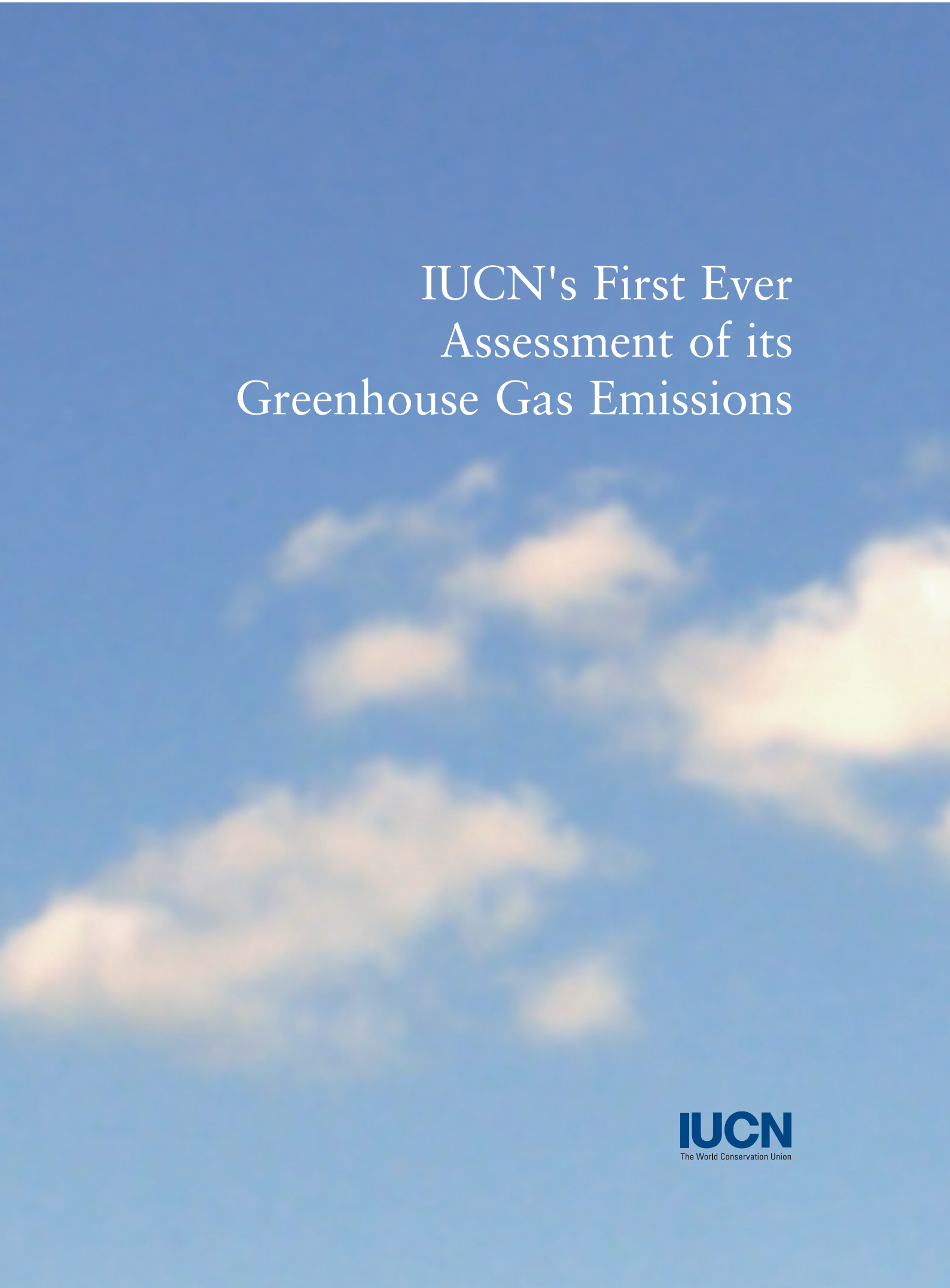
IUCN's First Ever Assessment of its Greenhouse Gas Emissions



IUCN
The World Conservation Union

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IUCN's First Ever Assessment of its Greenhouse Gas Emissions

IUCN
The World Conservation Union

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Background

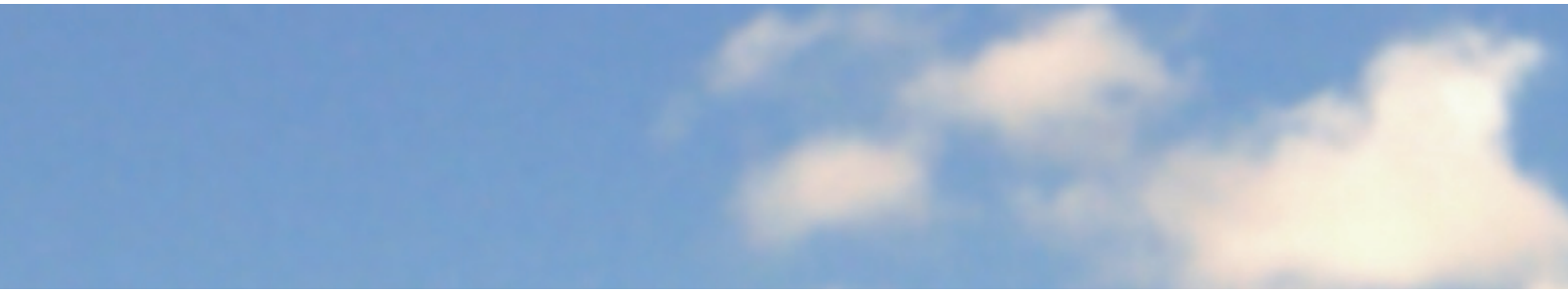
This assessment, conducted by the Edinburgh Centre for Carbon Management (ECCM), covers the greenhouse gas (GHG) emissions arising from the operation of IUCN offices and the international business activities of IUCN employees for the calendar year 2002.

Summary of Emissions

ECCM estimates that, during the calendar year 2002, the GHG emissions produced from the activities of IUCN were equivalent to **3,795 tonnes of CO_2**. Of the total, 31% of emissions are attributable to business travel; 29% to premises energy consumption; 21% to company vehicles and 17% to staff commuting. The remaining 2% of emissions arise from deliveries, publications and waste production. A breakdown of emissions is provided in Tables 3 and 4 and Figure 3. A detailed breakdown of emissions and the assumptions used in their calculation are available from IUCN upon request.

Scope and Methodology

The assessment methodology follows the reporting principles and guidelines provided by the WBCSD/WRI Greenhouse Gas Protocol (2004). The organisational boundary comprises 34 IUCN offices which cover 42 countries around the world. Activities included within the operational boundary are office premises electricity, gas and heating oil use; fuel consumption by company owned vehicles; business travel by car, aeroplane, train and bus; commuting; deliveries; publications; waste production and refrigerant losses (see diagram on page 10).



Recommendations

ECCM make the following recommendations:

1. For future assessments reliable data should be collected for those offices that did not provide data for the current assessment. The additional data would allow a more comprehensive GHG assessment to be undertaken.

2. For future assessments data should be collected on flight journey details so that the actual distance travelled can be calculated in order to reduce the number of assumptions made and increase the accuracy of the emissions estimate. This is important because aeroplane travel is responsible for a large proportion of emissions and therefore errors introduced by the use of assumptions will have a high impact on the accuracy of the overall emissions estimate.

3. An internal system for recording and submitting the data required for a greenhouse gas emissions assessment would greatly improve the ease and efficiency of data collection and the accuracy of future emissions assessments. The identification of key IUCN personnel and development of standardised forms would be a logical next step for repeat assessments.

1. Introduction

1.1 Background

Climate change presents a serious challenge for responsible organisations and businesses in the 21st century. Most scientists now agree that rising atmospheric concentrations of greenhouse gases (GHGs), particularly carbon dioxide (CO_2), threaten to have severe impacts on food production, natural ecosystems and human health over the next 100 years. Industrialised and rapidly industrialising countries are the main sources of greenhouse gases. However, the greatest impacts will be felt by people in developing countries, particularly those in low lying coastal regions and marginal agricultural areas.

