



浙江大学 国际联合学院(海宁国际校区)
INTERNATIONAL CAMPUS, ZHEJIANG UNIVERSITY

校园碳排放 核算报告

(2022年度)

2022 Accounting
Report on Carbon Emission for
International Campus,
Zhejiang University

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1 / 前言

构建“零碳校园”， 中国高校的社会责任！

2020年9月22日，习近平总书记在第75届联合国大会一般性辩论上的重要讲话中表示，“应对气候变化《巴黎协定》代表了全球绿色低碳转型的大方向，是保护地球家园需要采取的最低限度行动，各国必须迈出决定性步伐。中国将提高国家自主贡献力度，采取更加有力的政策和措施，二氧化碳排放力争于2030年前达到峰值，努力争取2060年前实现碳中和。”中国力争2030年前实现碳达峰、2060年前实现碳中和，是党中央经过深思熟虑作出的重大战略决策，事关中华民族永续发展和构建人类命运共同体。

高校是社会的重要组成部分，作为人才培养、技术创新的重要机构，具有极强的社会引领作用。加快建设“零碳校园”，是我国现代化建设可持续发展的需要，也是应承担的责任。



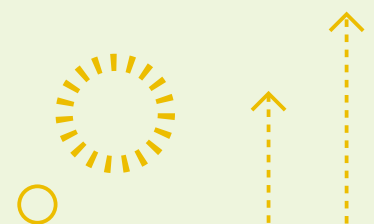


PREFACE

It is the social responsibility of Chinese universities to build "Zero-carbon Campus".

On September 22, 2020, General Secretary Xi Jinping said that "the Paris Agreement on Climate Change represents the global transition towards green and low carbon, which is the least action needed to protect the Earth, and all countries must take decisive steps forward. China will increase its contribution and adopt more vigorous policies and measures, with carbon dioxide emissions striving to peak by 2030 and achieve carbon neutrality by 2060" in an important speech at the 75th General Debate of the United Nations General Assembly. The aim is a major strategic decision made by the CPC Central Committee after careful consideration, which is related to the sustainable development of the Chinese nation and building a community with a shared future for mankind.

Universities are an important part of society, and as important institutions for talent training and technological innovation, they are playing a leading role. Accelerating the construction of "Zero-carbon Campus" is a necessity for the sustainable development of China's modernization and a responsibility that shall be taken.



2/ 行动历程

COURSE OF ACTIONS



应对挑战，我们在行动！

浙江大学国际联合学院（海宁国际校区）（以下简称国际校区）在建校之初，就秉持着“以人为本、低碳、绿色”的理念，校园规划建设充分考虑选址、绿色交通、可再生能源、低影响雨洪管理和绿色建筑关键技术应用等策略，取得绿色建筑二星认证。

在校园运营中，不断通过国际权威认证等手段提升运营管理水平，先后通过LEED V4.1 O+M ARC体系铂金级认证，EcoCampus铂金级认证和ISO14001认证。

国际校区作为绿色校园运营的实践者，非常关注校园碳排放，从2018年开始，每年公开发布碳核算报告，意在让更多师生关注自身的行为对校园碳排放的影响，让更多的师生和社会公众关注全球气候变暖，为改善人类生态环境作出大学应有的努力。

We are taking actions to meet challenges!

At the very beginning of the construction, International Campus, Zhejiang University (hereinafter referred to as the International Campus) has been adhering to the philosophy of “human-oriented, low carbon and green”, taking location, transportation, renewable energy, low-impact stormwater management and other key technologies of green construction into full consideration, which helps the International Campus achieve the two-starred Certificate of Green Building Design Label.

During the actual operations, the International Campus keeps enhancing management with the help of different international authoritative certificates, which has achieved certificates of LEED V4.1 O+M ARC (platinum), EcoCampus (platinum), and ISO14001.

As the practitioner of green operations, the International Campus cares much about carbon emission. The Accounting Reports on Carbon Emission have been publicized since 2018 annually to call on more and more students and faculty to focus on the influence made by their own behaviors. In addition, the reports aim to appeal to them to pay attention to the climate change and strive to improve the environment.





