the garage | kWh/year | 23,456 |
| 6Electricity used by the canteen - allocation based on workers’ meals | kWh/year | 31,443 |
| Office: PC desktops; Printers | n | 18; 19 |
| Office - Air conditioners | n | 17 |
| Reams consumed | reams/year | 245 |
| Weight of a ream | kg/ream | 4.68 |
| 3Page printed per toner | pages/toner | 2,500 |
| 1Toners needed | n/year | 49 |
| 1Lifespan PC desktop, Monitor and Printers | year | 10 |
| Canteen PC desktops | n | 1 |
| Meals paper waste | kg/year | 42.5 |
| Meals waste LDPE | kg/year | 42.5 |
| Meals’ leftover | kg/year | 365.5 |
| 1Distance between park and waste plant | km  | 50 |
| 1Transport involved in waste management | type | lorry (3.5-7.5t) |
| Car owned by the Reserve | n | 7 |
| Average km driven by each car - business trips | km/car/year | 7,000 |

1Estimate; 2To et al., (2019); 3Product data sheet; 4Cowan et al., (2010); 5EPA, (2014); 6Tjandra et al., (2016); C = refrigerant capacity of the equipment; x =leaks rate in percent of capacity; t = years used for the reporting period; RFRGlks = Refrigerant leaks; LDPE = Low density polyethylene

**Table S5 Life cycle inventory data of the Reserve’ residential sector**

|  |  |  |
| --- | --- | --- |
| ***Data*** | ***Unit*** | ***Amount*** |
| Distance from houses-to-Reserve’ gates (both way) | km | 8 |
| 1Transport involved | type | car |
| 1Daily trips | trips/day/car | 3 |
| 1Resident families | n | 24 |
| 1Tot. in-boundary distance driven | km/year | 210,240 |
| 1Average are of a house | mq/house | 117 |
| 2Energy required for heating | kWh/mq | 67.1 |
| 2Energy required for cooling | kWh/mq | 45.8 |
| 2Energy required for domestic hot water | kWh/mq | 14.8 |
| 1Tot. number of houses | n | 24 |
| Tot. energy required - heating | kWh/year | 186,454 |
| Tot. energy required - cooling | kWh/year | 127,267 |
| Tot. energy required - domestic hot water | kWh/year | 41,126 |
| Tot. energy required by the sector | kWh/year | 354,846 |

1Estimate; 2ISTAT, (2019)

**Table S6 Life cycle inventory data of the Reserve’ security and vigilances sector**

|  |  |  |
| --- | --- | --- |
| ***Data*** | ***Unit*** | ***Amount*** |
| Police patrols involved | n/year | 14 |
| Mean distance driven by each police patrol | km/patrol/day | 50 |
| Firefighter - (truck <3.5t) | n | 3 |
| Firefighter - cars | n | 2 |
| Distance driven by firefighter trucks | km/truck/year | 1,333 |
| Distance driven by firefighter cars | km/car/day | 6,250 |
| Air conditioners within the police station | n | 23 |
| Air conditioners within the firefighter station | n | 1 |
| 1C air conditioners | kg | 1.6 |
| 2x air conditioner | % | 10 |
| t air conditioner | year | 1 |
| Police station - air conditioners RFRGlks | kg R32/year | 3.68 |
| Firefighter station - air conditioners RFRGlks | kg R32/year | 0.16 |
| 3HD of the office area | kWh/mq/year | 68.9 |
| Tot. m2 occupied by police station | mq | 86 |
| Police station - air conditioners | n | 23 |
| Police station - PC desktops | n | 21 |
| Police station - printers | n | 4 |
| 4Toner needed | n/year | 26 |
| Reams of paper used by police station | reams/year | 130 |
| Working days - police station | days/year | 365 |
| Working days - firefighters | days/year | 120 |
| Tot. mq occupied by firefighter office | mq | 24 |
| Firefighter - air conditioners | n | 1 |
| Firefighter - PC desktops | n | 1 |
| 2Lifespan PC desktop, Monitor and Printers | year | 10 |
| Tot. number of policemen | policeman/working day | 85 |
| Tot. number of firefighters | firefighters/working day | 5 |
| 4Tot. meals - policeman | meals/year | 31,025 |
| 4Tot meals - firefighters | meals/year | 600 |
| Meals paper waste | kg/year | 158 |
| Meals waste LDPE | kg/year | 158 |
| Meals’ leftover | kg/year | 2,435 |
| 4Distance from park-to-recycling plant | km | 50 |
| 4Transport involved in waste management | type | Lorry (3.5-7.5t) |

