

I . SKKU Greenhouse Gas Emissions Data

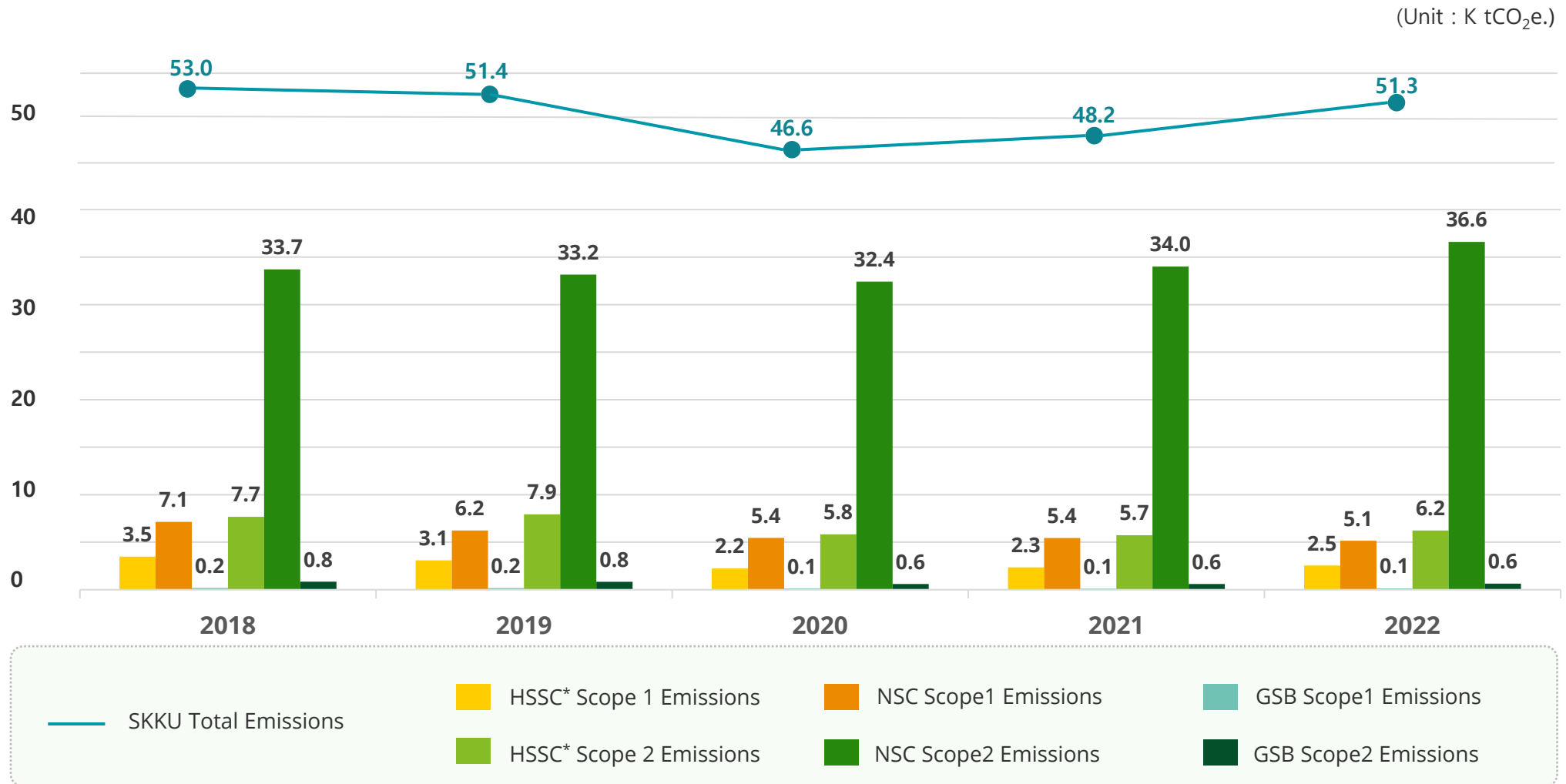


1. SKKU GHG emissions (Scope 1, 2)

1) GHG Emissions Trend ('18 ~ '22)

SKKU's Scope 1 and 2 emissions have been on the rise since 2020, increasing about 10% to 51,300 tCO₂e in 2022. Natural Sciences Campus (NSC) emission increased 6% because of educational buildings, in contrast the Humanities and Social Sciences campus (HSSC) increased 9% by the dormitory.