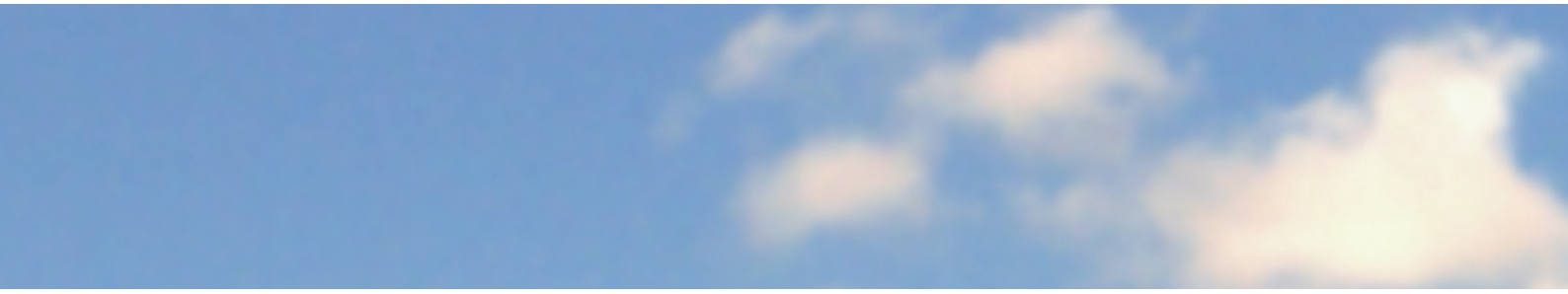
In response to the threat of climate change, the Kyoto Protocol was adopted in December 1997. Under the Protocol, industrialised countries have a legally binding commitment to reduce their collective greenhouses gas emissions by at least 5% compared to 1990 levels by the period 2008 – 2012. As of December 2004, 128 countries had ratified the Protocol representing 61.2% of 1990 emissions. It will come into force in early 2005.

1.2 Why carry out an emissions assessment?

Governments are taking a variety of steps to reduce GHG emissions including the introduction of emissions trading schemes, voluntary reduction and reporting programs, carbon or energy taxes, and regulations and standards on energy efficiency and emissions. Increasingly, organisations will need to understand and manage their GHG risks in order to maintain their license to operate and to comply with national or regional policies aimed at reducing GHG emissions (WBCSD/WRI 2004).

ECCM helps companies to install and run the systems they need to understand and control their climate change impact. A greenhouse gas emissions assessment is the first step in the carbon management process, giving an organisation an estimate of the size and breakdown of its 'carbon footprint'.

An emissions assessment provides the basis for further initiatives such as reporting, target setting and implementation of mitigation activities, such as offset schemes.



1.3 Client details

IUCN – The World Conservation Union is a leading international conservation organization drawing members from 140 countries including 81 states, 112 government agencies and 800 plus NGOs. More than 10,000 internationally recognised scientists and experts from over 180 countries volunteer their services to its six global commissions. IUCN has approximately 900 staff in 42 countries around the world, working on up to 500 projects.

IUCN's mission is »*to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.*« (IUCN, 2004).

Through its projects, IUCN has been actively engaged in restoring ecosystems and revitalising communities, economies and societies.

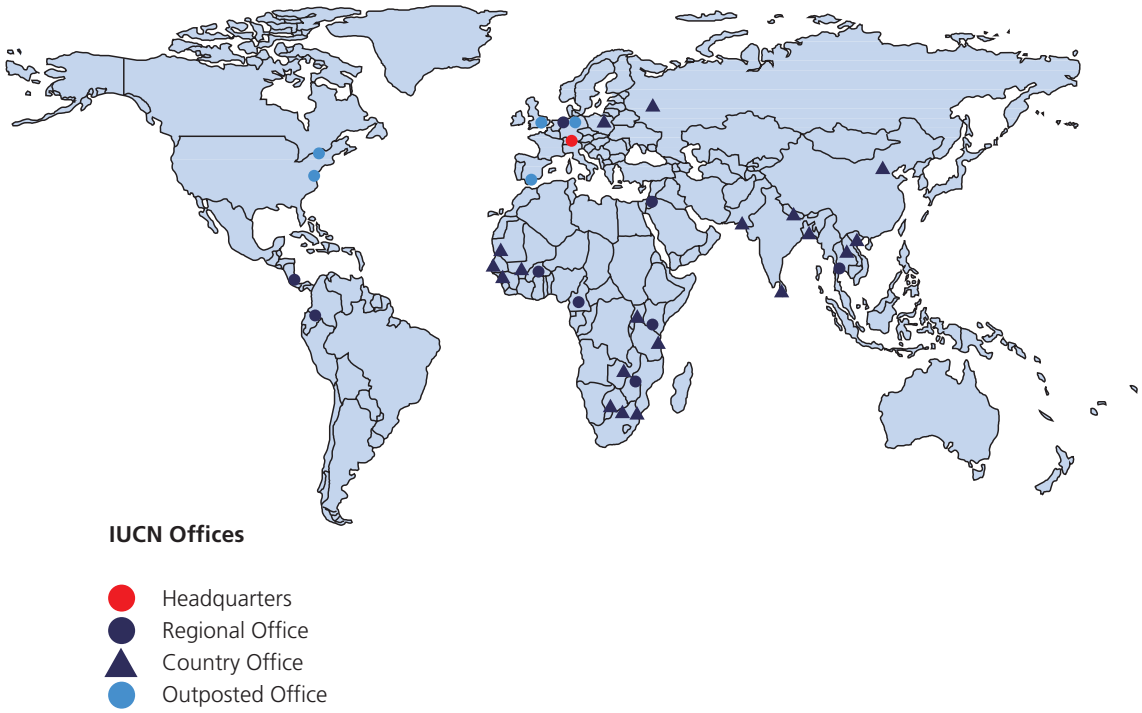


Figure 1.

IUCN global secretariat

2. Assessment methodology

2.1 General procedure

The assessment methodology used here follows the reporting principles and guidelines provided by the Greenhouse Gas Protocol published by the World Business Council for Sustainable Development and the World Resources Institute (WBCSD/WRI Protocol).

In line with the WBCSD/WRI Protocol, ECCM uses the following procedure to undertake an emissions assessment:

1. Establishment of the assessment boundaries (including the selection of: greenhouse gases, project boundaries and operational boundaries).
2. Collection of client data.
3. Evaluation of data quality and of client data sources.
4. Calculation of emissions using appropriate conversion factors.
5. Analysis of results.
6. Determination of suitable recommendations for future action.

The assessment procedure and a summary of results are presented in this report.

A glossary of climate change terms is found in the end of this document.

2.2 Greenhouse gases – Overview

A greenhouse gas emissions assessment can include all six greenhouse gases covered by the Kyoto Protocol. The six Kyoto gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulphur hexaflouride (SF_6), perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs).

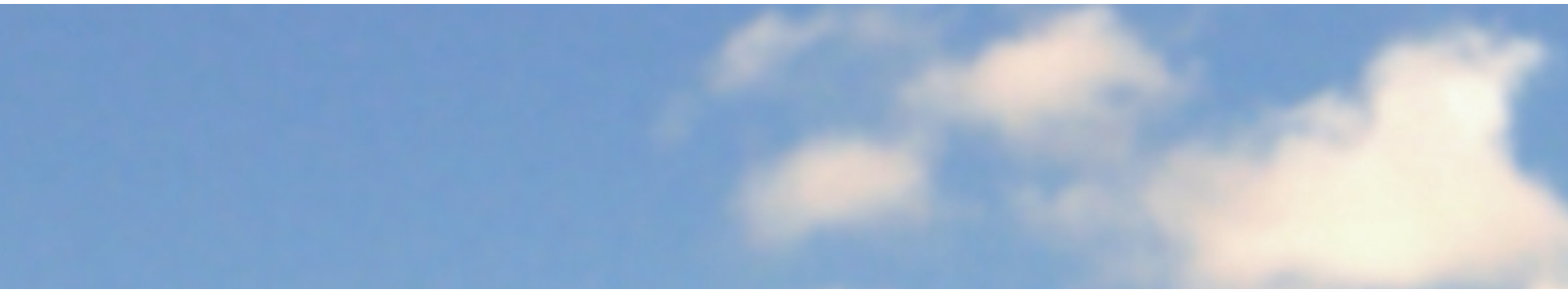
The global warming potential (GWP) of each greenhouse gas may be expressed in CO_2 equivalents (see Table 1). For those gases with a high global warming potential, a relatively small emission can have a considerable impact.

Table 1.