1Product datasheet; 2Cowan et al., (2010); 3Moreci et al., (2016); 4Estimate; C = refrigerant capacity of the equipment; x =leaks rate in percent of capacity; t = years used for the reporting period; RFRGlks = Refrigerant leaks; LDPE = Low density polyethylene

**Table S7 Life cycle inventory data of the Reserve’ research activities sector**

|  |  |  |
| --- | --- | --- |
| ***Data*** | ***Unit*** | ***Amount*** |
| 1Distance research area-to-Reserve’ gates (both way) | km | 8 |
| 1Transport involved | type | car |
| Researchers’ entrance | n/year | 2,400 |
| Tot. in-boundary distance driven | km/year | 19,200 |
| 1Sandwiches consumed by researchers | sandwiches/year | 2,400 |
| Sandwiches paper waste | kg/year | 40.8 |
| Sandwiches waste LDPE | kg/year | 98.4 |
| Sandwiches leftover | kg/year | 103.2 |
| 1Distance from park-to-recycling plant | km | 50 |
| 1Transport involved in waste management | type | Lorry (3.5-7.5t) |

1Estimate

**Table S8 Life cycle inventory data of the Reserve’ forest sector**

|  |  |  |
| --- | --- | --- |
| ***Data*** | ***Unit*** | ***Amount*** |
| Fuel consumption for pruning activities - chain saw | kg/year | 680 |
| Fuel consumption tractors | kg/year | 3,493 |
| Tractors dedicated to pruning activities | n | 3 |
| 1Average weight of tractor | kg | 12,000 |
| 1Lifespan of tractor | years | 30 |
| ***Forest type*** | ***Ha*** | ***Trees/ha*** | ***2t DM/total area*** | ***3Annual growth rate*** | ***t C fixed/year*** |
| Pinewoods | 1,008 | 597 | 220,161 | 2.0% | 2,092 |
| Oak wood | 2,353 | 1,183 | 430,944 | 1.5% | 3,135 |
| Holm oak woods | 506 | 1,406 | 88,658 | 1.5% | 665 |
| Cork trees | 240 | 1,086 | 37,101 | 1.5% | 278 |
| Other broadleaf | 125 | 1,124 | 15,382 | 2.0% | 154 |
| Exotic tree | 278 | 1,184 | 42,599 | 2.5% | 517 |
| Total | 4,511 | - | 834,845 | 1.7% | 6,840 |

1Value based on esteem; 2ELITE/SIFTeC project Scrinzi et al., (2019); 3Value based on expert opinion; DM = Dry matter