3/ 国际校区概况

INTRODUCTION OF INTERNATIONAL CAMPUS, ZHEJIANG UNIVERSITY

国际校区位于浙江省海宁市，校园占地1200亩，总建筑面积39.93万平方米。国际校区于2016年9月正式开学，截至2022年12月，国际校区全日制在校学位生共2570人，教职员工及服务人员761人。

International Campus, Zhejiang University is in Haining City, Zhejiang Province, covering 1200 acres, with a total building area of 399,300m². It was officially open to students in Sept 2016, and by Dec of 2022, it has 761 faculties & staff, and 2570 full-time students.



4/ 报告年及统计范围

REPORT YEAR AND SCOPE OF STATISTICS

本报告确定2022年为报告年。核算周期为2022年1月至12月。

This report is for 2022, from January to December.

5/ 核算边界 ACCOUNTING BOUNDARIES

校园碳排放的核算边界包括组织边界与运营边界。国际校区组织边界与地界范围一致，运营边界是指与国际校区的组织运行有关的碳排放有关的部门、设施的总和，主要包括三类：

范围1指在学校地理边界范围内发生的直接温室气体排放如锅炉燃烧产生的排放；

范围2指学校各类教学科研活动消耗的外购电力产生的间接排放；

范围3指其它间接温室气体排放，即由学校教学科研活动引起但发生在校园外的其它间接排放，例如物资采购、教职工上下班和出差乘坐交通工具产生的碳排放等。

国际校区温室气体主要排放源识别见**表5-1**。考虑统计方法和手段尚不完备，暂时不将范围3：其他间接温室气体排放和范围1包含的空调、灭火器等的氢氟碳化物的散逸排放列入本报告统计范围。

The accounting of campus carbon emission is based on two boundaries, organizational boundaries, and operational boundaries. The former one is in accordance with the geographical boundaries of the International Campus, and the later one refers to all department and facilities that are related to carbon emission, which mainly has 3 types:

Scope 1: It accounts for direct greenhouse gas (GHG) emissions that happen within the geographical boundaries of the International Campus, such as emissions from boiler combustion.

Scope 2: It accounts for indirect GHG emissions associated with generation of purchased electricity caused by activities such as teaching and academic research.

Scope 3: It accounts for other indirect GHG emissions that are consequences of activities of the International Campus but happen outside the campus, such as purchase, commuting, business travel and so on.

The main sources of GHG emissions from the International Campus are identified in **Table 5-1**. Since this report is the first round of carbon accounting reports, and considering that the statistical methods and tools are not yet complete, Scope 3: Other indirect GHG emissions and fugitive emissions of HFCs from air conditioners, fire extinguishers, etc., included in Scope 1, are temporarily excluded from the scope of the accounting.

表5-1 国际校区温室气体主要排放源识别
Identification Form of Emission Sources (Table 5-1)

运营边界 Operational boundaries	排放源类别 Type of Emission Source	主要排放源 Main Emission Source	消耗的能源 Energy Consumed	温室气体 GHG	是否列入 本期核算 Accounted
范围1: 直接温室 气体排放 Scope 1: direct GHG emissions	固定燃烧源 Stationary combustion sources	锅炉 Boiler	天然气 Natural Gas	二氧化碳 (CO ₂) 甲烷 (CH ₄) 氧化亚氮 (N ₂ O)	是 Y
	固定燃烧源 Stationary combustion sources	食堂餐厅 Dining Hall	天然气 Natural Gas	二氧化碳 (CO ₂) 甲烷 (CH ₄) 氧化亚氮 (N ₂ O)	是 Y
	移动燃烧源 Non-Stationary combustion sources	校车 Shuttle Bus	柴油 Diesel	二氧化碳 (CO ₂) 甲烷 (CH ₄) 氧化亚氮 (N ₂ O)	是 Y
	移动燃烧源 Non-Stationary combustion sources	公务车 Business Vehicle	汽油 Petrol	二氧化碳 (CO ₂) 甲烷 (CH ₄) 氧化亚氮 (N ₂ O)	是 Y
	散逸排放 Scattered Emission	空调、灭火器 A/C, fire extinguisher	冷媒 Refrigerant	氢氟碳化物 (HFCs)	是 Y
范围2: 间接温室 气体排放 Scope 2: indirect GHG emissions	外购电力 Purchased Electricity	照明、空调、 动力设施等 Light, A/C and other facilities	电力 Electricity	二氧化碳 (CO ₂)	是 Y
范围3: 其他间接温 室气体排放 Scope 3: other indirect GHG emissions	移动燃烧源 Non-Stationary combustion sources	除校车、公务车 外的校园内外交 通运输车辆 Vehicles apart from shuttle bus and business vehicles	汽油 Petrol	二氧化 (CO ₂) 甲烷 (CH ₄) 氧化亚氮 (N ₂ O)	否 N
	移动燃烧源 Non-Stationary combustion sources	飞机、火车、巴 士、轮船等 (师 生的商务旅行) Airplane, train, bus and ship (business travel)	汽油、柴油、 电力 Petrol, diesel, and electricity	二氧化 (CO ₂) 甲烷 (CH ₄) 氧化亚氮 (N ₂ O)	否 N