The global warming potential of the Kyoto gases

Kyoto gas	GWP *
carbon dioxide (CO_2)	1
methane (CH_4)	23
nitrous oxide (N_2O)	296
sulphur hexaflouride (SF_6)	22,200
perfluorocarbons (PFCs)	4,800 – 9,200
hydrofluorocarbons (HFCs)	12 – 12,000

* **Note: the 'global warming potential' of a gas is its relative potential contribution to climate change over a 100 year period, where CO_2 =1 (see Glossary for a full definition).**
Source: IPCC (2001).



2.3 Greenhouse gases – IUCN

This assessment covers CO_2, CH_4 and N_2O emissions arising from fuel combustion and CH_4 emissions from waste disposal.

2.4 Organisational boundaries – Overview

When accounting for GHG emissions from companies that are not wholly-owned and/or have a stake in other companies, it is important to draw clear organisational boundaries. The WBCSD/WRI Greenhouse Gas Protocol sets boundaries that are consistent with the organisational boundaries used for financial reporting purposes.

2.5 Organisational boundaries – IUCN

For the purpose of this assessment, the organisational boundary was set by IUCN, in consultation with Future Forests. The boundary encompasses all IUCN offices.

2.6 Operational boundaries – Overview

The WBCSD protocol states that emissions should be reported according to **three scopes**. **Scope 1** covers direct GHG emissions from company owned vehicles and facilities. **Scope 2** includes net indirect emissions from energy imports and exports, particularly imported and exported electricity and steam. **Scope 3** includes other indirect GHG emissions such as employee business travel, product transport by third parties, outsourcing of core activities and off-site waste disposal/management activities. Business activities and their associated GHG producing activities are outlined, and classified according to the appropriate scope.

The WBCSD Protocol recommends that **Scopes 1 and 2** are reported as a minimum. For a comprehensive assessment of total climate change impact, relevant **Scope 3** activities should also be included.

2.7 Operational boundaries – IUCN

The operational boundary encompasses the IUCN offices, located in Bangkok, Bangladesh, Belgium, Botswana, Burkina Faso, Canada, Cameroon, CIS Russia, Costa Rica, Ecuador, Europe, Germany, Guinea Bissau, Kenya, Laos, Mali, Mauritania, Mediterranean, Mozambique, Nepal, Niger, Pakistan, Poland, Senegal, Sri Lanka, South Africa, Switzerland, Tanzania, Uganda, UK, USA, Vietnam, Zambia and Zimbabwe.

The emission producing activities included within the boundary are illustrated in Table 2 and Figure 2.

Table 2.

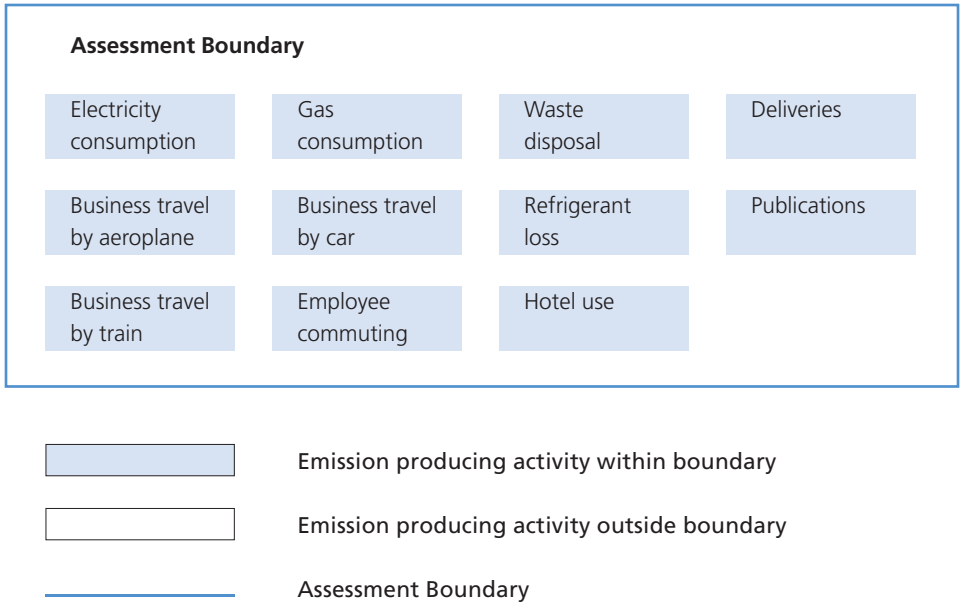
Information on activities within the operational boundary

Category	Activities: Energy inputs	WBCSD scope	Data	Activities: Waste outputs	WBCSD scope	Data
Premises	Gas consumption	1	+	Air conditioning	1	+
	Oil consumption	1	+	General waste production	3	+
	Electricity use	2	+			
Transport	Company owned cars	1	+			
	Employee cars (Business travel)	3	+			
	Aeroplane travel	3	+			
	Train travel	3	+			
	Staff commuting	3	+			

Key: **+ = complete** **N/R = not relevant**

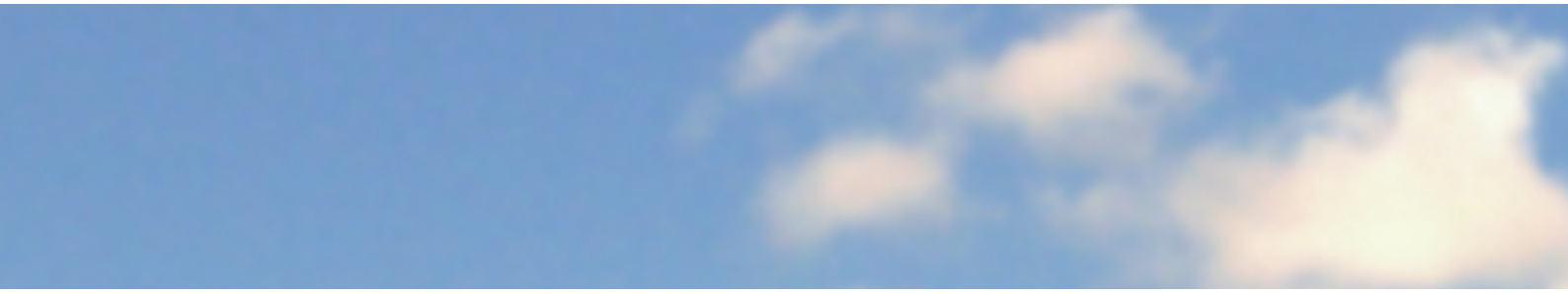
Figure 2.

Operational Boundary



2.8 Reporting approach

ECCM does not base its emissions assessments on direct measurement of emissions, but on estimates of material and energy consumption / transport (principally weight or volume of fuel, but also weight or volume of waste) from which estimates of emissions can be derived, by the application of relevant conversion factors (i.e. amount of CO_2 produced per unit of fuel consumed). This approach is considered the most pragmatic, since the quantity of key greenhouse gases produced in most combustion and manufacturing processes is well understood.



The validity of all estimates depends on the accuracy, relevance and completeness of the data provided by the client and on the conversion factors used. ECCM's approach is to set out as clearly as possible all the assumptions and conversion factors used, so that the report is as transparent as possible and the estimate of emissions is founded on '*best evidence*'.

ECCM is guided by the precautionary principle. Where there is any doubt over activities undertaken, or where there is a choice of published figures available for calculating greenhouse gas emissions, a conservative '*worst case*' scenario is assumed, unless otherwise specified.

2.9 Emission factors

In order to establish the tonnes of CO_2 equivalent emitted from fuel combustion activities default conversion factors were applied. These were taken from *'The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard Revised Edition'* published by the World Business Council for Sustainable Development and the World Resources Institute (WBCSD/WRI 2004).

The WBCSD/WRI guidelines do not provide conversion factors for non-CO_2 greenhouse gases arising from fossil fuel combustion. Methane (CH_4) and nitrous oxide (N_2O) can make a significant contribution to total emissions depending on the fuel and the combustion technology. Emission factors for these activities are derived from the Intergovernmental Panel on Climate Change (IPCC 1996).

In order to calculate CH_4 emissions from waste disposed to landfill, a conversion factor was derived from typical waste data in Brown et al. (1999). ECCM derived emissions associated with waste incineration by determining the carbon content of average Municipal Solid Waste (MSW) and assuming 99 % oxidation to CO_2 during combustion. Data for average composition of MSW and the carbon content of specific waste types were taken from Smith et al 1999.