**Table S9 List of the emission factors involved in the Reserve’ carbon footprint**

|  |  |  |  |
| --- | --- | --- | --- |
| ***Input*** | ***Unit*** | ***(kgCO2e/unit)*** | ***Data source*** |
| Diesel production | 1 kg | 0.51 | (Wernet et al., 2016) |
| Diesel combustion | 1 kg | 3.17 | (Wernet et al., 2016) |
| Ryegrass-clover seeds | 1 kg | 1.62 | (Wernet et al., 2016) |
| Compost (4% N content) | 1 kg  | 0.03 | (Havukainen, 2018) |
| Concentrate feed | 1 kg | 0.6 | (Adom et al., 2013) |
| Kraft paper unbleached | 1 kg | 0.84 | (Wernet et al., 2016) |
| Paper to recycling plant | 1 kg | 1.576 | (Turner et al., 2015) |
| Tractors (lifespan 30 yrs) | 1 kg | 5.73 | (Wernet et al., 2016) |
| Barn & shed (lifespan 50 yrs) | 1 mq | 168.9 | (Wernet et al., 2016) |
| Corn grains | 1 kg | 0.533 | (Wernet et al., 2016) |
| Methane combustion | 1 m3 | 1.8 | (Bradbury et al., 2015) |
| Refrigerant gas R32 | 1 kg | 675 | (Tian et al., 2015) |
| Refrigerant gas R404a | 1 kg | 3,922 | (EPA, 2014) |
| ITA electricity mix | 1 kWh | 0.284 | <http://www.isprambiente.gov.it/>  |
| Sandwiches | 1 unit  | 0.856 | (Espinoza-Orias and Azapagic, 2018) |
| Canteen meals production | 1 meal | 1.89 | (Pradhan et al., 2013) |
| Agents and workers’ meals | 1 meal | 1.62 | (Pradhan et al., 2013) |
| Event meals production  | 1 meal | 2.27 | (Pradhan et al., 2013) |
| LDPE production | 1 kg | 2.1 | (Wernet et al., 2016) |
| LDPE to recycling plant | 1 kg | 0.029 | (Turner et al., 2015) |
| Composting | 1 kg | 0.044 | (Moult et al., 2018) |
| Air conditioner | 1 unit | 282.5 | (De Kleine, 2009) |
| PC monitor 17” | 1 unit | 303 | (Wernet et al., 2016) |
| PC desktop | 1 unit | 210 | (Wernet et al., 2016) |
| Printer | 1 unit | 63.3 | (Wernet et al., 2016) |
| Printer paper | 1 kg | 0.773 | (Wernet et al., 2016) |
| Toner | 1 unit | 1.21 | (Kara, 2010) |
| Transports - car | 1 km | 0.232 | (Wernet et al., 2016) |
| Transport - regular bus | 1 pkm | 0.0911 | (Wernet et al., 2016 |
| Transport - minibus | 1 km | 0.89 | (Shorter, 2011) |
| Transports (lorry <3.5t) | 1tkm | 1.9 | (Wernet et al., 2016) |
| Transports (lorry 3.5-7.5t) | 1tkm | 0.52 | (Wernet et al., 2016) |
| Transports (lorry 7.5-16t) | 1tkm | 0.22 | (Wernet et al., 2016) |
| Paved roads (lifespan 20 yrs) | 1 km | 116,660 | (Araújo et al., 2014) |

LDPE = Low density polyethylene; pkm = Passenger-kilometre; tkm = Tonne-kilometre