6/ 能耗活动水平数据统计

STATISTICS OF ENERGY-CONSUMING ACTIVITIES

本报告统计范围为全校园建设项目所有楼宇。

All buildings of the International Campus are calculated in this report.

6.1 排放源及能耗活动水平数据统计 Emission Sources and Level of Energy-consuming Activities

表6-1 国际校区2022年主要排放源数据统计

Main Emission Sources of the International Campus in 2022, (Table 6-1)

运营边界 Operational boundaries	主要排放源 Main Emission Source	能源类别 Types of Energy	计量单位 Unit	报告年消耗量 Consumption	记录方式 Recorded by
范围1: 直接温室气体排放 Scope 1: direct GHG emissions	锅炉 Boiler	天然气 Natural Gas	10k NM ³	14.90	计量表单 Forms
	食堂餐厅 Dining Hall	天然气 Natural Gas	10k NM ³	7.00	计量表单 Forms
	校车、公务车 Shuttle bus, business vehicles	柴油 Diesel	10k L	2.29	车队统计数据 Bus Center
	校车、公务车 Shuttle bus, business vehicles	汽油 Petrol	10k L	2.92	车队统计数据 Bus Center
范围2: 间接温室气体排放 Scope 2: indirect GHG emissions	照明、空调、 动力设施等 Light, A/C and other facilities	电力 Electricity	10k kWh	2199.84	计量表单 Forms

6.2 重点建筑物的主要排放源及能源消耗量 Main Emission Sources and Consumption of Key Buildings

本报告对学校碳排放总量进行核算外，选取报告年度重点监测建筑物进行碳排放核算，旨在对重点建筑物进行细化核算，从而为下一步采取有效的节能降碳措施提供有力依据。

Carbon emissions of the following buildings are calculated in detail to provide a strong data support for more effective low-carbon measures in the future.

表6-2 国际校区2022年典型功能建筑物能耗活动水平数据
Consumptions of Functional Buildings in 2022 (Table 6-2)

序号 No.	建筑名称 Building	建筑功能 Function	建筑面积 Area (m ²)	电量 Electricity (kWh/a)	天然气 Natural Gas (m ³ /a)
1	书院 (2号) No.2 Residential College	学生宿舍 Dormitory	29127	1787953	---
2	书院 (1号) No.1 Residential College	学生宿舍 Dormitory	27408	1474895	---
3	学术交流中心 Academic Exchange Center	酒店 Hotel	25296	1275247	---
4	书院 (3号) No.3 Residential College	学生宿舍 Dormitory	24831	501336	---
5	基础实验楼 Laboratory Building	科研楼建筑 Science and Research	19779	627228	---
6	体育馆 Gymnasium	场馆建筑 Sports	14669	1013170	3928.08
7	学生中心 Student Center	食堂餐厅 Dining Hall	12748	1400312	33880.32
8	大讲堂 Auditorium	教学建筑 Teaching	11919	318573	---
9	北教学楼B楼 Learning and Teaching Building North B	教学建筑 Teaching	10750	177819	28570.26
10	文理楼 Art and Science Building	行政办公建筑 Administration	10648	150947	28299.18
11	北教学楼A楼 Learning and Teaching Building North A	教学建筑 Teaching	10440	309575	27746.38
12	图书馆 Library	图书馆 Library	9840	324886	26151.76
13	行政楼 Administration Building	行政办公建筑 Administration	9379	240446	---