The CO_2 conversion factor for hotel accommodation was derived using electricity and gas consumption figures from the Department of Environment (DoE 1994-6) for a typical hotel room and the associated cost figures from the Department of Trade and Industry (DTI 1998). ECCM generated emission factors for hotels in specific countries by using the relevant grid electricity emissions factor for each country in which hotel night stays were undertaken. These data were taken from the WBCSD/WRI Greenhouse Gas Protocol.

3. Data

3.1 Data sources and quality

Data were collected on the emission producing activities outlined in Section 2.7 using a data collection form. The collection of the data, upon which the emissions calculations were based, was co-ordinated by Brett Orlando, IUCN Climate Change Advisor.

The data provided relate to the calendar year 2002. Data were collected for the IUCN offices in 25 countries as outlined in Section 2.5 'Organisational Boundaries'.

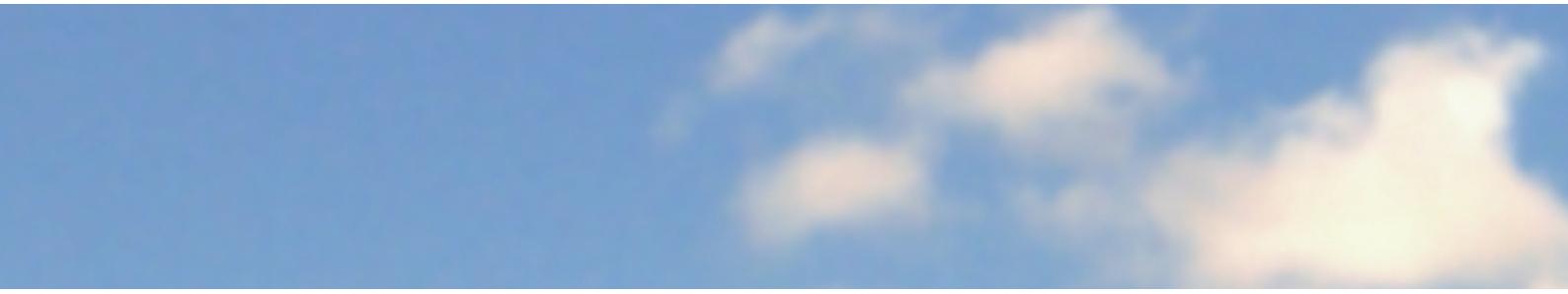
Where preferred data were missing, estimations were made based upon information provided by the client and are outlined throughout the calculations. Specifically data were not provided for the following countries, regions and operations: CIS, Europe (Belgium), Laos, Niger, Publications Services Unit, Sri Lanka, SSC Programme, Uganda and Zambia. ECCM estimated emissions for these countries and regions by establishing the average emissions per employee for all countries and regions that did supply data, and then applying this derived emissions benchmark to the number of employees in the countries that did not supply data.

ECCM did not review the sources of the data provided by the client and therefore a formal analysis of the uncertainty associated with the emissions estimate could not be made.

3.2 Data assumptions

The data provided by the different IUCN offices were of variable quality and completeness and therefore assumptions and extrapolation were required in order to undertake the emissions calculations. The fundamental assumption underlying the assessment is that all data that were provided by personnel from IUCN are correct. A further underlying assumption is that the average emissions per employee for those countries that did supply data can be used to estimate emissions for those countries that did not supply data.

The assumptions and average values that ECCM used to calculate emissions were the best available from referenced sources. ECCM acknowledge that these assumptions and average values will not be specific to individual IUCN offices or operations.



The following major assumptions were used in the assessment of GHG emissions:

Premises – electricity

a. Total floor space can be used to model electricity consumption based on a typical office as defined by the DETR (1998).

b. Electricity consumption can be estimated based on the average price of electricity and total expenditure.

Premises – gas

a. Total floor space can be used to model gas consumption based on a typical office as defined by the DETR (1998).

b. Gas consumption can be estimated based on the average price of gas and total expenditure.

Premises – landfilled waste

a. The density of office waste can be assumed to be 100kg/m3 as defined by the DETR (2000).

b. The average weight of a standard black bin bag is 7kg as defined by Westminster City Council (2000)

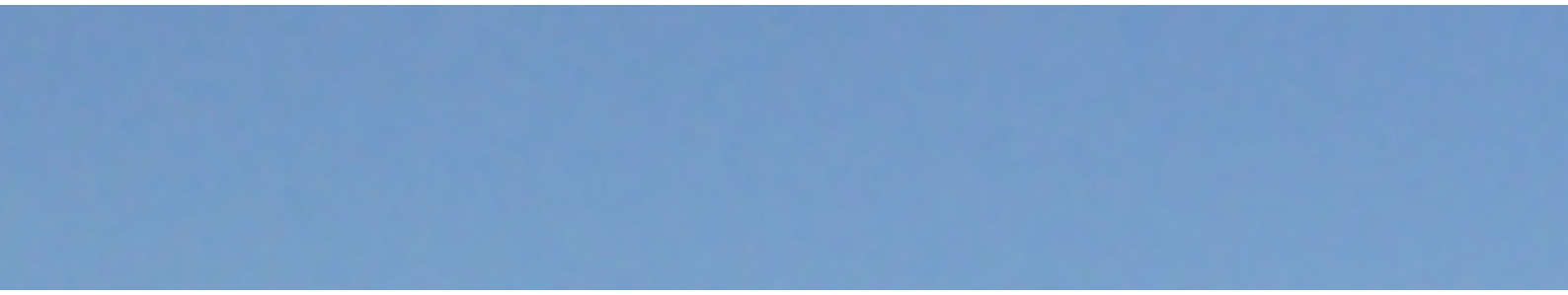
Premises – incinerated waste

a. The density of office waste can be assumed to be 100kg/m3 as defined by the DETR (2000).

Company owned vehicles

a. The litres of diesel used in company owned vehicles can be calculated from total expenditure and average cost.

b. The litres of petrol used in company owned vehicles can be calculated from total expenditure and average cost.



Business travel – Cars

a. The average fuel efficiency of a petrol car can be assumed to be 8.3km/l (IPCC 1996).

b. The average fuel efficiency of a diesel car can be assumed to be 7.8km/l (IPCC 1996).

c. The average trip distance travelled by a hire car can be assumed to be 73 miles.

d. The average number of trips undertaken in a hire car can be assumed to be 2 trips per hire car.

Business travel – Taxis

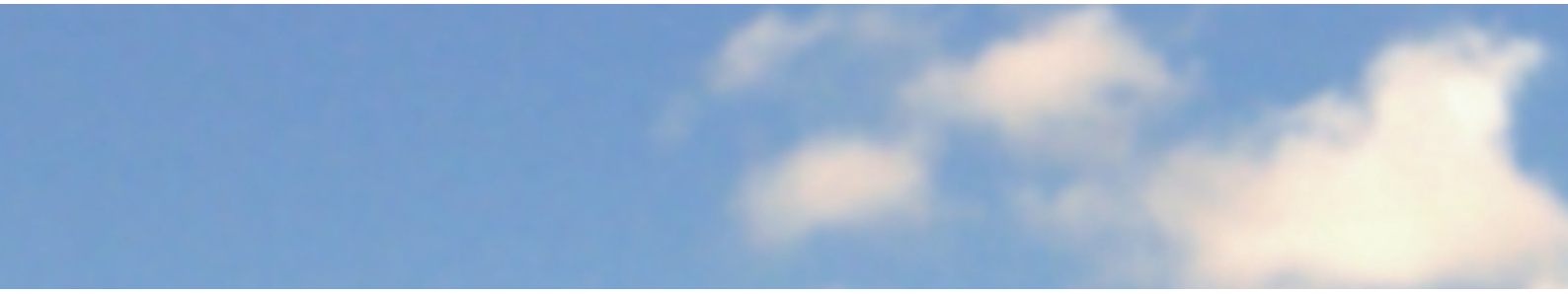
a. The average trip length of a taxi journey is 7.56 km/trip (DTLR 2001).

b. CO_2 emissions from a taxi are equivalent to an average diesel car.

Business travel – Aeroplanes

a. The average short haul flight is 500 km long (Defra 2001).

b. The average long haul flight is 6,495 km long (Defra 2001).