**Table S10 List of the equations involved in the study**

|  |  |  |
| --- | --- | --- |
| ***Emission source*** | ***Equation*** | ***Data source*** |
| Enteric fermentation(*Cattle*) | *[1]* $EF=\frac{GE\*\left(\frac{Y\_{m}}{100}\right)\*365}{55.65}$Where:***EF*** = emission factor, kg CH4 head-1 yr-1 ***GE*** = gross energy intake, MJ head-1 day-1***Ym*** = methane conversion factor | (IPCC, 2019)Equation 10.21(*Tier 2*)[*see table S1*] |
| Enteric fermentation(*Wild fauna*) | *[2]* $E\_{fa}= E\_{f}\left(\frac{M\_{w}}{M\_{d}}\right)^{0.75}$Where:***Efa*** = adjusted methane emission factor in kg CH4 yr-1 ***Ef*** = standard IPCC Tier 1 emission factors in kg CH4 yr-1***Mw*** = body mass of target wild animal in kg***Md*** = IPCC body mass for the domestic animal | Smith et al., (2015)[*see table S2*] |
| CH4 emissionsmanure(*Horses & wild fauna*) | *[3]* $CH\_{4(mm)}=\left[\sum\_{T,S}^{}\left(N\_{(T)}\*VS\_{(T)}\*AWMS\_{(T,S)}\*EF\_{(T,S)}\right)/1000\right]$Where:***CH4(mm)*** = kg CH4 yr-1 from manure management ***N(T)*** = number of head of livestock species/category *T****VS(T)***= volatile solid excretion per head of species/category *T* (kg VS animal-1 yr-1)***AWSM(T,S)*** = fraction of total annual VS for each livestock species/category *T* that is managed in manure management system *S****EF(T,S)*** = specific emission factor for the manure management system *S* and animal species/category *T* (g CH4 kg VS-1) | (IPCC, 2019)Equation 10.22(*Tier 1*)[*see table S2*] |
| N2O emissionsmanure(*Horses & wild fauna*) | *[4]* $N\_{2}O\_{Dir \& Ind}=[\left(N\_{exc}× EF\_{3PRP}\right)+\left(N\_{exc}× Frac\_{LEACH}×EF\_{5}\right)+\left(N\_{exc}× Frac\_{GASM}×EF\_{4}\right)]×44/28$Where:***N2ODir&Ind*** = Direct and indirect N2O emissions (kg N2O yr-1) ***Nexc*** = kg N yr-1 excreted by the animal category [Velthof, (2014) for N excreted by wild boars]***EF3PRP*** = Emission factor from urine and dung deposited on pasture***FracLEACH*** = Fraction of N lost through leaching and runoff***EF5*** = Emission factor for N2O from N leaching and runoff***FracGASM*** = Fraction N that volatilizes as NH3 and NOX***EF4*** = Emission factor for N2O emissions from atmospheric deposition | (IPCC, 2019)adapted from equations: 10.25; 10.26; 10.27; 10.28; 10.29[*see table S2*] |
| Heating system | *[5]* $HD= 32.089 ln \left(x\right)-210.18$Where:***HD*** = heating demand (kWh m-2 yr-1) **(x)** = yearly heating degree days (HDD) for the specific city | Moreci et al., (2016)[*see table S3*] |
| Cooling system | *[6]* $CD=\left(\frac{CC}{COP}\right) × t\_{ac}×d\_{yr}$Where:***CD*** = cooling demand (kWh device-1 year-1)***CC*** = cooling capacity (kW)***COP*** = coefficient of performance ***tac*** = daily operating hours of the device***dyr*** = number of operating days within a year | Tjandra et al., (2016)[*see table S3-S4*]Because the large amount of input data only the tot. energy required was reported |
| Lighting system | *[7]* $LT\_{ec}=∑(P\_{light,i} × n\_{light,i} ×t\_{light,i} ×d\_{yr,i})$Where:***LTec*** = annual consumes by lighting system (kWh year-1)***Pligth,i***= power rating of each bulb category *i* (W)***nligth,i***= number of bulbs for each category *i****tlight,i*** = daily usage durations (hours)***dyr,i***= number of days in use within a year (days year-1) | Tjandra et al., (2016)[*see table S3-S4*]Because the large amount of input data only the tot. energy required was reported |
| Electronic devices | *[8]* $ED\_{ec}=∑(ED\_{ec, i}×t\_{ed,i}× d\_{yr})$Where:***EDec*** = energy consumed by the electronic devices (kWh year-1)***EDec,i***= power rating (kW) of the electronic device at mode *i* (active, sleep, off)***ted,i***= daily operating hours of the devices at mode *i* (hours day-1) ***dyr*** = number of days at mode *i* within a year (days year-1) | Tjandra et al., (2016)[*see table S3-S4*]Because the large amount of input data only the tot. energy required was reported |
| Refrigerant gas leaks | *[9]* $RFRG\_{lks}= C×\left(\frac{x}{100}\right)×t$Where:***RFRGlks*** = amount of gas leaked from the device***C*** = refrigerant capacity of the piece of equipment***x*** = annual leak rate in percent of capacity***t*** = time in years used during the reporting period | EPA, 2014[*see table S3-S4-S5*] |
| Transports | *[10]* $TRS\_{em}=∑(km\_{ i}× d\_{yr,i}× EF\_{t,i} × nr\_{em,i})$Where:***TRSem*** = GHG emissions arising from employees commuting (kg CO2e year-1)***kmi*** = average distance home-to-work travelled by the employees using transport *i* ***dyr,i***= number of working days in a year travelled by the employees using transport *i* ***EFt,i***= emission factor for transport *i* ***nrem***= number of employees using transport *i* during working days  | This study[*see table S9 for the EFs involved]* |