序号 No.	建筑名称 Building	建筑功能 Function	建筑面积 Area (m ²)	电量 Electricity (kWh/a)	天然气 Natural Gas (m ³ /a)
14	浙江大学爱丁堡大学联合学院 ZJU-UoE Institute	科研楼建筑 Scientific Research	8174	1604453	---
15	浙江大学伊利诺伊大学 厄巴纳香槟校区联合学院 ZJU-UIUC Institute	科研楼建筑 Scientific Research	7238	803018	---
16	教师公寓 Serviced Apartment	教工宿舍 Staff Dormitory	5824	216554	---
17	多功能厅 Multimedia Hall	会议厅 Meeting	2810	47049	---
18	东西讲堂 Lecture Theatre East & West	教学建筑 Teaching	2502	108437	---
19	校医院 Hospital	医院 Hospital	2130	92187	---
20	实验动物中心 Laboratory Animal Center	科研楼建筑 Scientific Research	1698	1044383	---
21	教工俱乐部 Faculty Club	会议厅 Meeting	1405	56938	---



7/ 校园碳排放 (温室气体排放) 清单

LIST OF CAMPUS CARBON EMISSION (GREENHOUSE GAS EMISSION)

7.1 校园碳排放 (温室气体排放) 清单

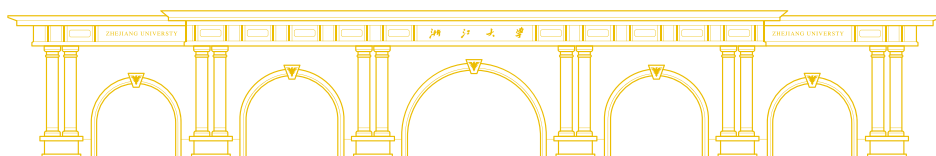
List of Campus Carbon Emission (Greenhouse Gas Emission)

1. 校园碳排放 (温室气体排放) 总量

2022年, 国际校区全年温室气体的排放量分别为: CO₂ 18431.31吨、CH₄ 0.0353吨、N₂O 0.0117吨。折算成二氧化碳当量 (CO_{2e}) 排放为18435.69吨。其中: 直接温室气体排放的二氧化碳当量为590.61吨, 直接温室气体包括食堂餐饮用天然气、教学科研楼冬季供暖消耗的天然气, 以及来往杭州各校区班车和公务用车 (不包括教职工私家车) 排放; 间接温室气体排放的二氧化碳当量为17845.09吨, 间接温室气体排放主要为外购电力。见图7-1和表7-1至7-2。

1.Total Campus Carbon Emission (Greenhouse Emission)

In 2022, the greenhouse gas emissions of the International Campus are: 18,431.31 tons of CO₂, 0.0353 tons of CH₄, and 0.0117 tons of N₂O. The conversion to carbon dioxide equivalent (CO_{2e}) emissions is 18435.69 tons. Among them: direct greenhouse gas emissions of 590.61 tons of CO_{2e}, the direct greenhouse gas includes natural gas used in the cafeteria catering, natural gas consumed by the teaching and research buildings for winter heating, as well as emissions from shuttle buses to and from Hangzhou campuses and official cars (excluding private cars of faculty and staff members); indirect greenhouse gas emissions of 17,845.09 tons of CO_{2e}, the indirect greenhouse gas emissions are mainly for the purchased electricity. See Figure 7-1 and Tables 7-1 to 7-2.



2. 校园碳排放强度

2022年度，国际校区按学生人数折合的生均碳排放为7.17tCO_{2e}/生，按师生总人数折合的人均碳排放5.53tCO_{2e}/人，按校园建筑面积折合的单位建筑面积碳排放为46.16kgCO_{2e}/m²，按校园占地面积折合的单位校园面积碳排放为21.53 kgCO_{2e}/m²。见表7-3。

2.Campus Carbon Emission Intensity

In 2022, the average carbon emission of the International Campus is 7.17tCO_{2e}/student, the carbon emission is 5.53tCO_{2e}/person, the carbon emission per unit of building area is 46.16kgCO_{2e}/m², and the carbon emission per unit of campus area converted by the campus area is 21.53kgCO_{2e}/m². See Table 7-3.