Deliveries – HGVs and LGVs

a. The average fuel efficiency of a diesel LGV can be assumed to be 7.2 km/l (IPCC 1996).

Deliveries – Aeroplanes

a. The average short haul flight is 500 km long (Defra 2001).

b. The average long haul flight is 6,495 km long (Defra 2001).

c. The average weight of goods shipped by air is 5kg.

Deliveries – Trains

a. The average weight of goods shipped by train is 5kg.

Publications – Lifecycle emissions of paper used

a. The paper used b y IUCN is wood containing uncoated.

b. The area of one ream of paper is 30.875 m^2.

c. There are 500 sheets of A4 paper per ream.

d. IUCN use standard paper which weighs 80 grams per square metre.

All assumptions underlying the emission calculations are available from IUCN upon request.

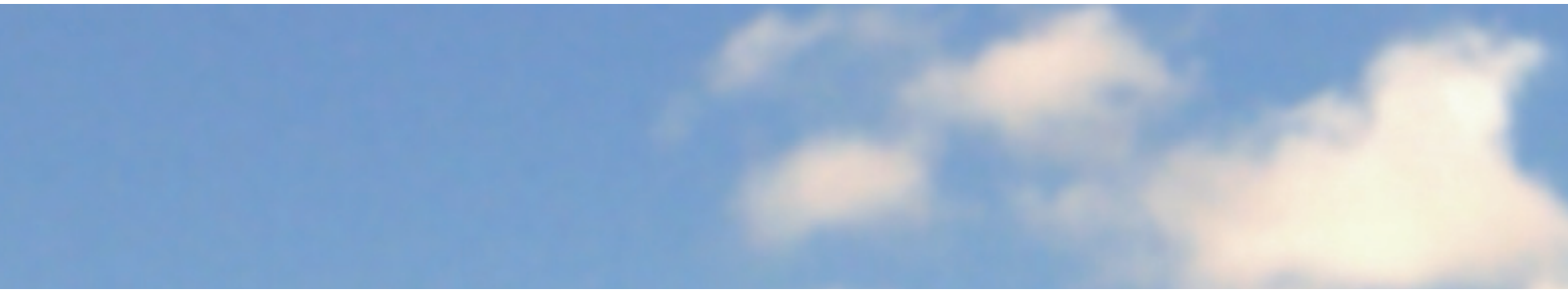
4. Results

ECCM estimates that, during the calendar year 2002, the GHG emissions produced from the activities of IUCN were equivalent to **3,795 tonnes of CO_2**. Of the total, 31% of emissions are attributable to business travel; 29% to premises energy consumption; 21% to company vehicles and 17% to staff commuting. The remaining 2% of emissions arise from deliveries, publications and waste production. A breakdown of emissions is provided in Tables 3 and 4 and Figure 3. A more detailed breakdown of emissions and the calculation assumptions are available upon request from IUCN.

Table 3.

Breakdown of emissions by source

Source of emissions	WBCSD scope	Equivalent CO_2 (t/yr)	emissions C (t/yr)	Percentage of total
Premises – Gas	Scope 1	189	51	5.0%
Premises – Heating Oil	Scope 1	62	17	1.6%
Premises – Refrigerant losses	Scope 1	0	0	0.0%
Company owned vehicles	Scope 1	795	217	20.9%
Sub-total	**Scope 1**	**1,045**	**285**	**27.5%**
Premises – Electricity	Scope 2	857	234	22.6%
Sub-total	**Scope 2**	**857**	**234**	**22.6%**
Premises – Landfilled waste	Scope 3	31	8	0.8%
Premises – Incinerated waste	Scope 3	0	0	0.0%
Business travel – Cars	Scope 3	57	16	1.5%
Business travel – Taxis	Scope 3	8	2	0.2%
Business travel – Aeroplanes	Scope 3	653	178	17.2%
Business travel – Trains	Scope 3	6	2	0.2%
Business travel – Hotels	Scope 3	446	122	11.8%
Commuting – Cars	Scope 3	547	149	14.4%
Commuting – Motorcycle	Scope 3	16	4	0.4%
Commuting – Train	Scope 3	13	4	0.3%
Commuting – Bus	Scope 3	59	16	1.6%
Commuting – Metro	Scope 3	3	1	0.1%
Deliveries – HGVS and LGVs	Scope 3	3	1	0.1%
Deliveries – Aeroplane	Scope 3	1	0	0.0%
Deliveries – Train	Scope 3	0	0	0.0%
Publications – Lifecycle emissions	Scope 3	49	13	1.3%
Sub-total	**Scope 3**	**1,893**	**516**	**49.9%**
Total	**All scopes**	**3,795**	**1,035**	**100%**



Source of emissions	Equivalent emissions CO_2 (t/yr)	C (t/yr)	% of total
Premises – energy consumption	1,107	302	29.2%
Deliveries	4	1	0.1%
Company vehicles	795	217	20.9%
Premises – waste	31	8	0.8%
Business travel	1,171	319	30.9%
Commuting	638	174	16.8%
Publications	49	13	1.3%
Total	**3,795**	**1,035**	**100%**

Table 4.

Breakdown of emissions by general activity

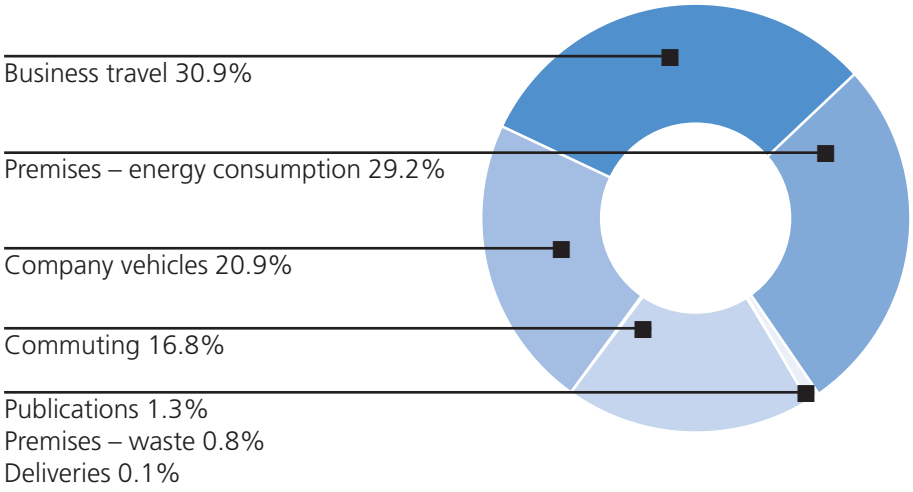


Figure 3.

Breakdown of emissions by source

5. Analysis of results

Business travel accounts for 31% of total emissions, which is the largest source of emissions in IUCN's GHG emissions footprint. Air travel accounts for 56% of the emissions from business travel and 17% of overall emissions. For an organisation with a large number of offices worldwide, such as IUCN, business travel by air often accounts for a large proportion of overall emissions as a result of the need to travel between offices. This is an area that IUCN could target for emissions reductions.

Premises energy consumption accounts for 29% of total emissions. The majority of the emissions are from electricity consumption, which accounts for 77% of GHG emissions associated with energy consumption.

Company vehicles give rise to 21% of total emissions. 62% of the emissions associated with company vehicles arise from diesel cars with 24% of company vehicle emissions arising from petrol cars. Emissions reductions could be achieved by selecting more efficient vehicles when older vehicles are due to be replaced. The use of alternative fuels such as biodiesel will also reduce emissions from company vehicles. For example a blend of 5% biodiesel with 95% ordinary diesel would result in a 5% reduction in emissions when used in diesel vehicles.