GHG Emissions Trends ('18 ~ '22)



* Excluded GSB GHG Emissions

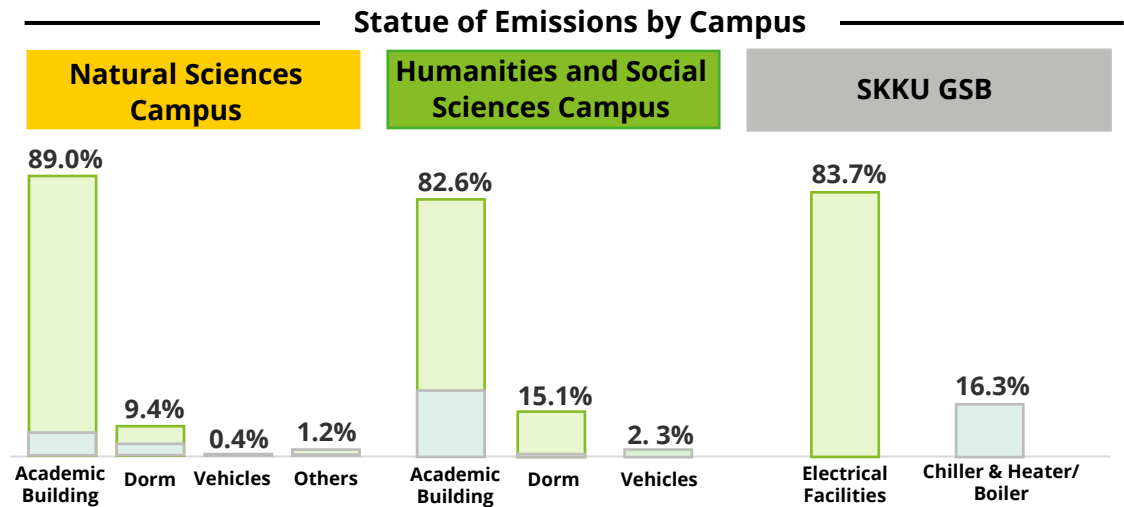
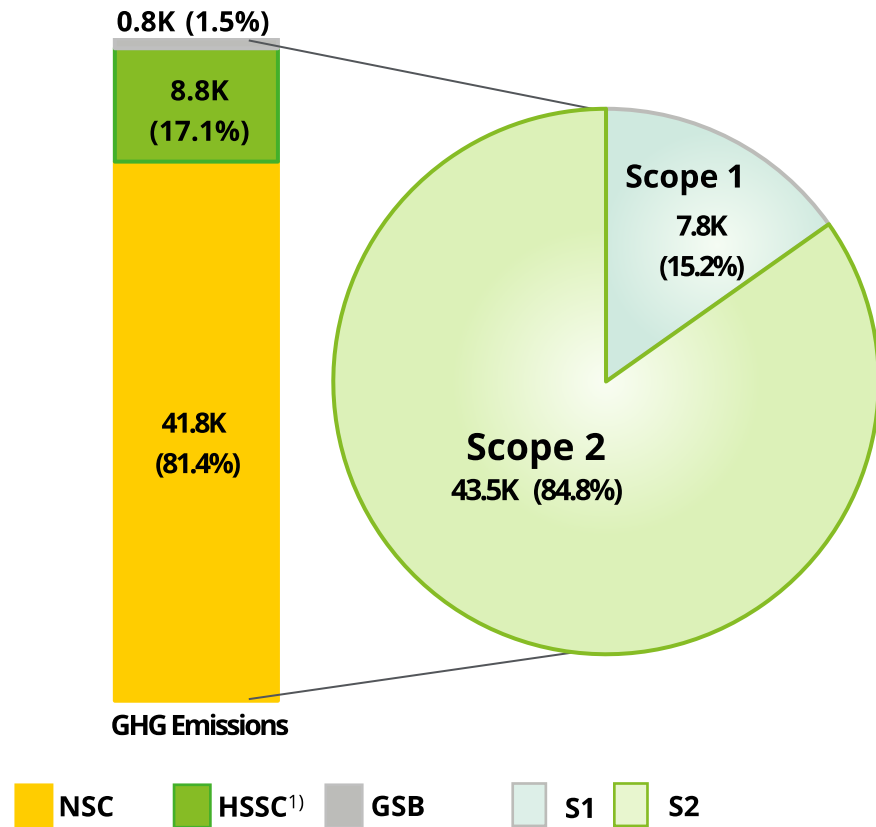
1. SKKU GHG emissions (Scope 1, 2)