表7-1 国际校区温室气体排放量

GHG Emission of the International Campus (Table 7-1)

运营边界 Operational boundaries	主要排放源 Main Emission Source	能源类别 Types of Energy	计量单位 Unit	报告年消耗量 Consumption	CO ₂	CH ₄	N ₂ O
范围1: 直接温室气体排放 Scope 1: direct GHG emissions	锅炉 Boiler	天然气 Natural Gas	10k NM ³	14.9	311.41	0.0056	0.0006
	食堂餐厅 Dining Hall	天然气 Natural Gas	10k NM ³	7	146.30	0.0026	0.0003
	校车、公务车 Shuttle bus, business vehicles	柴油 Diesel	10k L	2.29	62.57	0.0033	0.0033
	校车、公务车 Shuttle bus, business vehicles	汽油 Petrol	10k L	2.92	65.95	0.0238	0.0076
范围2: 间接温室气体排放 Scope 2: indirect GHG emissions	照明、空调、动力设施等 Light, A/C and other facilities	外购电 Electricity	10k kWh	2199.84	17845.09	0.0000	0.0000



图7-1 国际校区温室气体排放量 单位：t

Emission of Greenhouse Gas of the International Campus (unit: tons) (Fig 7-1)

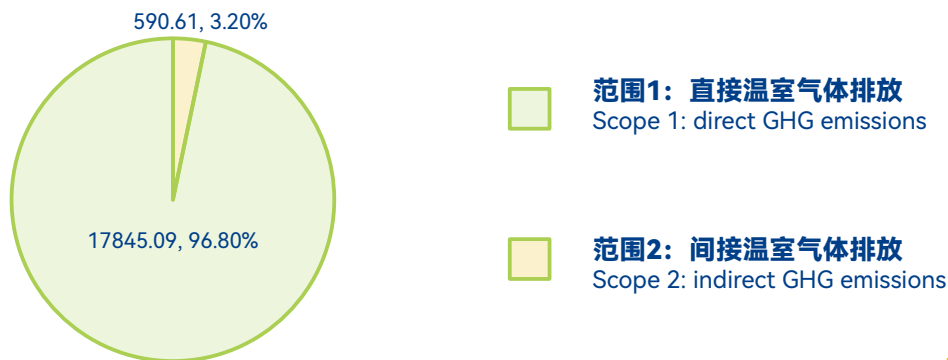


表7-2 国际校区温室气体排放清单（分温室气体种类统计）

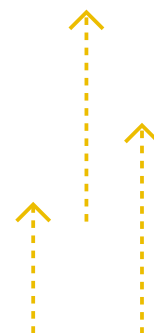
GHG Emission Inventories (by type of greenhouse gas) (Table 7-2)

排放量 Emission	温室气体 GHG	CO ₂	CH ₄	N ₂ O	总排放量 Total Emission
排放量 Emission (t)		18431.31	0.04	0.01	--
增温潜势 (GWP)		1	25	298	--
折算为CO _{2e} 排放量 (t)		18431.31	0.88	3.50	18435.69
所占比例 Percentage %		99.98%	0.00%	0.02%	100%

表7-3 国际校区温室气体排放清单（折算成单位量统计）

GHG Emission Inventories (converted to unit volume statistics) Table 7-3

排放量 Emission	温室气体 GHG	CO ₂	CH ₄	N ₂ O	总排放量 Total Emission
CO _{2e} 排放量 Emission (t)		18431.31	0.8820	3.4965	18435.69
tCO _{2e} /student		7.17	0.0000	0.0000	7.17
tCO _{2e} /person		5.53	0.0000	0.0000	5.53
kgCO _{2e} /m ²		46.16	0.0022	0.0088	46.17
kgCO _{2e} /m ²		21.53	0.0010	0.0041	21.54