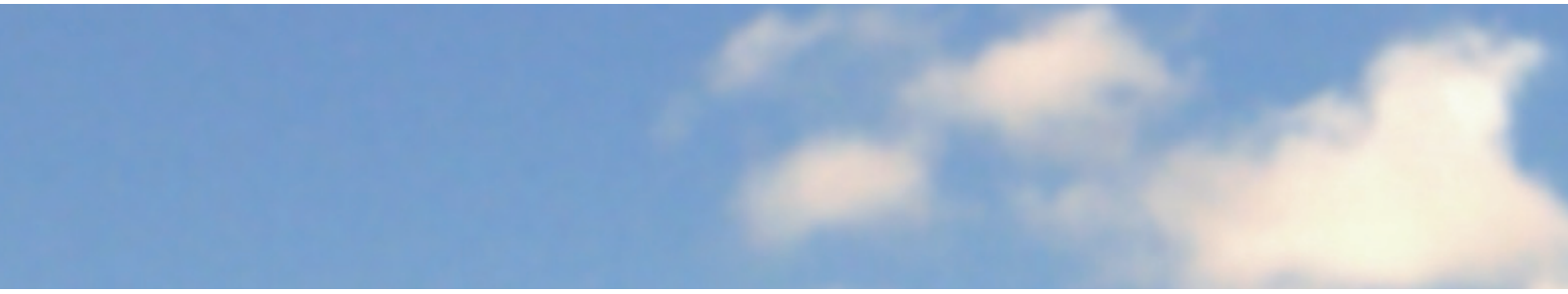
Staff commuting accounts for 17% of total emissions. The majority of emissions from staff commuting arise from the use of cars to get to and from work.

The Pakistan office was responsible for the largest absolute GHG emissions of all the IUCN offices. The business activities from the Pakistan office gave rise to approximately 700 tonnes of CO_2 equivalent, which represents 18% of IUCN's total emissions. The Mediterranean office in Spain was responsible for the lowest emissions of all IUCN offices. The business activities from the Mediterranean office gave rise to 13 tonnes of CO_2 equivalent, which represents 0.3% of IUCN's overall emissions.

The reason that the Pakistan office's emissions are higher than other offices is that there are more employees working in the office than in others. On a per employee basis the emissions from the Pakistan office are 2.95 tonnes of CO_2 equivalent/employee, which is slightly higher than the 2.2 tonnes of CO_2 equivalent/employee for the Mediterranean office.

The average emissions per employee for IUCN are 5.8 tonnes of CO_2/employee. On this basis the Pakistan office actually has lower than average emissions despite having the highest absolute emissions. Figure 4 shows the average emissions per employee for the IUCN offices that supplied data to ECCM.

Figure 4 shows that the highest emissions on a per employee basis are from the Central Europe office and the USA office with emissions of 12.8 and 12.6 tonnes of CO_2 equivalent/employee respectively. The offices that have the lowest emissions are Nepal and Vietnam with emissions of 1.16 and 1.13 tonnes of CO_2 equivalent/employee respectively.



The average emissions per employee metric could be used as a key performance indicator against which emissions reductions progress may be monitored. This is because the emissions/employee indicator takes into account any growth or reduction in the size of the organisation. For example the organisation may grow by 200 employees and GHG emissions may rise in proportion to this growth but the GHG emissions per employee should remain roughly constant. Any emissions reductions measures will therefore be recorded in the emissions/employee benchmark even if the organisation has grown and overall emissions increased as a result.

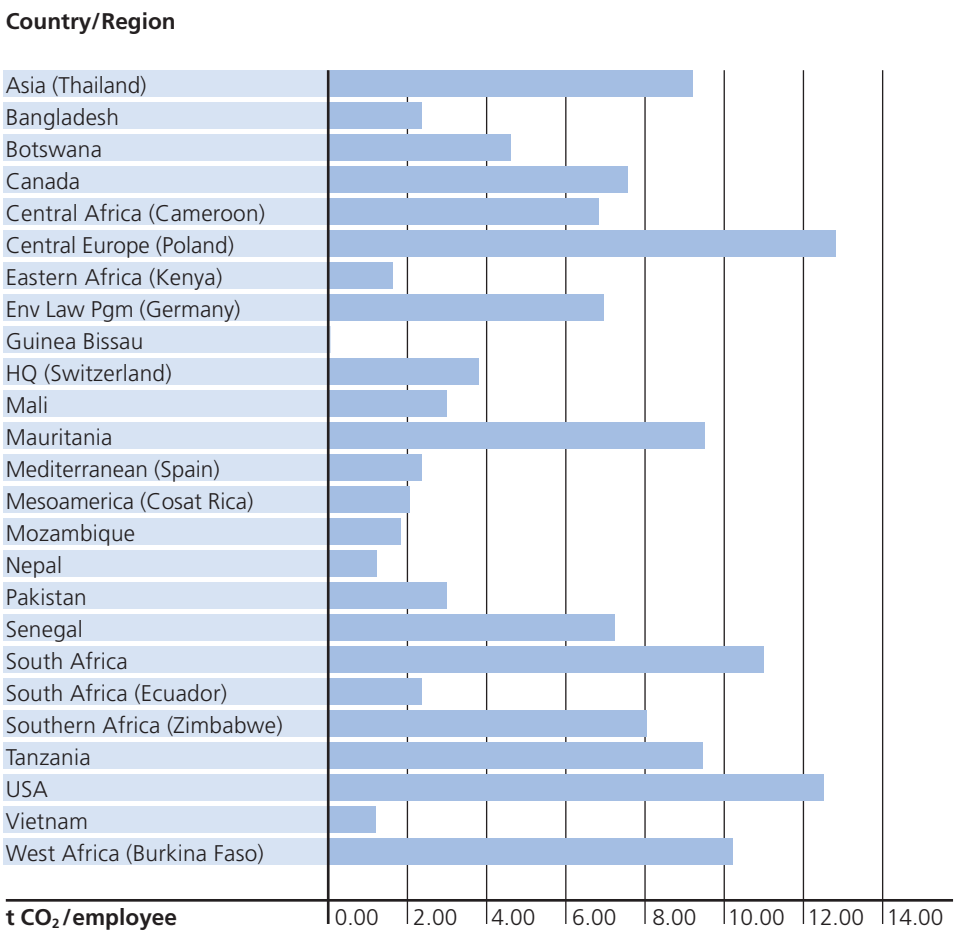


Figure 4.

Greenhouse gas emissions per employee for IUCN offices.

NB. Emissions per employee indicator for Guinea Bissau are not included due to lack of data.

6. Reduction measures

There are five major sources of emissions from IUCN operations that together account for 87% of the total emissions. These are: electricity consumption; commuting by car; business travel by aeroplane; hotel night stays, and company owned vehicles. There are a range of measures that can be implemented to reduce emissions from these sources. These are discussed below.

6.1 Reducing business travel emissions

Emissions reductions could be achieved by increasing the use of teleconferencing and videoconferencing, as this would reduce the need for employees to travel to meetings. A further benefit of this is that it will also reduce the number of hotel night stays that staff must undertake when they are abroad for meetings. Hotel emissions account for approximately 12% of total emissions; so large emissions reductions could be achieved by encouraging staff to travel to meetings only when absolutely necessary.

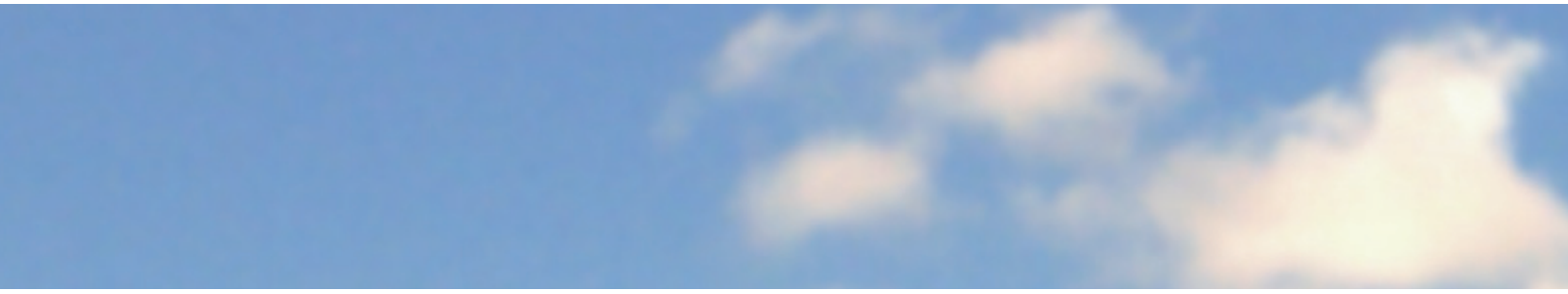
If the number of flights undertaken were halved, then IUCN could reduce its overall emissions by approximately 325 tonnes of CO_2 equivalent (9% of total emissions). IUCN should investigate the need to travel to meetings as well as the opportunities for teleworking.