2) GHG Emissions Analysis ('22)

NSC takes 85% of total emission (41.8k tCO₂e) in 2022. N center/Research Complex 1/DRC Hall are carbon intensive buildings on campus. while 600th anniversary hall, management hall and law center account for 45.1% of HSSC in 2022.

GHG Emissions DATA ('22)

Total 51.3KtCO₂e.



Campus	Category	Emissions (KtCO ₂ e)	(%)
Natural Sciences Campus	N center	6.4	15.3%
	Research Complex 1	4.4	10.5%
	Pharmacy, Chemistry, Semiconductor Engineering Hall, C&C Lab, DRC	4.3	10.3%
	Medical School	4.0	9.5%
	Research Complex 2	3.8	9.1%
	Subtotal of Top 5 Emissions	22.8	54.7%
Humanities and Social Sciences Campus	600 Years Anniversary Hall	1.6	16.3%
	Business School Hall	1.5	15.8%
	Sungkyunkwan University Law School	1.2	13.0%
	Central Library	0.8	8.8%
	GSB	0.8	8.0%
	Subtotal of Top 5 Emissions	5.9	62.0%
Others		18.9	45.3%
Total Emissions		41.8	100.0%

1) Excluded GSB GHG Emissions

2. SKKU Greenhouse Gas Emissions in 2022

In 2022, GHG emissions, including scope 3 emissions, are 80,140.5 tCO₂e., and the ratio of scope 3 emissions is estimated to be around 36% of total emissions.

Category	GHG Protocol	Definitions	Total in 2022	Total in 2022 (GSB)
Scope 1,2			51,296.2 tCO₂e	766.1 tCO₂e
Direct GHG emissions	Scope 1	Emissions from sources owned or controlled by a company	7,807.9 tCO ₂ e	124.6 tCO ₂ e
Indirect GHG emissions	Scope 2	Indirect emissions from electricity purchased from sources owned or controlled by the enterprise	43,488.3 tCO ₂ e	641.5 tCO ₂ e
Scope 3			28,844.3 tCO₂e	468.2 tCO₂e
Capital goods	Scope 3 _ Category 2	Extraction, production and transportation of capital goods purchased or acquired by a company	4,467.25 tCO₂e	29.65 tCO₂e
Fuel and energy related activities	Scope 3 _ Category 3	Activities related to fuel and energy purchased or acquired by a company	3,833.87 tCO₂e	62.36 tCO₂e
Waste generated in operations	Scope 3 _ Category 5	Disposal and disposal of waste generated by enterprises	560.89 tCO₂e	0.40 tCO₂e
Business travel	Scope 3 _ Category 6	Means of transportation used by corporate executives and employees for business trips	1,682.83 tCO₂e	87.22 tCO₂e
Employee commuting	Scope 3 _ Category 7	Means of transportation used by officers and employees to travel between their homes and workplaces	18,299.48 tCO₂e	288.55 tCO₂e
Total			80,140.5 tCO₂e	1,234.3 tCO₂e

[Ref.] Independent Assurance Statement (Scope 3)



LRQA Independent Assurance Statement Relating to Sungkyunkwan University's GHG Emissions Inventory for the calendar year 2022

This Assurance Statement has been prepared for Sungkyunkwan University in accordance with our contract.

Terms of engagement

LRQA was commissioned by Sungkyunkwan University to provide independent assurance on its GHG emissions inventory for the calendar year 2022 (here after referred to as "the report") against the assurance criteria below to a limited level of assurance and materiality of 5% using ISO 14064-3:2019, 'Specification with guidance for verification and validation of greenhouse gas statements'.