7.2 重点建筑物温室气体排放清单

Greenhouse Gas Emissions List of Key Buildings

本报告对国际校区校园建筑中用能总量和单位建筑面积碳排放量大的建筑进行碳排放核算，重点核算建筑的面积为248615万平方米，占校园建筑面积的62.26%，碳排放占校园总排放61.42%。其中单位建筑面积碳排放强度最大的为实验动物中心，为498.94kgCO_{2e}/m²。见图7-2和表7-4。

This report accounts for the carbon emissions of the buildings with large total energy consumption and carbon emissions per unit of building area in the campus buildings of the International Campus, and the area of the key buildings is 2486.15 million square meters, accounting for 62.26% of the campus building area, and the carbon emissions account for 61.42% of the total campus emissions. The largest carbon emission intensity per unit building area is the Laboratory Animal Center, which is 498.94kgCO_{2e}/m². See Fig 7-2 and Table 7-4.

图7-2 重点监测的建筑物单位面积碳排放
Key Buildings' Average Carbon Emission (Table 7-2)

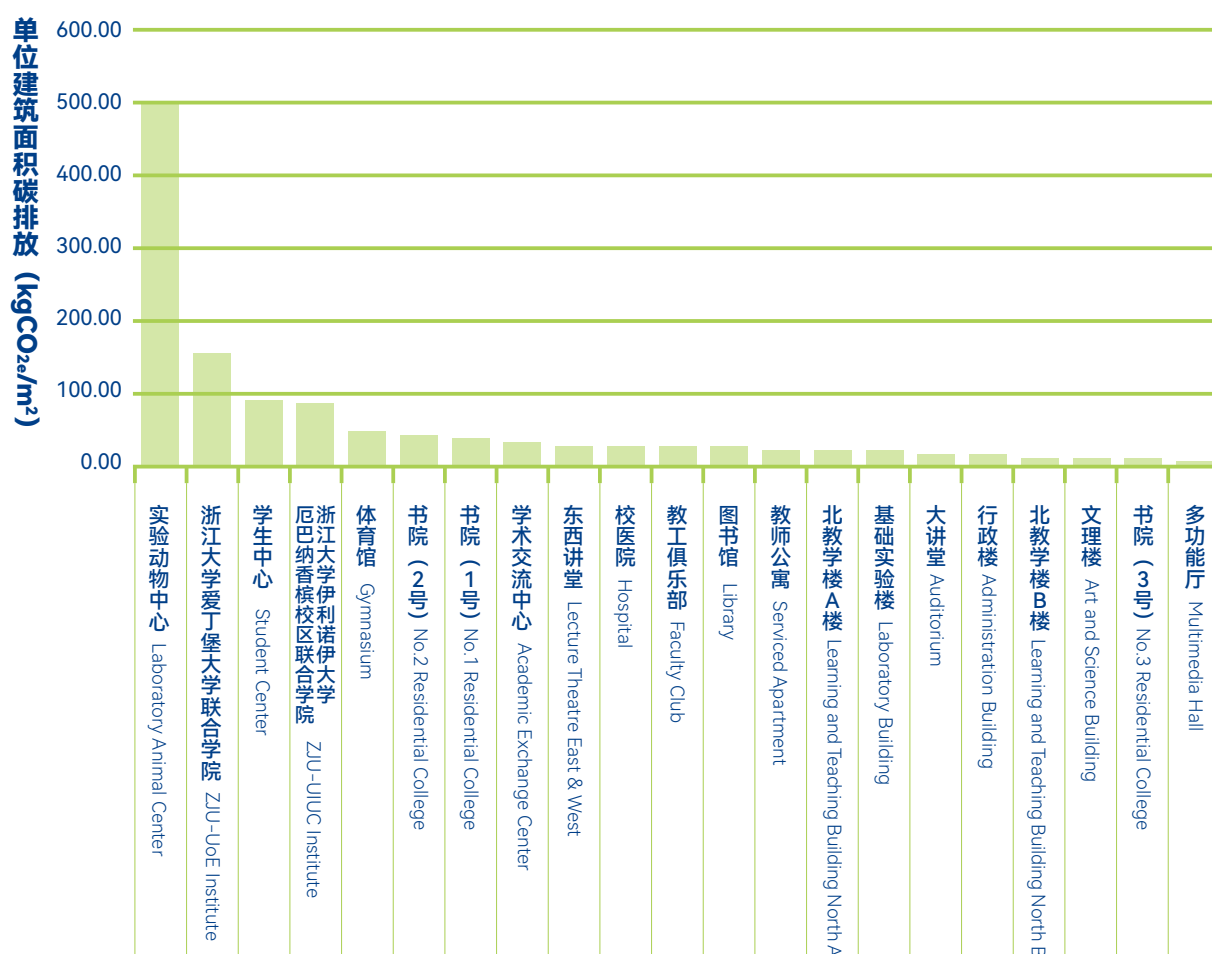




表7-4 国际校区2022年度重点监测建筑物碳排放清单
2022 Carbon Emission List of Key Buildings on International Campus (Table 7-4)

序号 No.	建筑名称 Building	建筑面积 Area (m ²)	电量 Electricity (kWh/a)	天然气 Natural Gas (m ³ /a)	CO ₂ 排放总量 (t)	单位建筑 面积碳排放 Per Area (kgCO _{2e} /m ²)
1	实验动物中心 Laboratory Animal Center	1698	1044383.2		847.20	498.94
2	浙江大学爱丁堡大学联合学院 ZJU-UoE Institute	8174	1604452.5		1301.53	159.23
3	学生中心 Student Center	12748	1400311.75	33880.32	1206.74	94.66
4	浙江大学伊利诺伊大学厄巴纳香槟校区 联合学院 ZJU-UIUC Institute	7238	803017.84		651.41	90.00
5	体育馆 Gymnasium	14669	1013169.7	3928.08	830.09	56.59
6	书院 (2号) No.2 Residential College	29127	1787953.07		1450.39	49.80
7	书院 (1号) No.1 Residential College	27408	1474894.65		1196.43	43.65
8	学术交流中心 Academic Exchange Center	25296	1275247		1034.48	40.90
9	东西讲堂 Lecture Theatre East & West	2502	108436.5		87.96	35.16
10	校医院 Hospital	2130	92187		74.78	35.11