6.2 Reducing electricity consumption related emissions

Renewable electricity – If IUCN can source its electricity form renewable suppliers such as wind or hydroelectric power then the emissions associated with purchased electricity would be zero. IUCN could reduce its emissions by 23%, equivalent to 857 tonnes of CO_2 if it were to source 100% of its electricity from renewable sources. Where offices are leased, sourcing renewable electricity will require negotiation with building landlords, as the landlord will be in control of purchasing electricity.

Staff behaviour – A PC monitor left on standby uses 51 kWh of electricity per year. In an office with one hundred computers, GHG emissions could be reduced by over two tonnes if the monitors were simply switched off at night rather than being left on standby. Encouraging staff to switch off monitors, PCs, photocopiers and printers at night could reduce electricity consumption and associated emission by up to 20% compared with leaving them on standby. These substantial reductions can be achieved at no additional cost.

Purchasing efficient equipment – Changing old office lighting and appliances for more modern energy efficient varieties will reduce electricity consumption and its associated GHG emissions. For example energy saving light bulbs typically use 25% of the energy of normal bulbs, produce the same quality of light and last 8 to 12 times longer. IUCN should ensure that when they purchase new equipment it is the most efficient equipment available and in the case of photocopiers, monitors, printers and PCs that there are energy saving standby modes available.



6.3 Reducing emissions from company owned vehicles

IUCN should encourage the uptake of more modern efficient vehicles in vehicle fleets. For example by simply switching all IUCN vehicles to diesel as opposed to petrol, company vehicle emissions would be reduced by 87.4 tonnes CO_2, a saving of over 10% on current emissions.

Using alternative fuels could also lead to emissions reductions. For example the use of a 5% biodiesel blend instead of ordinary diesel would reduce emissions from diesel vehicles by up to 5%. Blends of up to 20% biodiesel can be used in normal diesel vehicles without modification. If this was used in all IUCN's diesel vehicles it could lead to an emissions reduction of up to 93 tonnes of CO_2 equivalent.

6.4 Reducing emissions from staff commuting

Emissions from staff commuting could be reduced by encouraging staff to adopt car pool schemes or by encouraging the use of public transport. Incentives could be introduced to encourage staff to adopt such practices and targets could be set to reduce the use of cars for commuting by one third. If this was achieved in all IUCN offices, it could lead to emissions reductions of up to 164 tonnes of CO_2 equivalent.

6.5 Targeted reductions

Approximately 70% Of IUCN's total emissions arise from ten individual offices. Figure 5 illustrates the varying impact that each of the five main emission sources has in each of these countries.

Figure 5.

Greenhouse gas emissions from selected IUCN country offices.

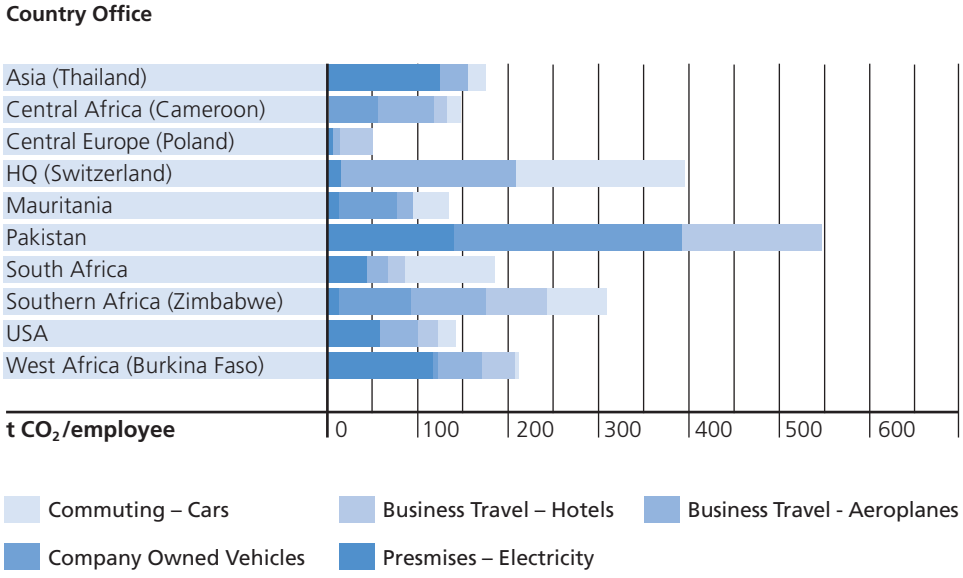
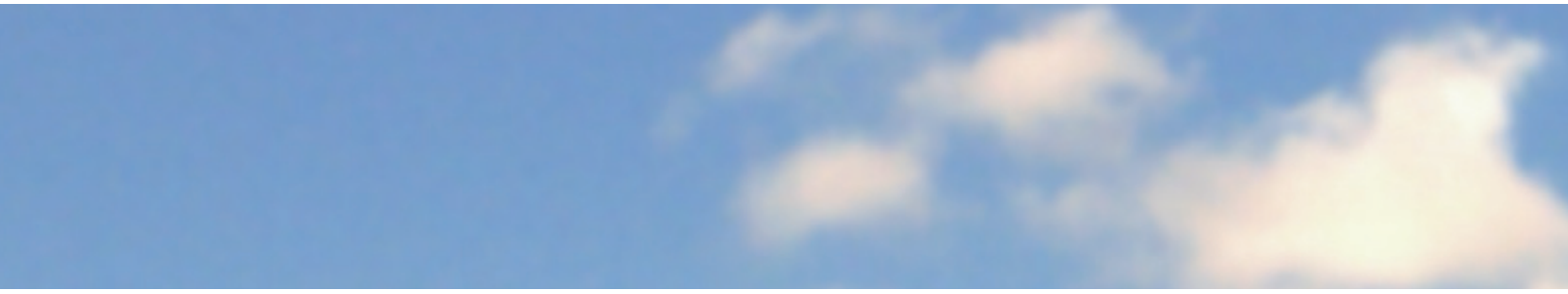


Figure 5 shows that the largest emission source for each country/region varies. For example, Pakistan's largest source of emissions is from company owned vehicles, whereas Switzerland's largest emissions source is business travel by aeroplanes. As a result reductions opportunities will vary from country to country and each country should target the reduction measures that have the biggest impact on reducing their emissions.

A reduction plan should therefore be designed for each country/region. In order to illustrate how a targeted reduction plan could work, ECCM has calculated the emissions savings that would be achieved if each of the ten biggest emitting countries/regions targeted its major source of emissions for reductions measures. ECCM has provided examples for a 10% reduction (achievable) and 50% reduction (ambitious) in emissions from the major source of emissions (see Table 5).



Region/ Country	Major emissions source	Region/Country's current emissions (t CO_2/yr)	Emissions after 10% reduction target has been met (t CO_2/yr)	Emissions after 50% reduction target has been met (t CO_2/yr)
Asia	Premises electricity consumption	182	169	117
Central Africa	Business travel – aeroplanes	149	142	117
Central Europe	Business travel – hotels	64	60	45
HQ (Switzerland)	Business travel – aeroplanes	461	441	364
Mauritania	Company owned vehicles	141	134	108
Pakistan	Company owned vehicles	696	669	561
South Africa	Commuting – cars	185	175	135
Southern Africa (Zimbabwe)	Company owned vehicles	326	318	285
USA	Premises electricity consumption	138	133	110
West Africa	Premises electricity consumption	213	202	158
Total	—	**2,555**	**2,443**	**2,000**
% Reduction on overall emission		**0 %**	**3 %**	**15 %**

Table 5.

Emissions reductions that could be achieved from 10% and 50% reduction in the major emissions source.

Table 5 demonstrates the benefit of implementing targeted reduction measures. By reducing the biggest source of emissions by 10% in each of the 10 highest emitting countries, IUCN could reduce its overall emissions by 3%. If IUCN had targeted the single biggest emissions source (premises electricity consumption) for a 10% reduction across all countries then overall emissions would only have been reduced by 2%.

Meeting the achievable 10% reduction target is likely to require a lower level of investment than meeting the 50% reduction target. IUCN could aim to meet a more ambitious reduction target over a longer period of time by implementing a suite of reduction measures across all of its offices. Reducing international travel should be a key measure in meeting an ambitious target because it will allow IUCN to reduce two of its major emissions sources at the same time – air travel and hotel night stays. Sourcing renewable electricity for its offices will also be required if IUCN are to meet an ambitious reductions target.