Our assurance engagement covered Sungkyunkwan University's domestic operations and activities, and specifically the following requirements:

- Evaluating conformance with World Resources Institute / World Business Council for Sustainable Development Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, revised edition¹
- Evaluating the accuracy and reliability of data and information for other indirect GHG emissions (Scope 3)².

LRQA's responsibility is only to Sungkyunkwan University. LRQA disclaims any liability or responsibility to others as explained in the end footnote. Sungkyunkwan University's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of Sungkyunkwan University.

LRQA's Opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that Sungkyunkwan University has not, in all material respects:

- Met the requirements above; and
- Disclosed accurate and reliable data and information as summarized in Table 1 below.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of 5%.

Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

LRQA's approach

LRQA's assurance engagements are carried out in accordance with our verification procedure. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Interviewing key people of the organization responsible for managing GHG emissions data and records;
- Reviewing processes related to the control of GHG emissions data and records;
- Reviewing whether GHG emissions have been calculated with parameters from recognized sources;
- Verifying historical GHG emissions data and records at an aggregated level for the calendar year 2022; and
- Visiting Sungkyunkwan University's Natural Sciences Campus and reviewed additional evidence made available by Sungkyunkwan University.

LRQA's standards, competence and independence

LRQA implements and maintains a comprehensive management system that meets accreditation requirements for ISO 14065 Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition and ISO/IEC 17021 Conformity assessment - Requirements for bodies providing audit and certification of management systems that are at least as demanding as the requirements of the International Standard on Quality Control 1 and comply with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants.

¹ <https://www.ghgprotocol.org>

² This assurance engagement excludes verification of Scope 1 and Scope 2 emissions in accordance with our contract with Sungkyunkwan University. Sungkyunkwan University's Scope 1 and Scope 2 emissions for domestic operations and activities, which were consolidated using an operational control approach for the same reporting period, have been verified by Korea Management Registrar Inc. in accordance with the guidelines an emission reporting and certification under the GHG emissions trading system of Korea.



LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

This verification engagement is the only work undertaken by LRQA for Sungkyunkwan University and as such does not compromise our independence or impartiality.

Byung-Gil Lim
LRQA Lead Verifier
On behalf of LRQA Limited
2nd Floor, T Tower, 30, Sowol-ro 2-gil, Jung-gu, Seoul, Republic of Korea

Dated: 4 October 2023

LRQA reference: SE000001397

Table 1. Summary of Sungkyunkwan University, GHG Emissions Inventory 2022

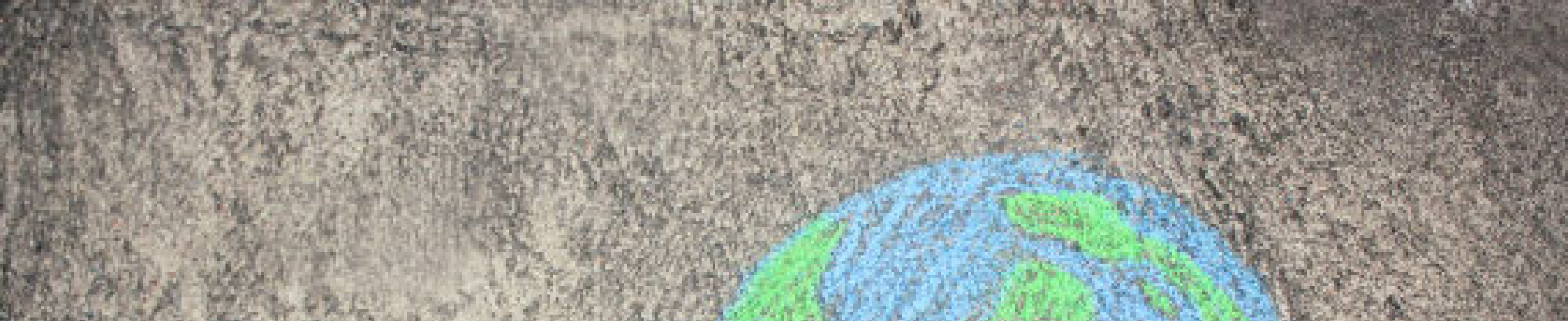
Scope of GHG emissions	Tonnes CO ₂ e		
	Humanities and Social Sciences Campus (including SKK GSB)	Natural Sciences Campus	SKK GSB (Graduate School of Business)
Other Indirect GHG emissions (Scope 3)			
• Capital goods - production of capital goods purchased	900	3,567	30
• Fuel and energy related activities - upstream GHG emissions of natural gas, diesel, gasoline, kerosene and electricity purchased	784	3,049	62
• Waste generated in operations - treatment of waste generated from operations	5	505	0.4
• Business travel - personal cars, domestic and international flights	373	1,310	87
• Employee commuting - commuting by personal cars, subways, trains and buses	6,820	11,479	289