11	教工俱乐部 Faculty Club	1405	56938.2		46.19	32.87
12	图书馆 Library	9840	324886.1	26151.76	318.20	32.34
13	教师公寓 Serviced Apartment	5824	216553.5		175.67	30.16
14	北教学楼A楼 Learning and Teaching Building North A	10440	309574.85	27746.38	309.12	29.61
15	基础实验楼 Laboratory Building	19779	627228		508.81	25.72
16	大讲堂 Auditorium	11919	318573.1		258.43	21.68
17	行政楼 Administration Building	9379	240446.2		195.05	20.80
18	北教学楼B楼 Learning and Teaching Building North B	10750	177818.55	28570.26	203.96	18.97
19	文理楼 Art and Science Building	10648	150947.2	28299.18	181.59	17.05
20	书院 (3号) No.3 Residential College	24831	501335.79		406.68	16.38
21	多功能厅 Multimedia Hall	2810	47049.2		38.17	13.58
	合计 Total	248615	13575403.9	---	11322.89	1363.20

8/ 附录

APPENDIX

8.1 排放因子

E mission Factor (EF)

温室气体排放因子（EF）是将活动水平数据与温室气体（GHG）排放相关联的因子，即某种单位体积或质量的燃料或物质的温室气体放量。本报告采用的电力排放因子来源于国家发展改革委应对气候变化司《关于公布2015年中国区域电网基准线排放因子的公告》；标煤CO₂的排放因子来源为《可再生能源建筑应用示范项目测评导则》；其它排放因子数据基于燃料的热值和《IPCC国家温室气体排放清单指南2006》第二卷提供的温室气体缺省排放系数的计算值，其中能源热值来源于《中国能源统计年鉴2008》第283页。

Emission factor is used in greenhouse gas inventories to estimate emissions from materials in a certain measurement, which links the activity level data with GHG emissions. Power EF is based on Announcement of Emission Factor for China's Reginal Power Grid Baseline in 2015 by Climate Change Department subordinated to National Development and Reform Commission; coal EF is based on Evaluation Guide Rules of Recycle Energy Buildings Model Application Projects; other EF data are guided by energy heat values from the page 283 of China Energy Statistical Yearbook of 2008 and calculation values from GHG default emission coefficient of 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2.