7. Recommendations

ECCM make the following recommendations:

1. For future assessments reliable data should be collected for those offices that did not provide data for the current assessment. The additional data would allow a more comprehensive GHG assessment to be undertaken.

2. For future assessments data should be collected on flight journey details so that the actual distance travelled can be calculated in order to reduce the number of assumptions made and increase the accuracy of the emissions estimate. This is important because aeroplane travel is responsible for a large proportion of emissions and therefore errors introduced by the use of assumptions will have a high impact on the accuracy of the overall emissions estimate.

3. An internal system for recording and submitting the data required for a green house gas emissions assessment would greatly improve the ease and efficiency of data collection and the accuracy of future emissions assessments. The identification of key IUCN personnel and development of standardised forms would be a logical next step for repeat assessments.

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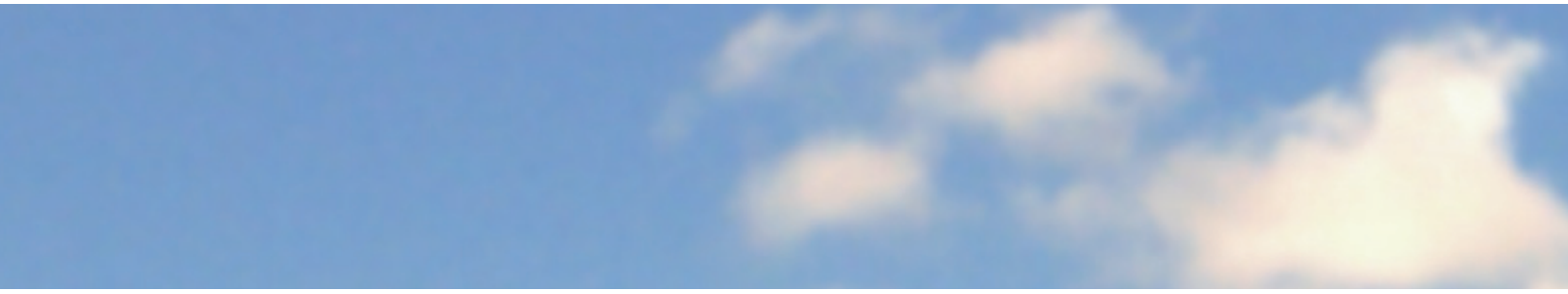

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Glossary

Carbon dioxide equivalent (CO_2e)
The universal unit of measurement used to indicate the global warming potential (GWP) of each of the 6 Kyoto greenhouse gases. It is used to evaluate the impacts of releasing (or avoiding the release of) different greenhouse gases.

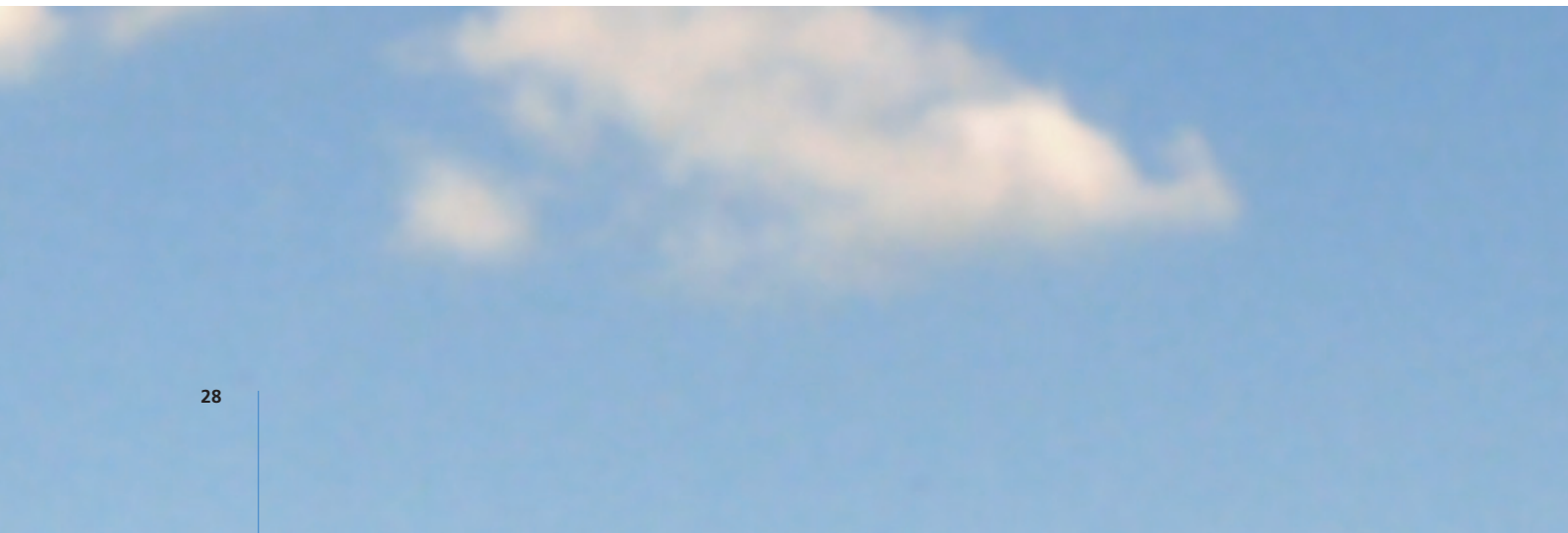
Climate change
A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability over comparable time periods (Source: United Nations Framework Convention on Climate Change).

Direct emissions
Emissions that are produced by organisation-owned equipment or emissions from organisation-owned premises, such as carbon dioxide from electricity generators, gas boilers and vehicles, or methane from landfill sites.

Global warming
The continuous gradual rise of the earth's surface temperature thought to be caused by the greenhouse effect and responsible for changes in global climate patterns (see also Climate Change).

Global warming potential (GWP)
The GWP is an index that compares the relative potential (to CO_2) of the 6 greenhouse gases to contribute to global warming i.e. the additional heat/energy which is retained in the Earth's ecosystem through the release of this gas into the atmosphere. The additional heat/energy impact of all other greenhouse gases are compared with the impacts of carbon dioxide (CO_2) and referred to in terms of a CO_2 equivalent (CO_2e) e.g. Carbon dioxide has been designated a GWP of 1, Methane has a GWP of 23.

Greenhouse gases
The current IPCC inventory includes six major greenhouse gases. These are Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Hydrofluorocarbons (HFCs), Pefluorocarbons (PFCs), Sulphur hexafluoride (SF_6).



IPCC
The Intergovernmental Panel on Climate Change. A special intergovernmental body established by the United Nations Environment Programme (UNEP) and the World Meteorological Organisation (WMO) to provide assessments of the results of climate change research to policy makers. The Greenhouse Gas Inventory Guidelines are being developed under the auspices of the IPCC and will be recommended for use by parties to the Framework Convention on Climate Change.

Indirect emissions
Emissions that are a consequence of the activities of the reporting company but occur from sources owned or controlled by another organisation or individual. They include all outsourced power generation (e.g. electricity, hot water), outsourced services (e.g. waste disposal, business travel, transport of company-owned goods) and outsourced manufacturing processes. Indirect emissions also cover the activities of franchised companies and the emissions associated with downstream and/or upstream manufacture, transport and disposal of products used by the organisation, referred to as product life-cycle emissions.

Kyoto Protocol
The Kyoto Protocol originated at the 3rd Conference of the Parties (COP) to the United Nations Convention on Climate Change held in Kyoto, Japan in December 1997. It specifies the level of emission reductions, deadlines and methodologies that signatory countries (i.e. countries who have signed the Kyoto Protocol) are to achieve. The Protocol has not yet been ratified by a sufficient number of countries to come into force.

Montreal Protocol
The Montreal Protocol on Substances that Deplete the Ozone Layer was adopted in 1987 as an international treaty to eliminate the production and consumption of ozone-depleting chemicals, with developing countries benefiting from a ten-year grace period. Although the Montreal Protocol originally identified five CFCs and three halons for reduction, by 1999 approximately 95 individual substances were controlled.

IUCN – The World Conservation Union

Founded in 1948, The World Conservation Union brings together States, government agencies and a diverse range of non-governmental organizations in a unique world partnership: over 1000 members spread across some 140 countries.

As a Union, IUCN seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.

The World Conservation Union builds on the strengths of its members, networks and partners to enhance their capacity and to support global alliances to safeguard natural resources at local, regional and global levels.

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