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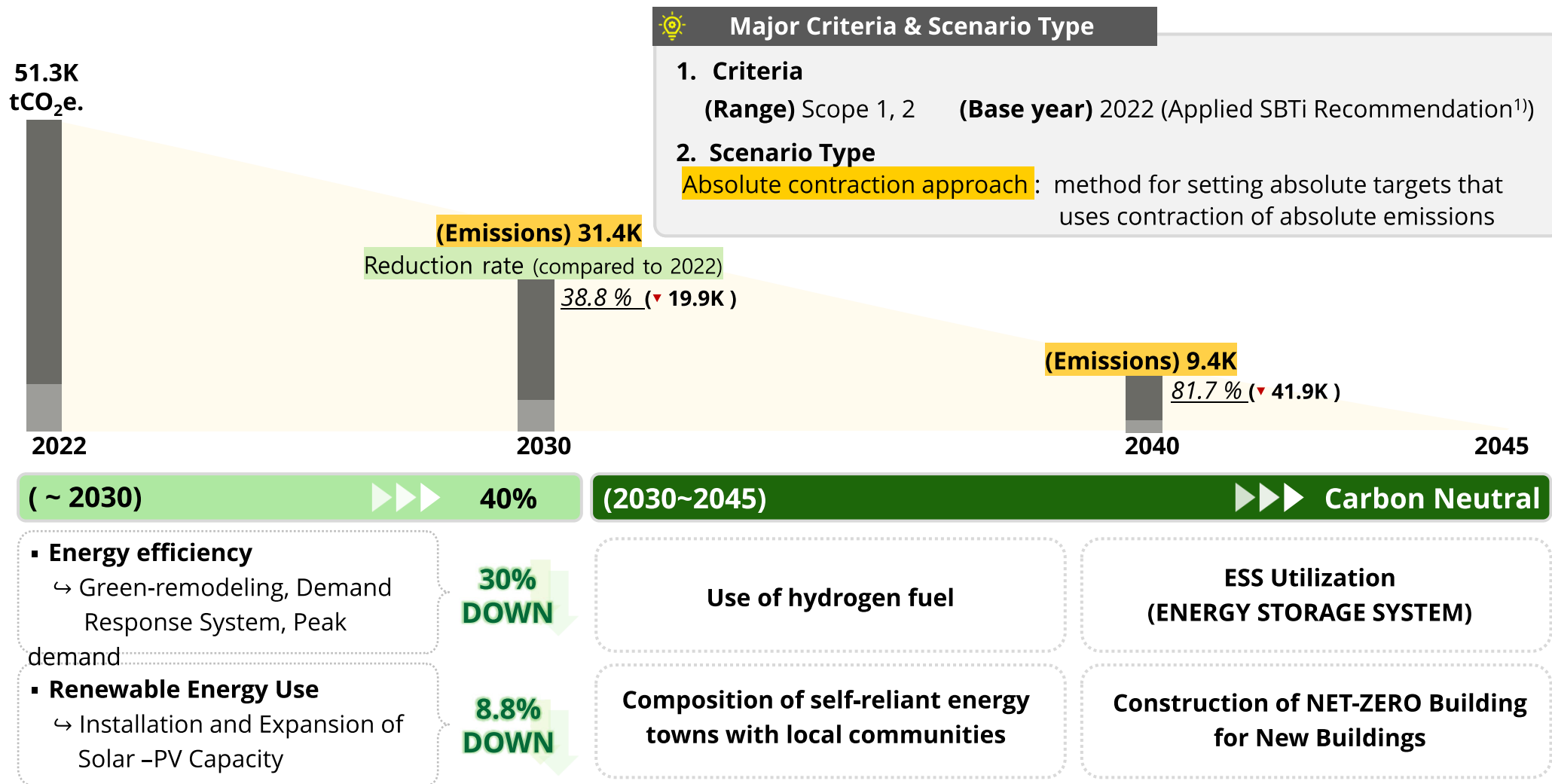
II. Carbon Neutral Scenario of SKKU