表8-1 常用排放因子及相关说明
Typical Emission Factors and Introduction (Table 8-1)

类别	排放因子			来源（或依据）
	CO ₂	CH ₄	N ₂ O	
电力	8.112 tCO ₂ / (万kWh)	--	--	国家发展改革委应对气候变化司《关于公布2015年中国区域电网基准线排放因子的公告》P4“排放因子数值表”华东区域电网电力排放因子
标煤	2.47 tCO ₂ /t	--	--	根据 《可再生能源建筑应用示范项目测评导则》 标煤CO ₂ 的排放因子为2.47
天然气	20.9 tCO ₂ /万m ³	3.73×10 ⁻⁴ tCH ₄ /万m ³	3.73×10 ⁻⁵ tN ₂ O /万m ³	《IPCC国家温室气体排放清单指南2006》 第3章的缺省排放因子
车用汽油	22.6 tCO ₂ /万L	8.16×10 ⁻³ tCH ₄ /万m ³	2.61×10 ⁻³ tN ₂ O /万L	《IPCC国家温室气体排放清单指南2006》 第3章的缺省排放因子
车用柴油	27.3 tCO ₂ /万L	1.44×10 ⁻³ tCH ₄ /万m ³	1.44×10 ⁻³ tN ₂ O /万L	《IPCC国家温室气体排放清单指南2006》 第3章的缺省排放因子
液化石油汽 (固定)	17.5 tCO ₂ /万L	0.278 tCH ₄ /万m ³	0.0278 tN ₂ O /万L	《IPCC国家温室气体排放清单指南2006》 第3章的缺省排放因子
汽车	3.641×10 ⁻⁵ tCO ₂ /km	--	--	2010 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting: Annex 6 Passenger Transport Conversion Tables:22 of 35,Table 6k
火车、动车	3.641×10 ⁻⁵ tCO ₂ /km	--	--	2010 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting: Annex 6 Passenger Transport Conversion Tables:22 of 35,Table 6k
飞机	2.052×10 ⁻⁴ tCO ₂ /km	--	--	2010 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting: Annex 6 Passenger Transport Conversion Tables:22 of 35,Table 6l

8.2 全球增温潜势

Global Warming Potential (GWP)

全球增温潜势 (GWP)：基于充分混合的温室气体辐射特征的一个指数，是指某种温室气体的温室效应与二氧化碳的温室效应的比值，二氧化碳的GWP为1。本次核算用到的GWP值，为政府间气候变化委员会 (IPCC) 于2007年编制国家温室气体清单在其报告指南中发布的温室气体在100年间的全球增温潜势。

Global Warming Potential (GWP): an index based on the radiative characteristics of well-mixed greenhouse gases that is the ratio of the greenhouse effect of a particular greenhouse gas to the greenhouse effect of carbon dioxide. The GWP of CO₂ is 1. The GWP in this report is from 2007 IPCC Guidelines for National Greenhouse Gas Inventories.

表8-2 温室气体全球增温潜势

Global Warming Potential (Table 8-2)

温室气体名称	分子式	GWP
二氧化碳	CO ₂	1
甲烷	CH ₄	25
氧化亚氮	N ₂ O	298

数据来源：IPCC第四次评估报告2007 Data from the 4th 2007 IPCC Evaluation Report

8.3 二氧化碳当量

Carbon Dioxide Equivalence (CO_{2e})

二氧化碳当量 (CO_{2e}) 是指与一定质量的某种温室气体辐射强度相当的二氧化碳的量。

全校温室气体排放的二氧化碳当量 $CO_{2e} = GHG_i \times GWPI$

其中: GHG_i: 第i种温室气体的排放量, 单位: t

GWPI: 第i种温室气体的全球增温潜势

Carbon dioxide equivalent (CO_{2e}) is the amount of carbon dioxide equivalent to the radiative intensity of a given mass of a greenhouse gas.

The CO_{2e} of the International Campus: $CO_{2e} = GHG_i \times GWPI$, in which GHG_i means the emission of greenhouse gas type I (measured in tons), and GWPI means the GWP of greenhouse gas type i