1. Carbon Neutral Scenario (Based SBTi)

1) Scope 1, 2

SKKU aim of achieving Climate neutrality (Scope 1, 2) by 2050. (Base year 2022) (38.8% by 2030 / 81.7% by 2040 compared to 2022)
 We set a carbon reduction pathway considering SBTi's proposed reduction level.



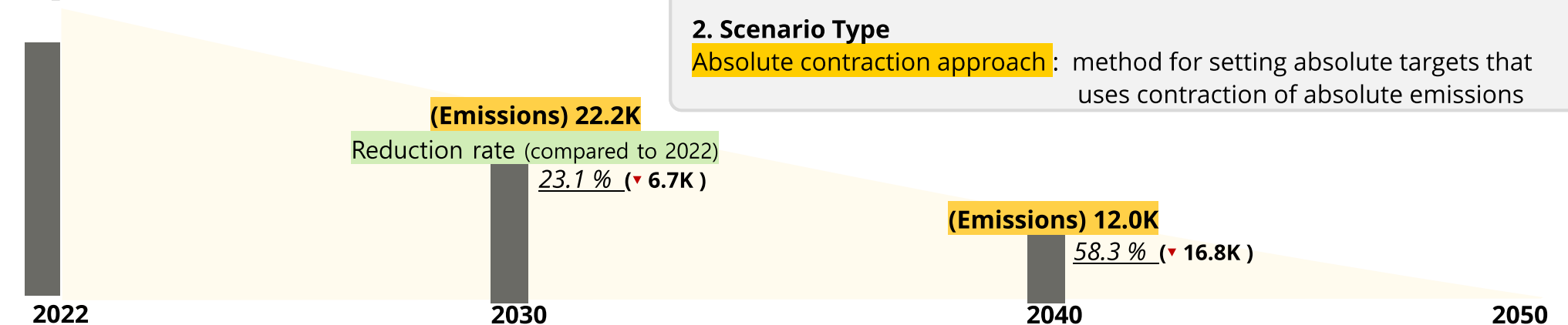
1) SBTi (Science Based Targets) is a carbon-neutral initiative that recommends declaring emissions in the previous year as Base year when establishing carbon-neutral targets

1. Carbon Neutral Scenario (Based SBTi)

2) Scope 3

SKKU aim of achieving Climate neutrality for Value chain (Scope 3) by 2050. (Base year 2022) (23.1% by 2030 / 58.3% by 2040 compared to 2022). We set a carbon reduction pathway considering SBTi's proposed reduction level.

28.8K
tCO₂e.



Major Criteria & Scenario Type

1. Criteria

(Range) Scope 3 (Base year) 2022 (Applied SBTi Recommendation¹⁾)

2. Scenario Type

Absolute contraction approach: method for setting absolute targets that uses contraction of absolute emissions

(~ 2030)

▶▶▶ 23%

(2030~2050)

▶▶▶ Carbon Neutral

Expansion of eco-products

↳ Construction of eco-product procurement systems, Buying Eco-Certified Products

45%
DOWN

Expansion of Low-carbon commuting systems

↳ Providing incentives, Expanding eco-friendly commuter buses for Reduce personal commuting

25%
DOWN

Off-set Activities

S3 emissions offset by forest development, etc. of external businesses

Waste Reduction with recycling

No Plastic in Campus

Expanding eco-friendly transportation, Domestic/International Business Trip

Category 3 emissions Reduction by reducing LNG and oil use

1) SBTi (Science Based Targets) is a carbon-neutral initiative that recommends declaring emissions in the previous year as Base year when establishing carbon-neutral targets

2. SKKU Carbon Neutral Action Plan

To achieve Carbon Neutral at SKKU, we will establish three major direction and five strategic themes based on the vision of "Global Leader for sustainable Campus" and promote carbon neutrality based on 10 detailed tasks.

