

**SK hynix**  
**Green Bond**  
**Impact Report 2023**

## Sustainable Future with Double Bottom Line Management

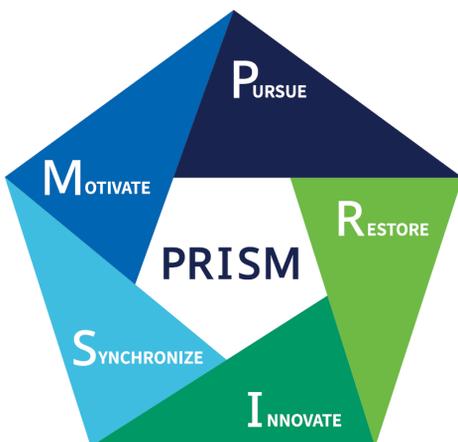
As a world’s top-tier semiconductor supplier, SK hynix pursues a sustainable future by embracing both economic value (EV) and social value (SV) as priorities. Under this unique management philosophy called Double Bottom Line (DBL), SK hynix tries to create a better ICT world.

In 2021, SK hynix announced SV 2030, the first initiative that specified the company’s mid- to long-term goal of SV creation for the next 10 years. Under the belief that “if you can’t measure it, you can’t manage it,” we have classified social value as (1) indirect contribution to economy, (2) environmental performance, (3) social performance, and (4) governance, and disclosed the result transparently. The performance in governance category will be announced by further upgrading the indicator system by reflecting the characteristics of the field. We aim to cover the impact of all business activities under the principle of conservatism.

FY 2021 SK hynix SV Result: KRW 9.42tn			
Indirect Contribution	Environmental Performance	Social Performance	Governance
Employment	Resource Consumption	Quality of Life	* The governance Indicator is being reviewed as social value metrics based on governance activities
Dividend		Consumer Protection	
Tax Payment	Environmental Pollution	Labor	
		Shared Growth	
		Social Contribution	
		Donation	
		Volunteering	

## PRISM Framework and 2030 Goals

In 2022, SK hynix developed its own ESG strategy framework that encompasses all the goals set out in the existing SV 2030, called ‘PRISM.’



Divided into the five pillars of Pursue, Restore, Innovate, Synchronize, and Motivate, PRISM represents why SK hynix pursues ESG management, what will be done, and how to achieve this purpose.

- Pursue a brighter future based on our philosophy
- Restore the environment to preserve the planet
- Innovate our technology for tomorrow
- Synchronize sustainability efforts with our partners
- Motivate our people toward excellence

## PRISM's Key 2030 Targets

Since 2021, the ESG Management Committee has discussed, embodied, and led ESG strategies for various issues. Moreover, in 2022, SK hynix established a new Carbon Management committee, operating under ESG Management committee, to respond more aggressively to the climate change.

	Category	2030 Goals (Base year: 2020)
Pursue	Our Value to Society	<ul style="list-style-type: none"> <li>To generate social contribution value of KRW 1tn (cumulative)</li> <li>To create 1,000 jobs for people with disabilities or low-income households<sup>1</sup></li> <li>To promote participation of 100,000 people in the global ICT talent fostering program (cumulative)<sup>1</sup></li> <li>To help 100,000 people from underserved communities via social contribution activities with cutting-edge technology (cumulative)<sup>1</sup></li> <li>To serve 12,000 people through our meal sharing program (cumulative)<sup>1</sup></li> </ul>
	Robust Governance	<ul style="list-style-type: none"> <li>To increase gender/ nationality diversity of the Board to 30%</li> </ul>
	Safety & Health at Work	<ul style="list-style-type: none"> <li>To reduce the integrated incidents rate by 10% (Base year: 2021)<sup>1</sup></li> <li>To lower the prevalence rate of metabolic syndrome by 10% (Base year: 2021)<sup>1</sup></li> </ul>
Restore	Climate Action	<ul style="list-style-type: none"> <li>To maintain scope 1 and 2 GHG emissions at 2020 levels<sup>3</sup></li> <li>To reduce GHG emissions intensity by 57% (by 2026)</li> <li>To create energy saving of 3000 Gwh (cumulative)</li> <li>To achieve 33% renewable electricity use</li> </ul>
	Water Stewardship	<ul style="list-style-type: none"> <li>To conserve 600 million tons of water (cumulative)</li> <li>To reduce water withdrawal intensity by 35% (by 2026)</li> </ul>
	Circular Economy	<ul style="list-style-type: none"> <li>To receive ZWTL Gold(99%) certification</li> </ul>
Innovate	Sustainable Manufacturing	<ul style="list-style-type: none"> <li>To reduce GHG emissions from process gases by 40%</li> <li>To improve the destruction and removal efficiency of abatement systems to 95%</li> </ul>
	Green Technology	<ul style="list-style-type: none"> <li>To double HBM energy efficiency</li> <li>To increase eSSD energy efficiency by 1.8 times</li> </ul>
Synchronize	Responsible Engagement	<ul style="list-style-type: none"> <li>To ensure 100% of new suppliers sign SK hynix Supplier Code of Conduct</li> <li>To ensure 100% of tier 1 suppliers complete online ESG self-assessment (every two years)</li> <li>To ensure 100% of high-risk/critical suppliers receive on-site ESG assessment (every two years)</li> <li>To triple the number of responsibly sourced minerals (from 3TG minerals to 12 minerals)</li> </ul>
	Shared Growth	<ul style="list-style-type: none"> <li>To invest KRW 3 trillion in technological cooperation to promote shared growth (cumulative)</li> </ul>
Motivate	Inclusive Workplace	<ul style="list-style-type: none"> <li>To triple the ratio of women in executive positions (Base year: 2021)</li> <li>To ensure 10% representation of women in team leader positions<sup>2</sup></li> </ul>
	Empowering People	<ul style="list-style-type: none"> <li>To achieve 200 hours of annual self-development education per employees<sup>2</sup></li> </ul>

Notes:

1) Figures form domestic sites

2) Figures based on domestic engineering and office staff

3) GHG emissions from the Dalian fabrication plant we acquired from Intel in December 2021 are not reflected in the target. Emission control targets for new manufacturing sites such as the Dalian Fab and Key Foundry, for which the acquisition contract was signed in 2021, will be announced later after a separate detailed analysis.

## 2022 ESG Development & Achievement

Under DBL Management, SK hynix contributed to build a better ICT ecosystem as a “Solution Provider” that realizes value for society and value in sync with the times. In 2022, SK hynix developed a new low-power, high-efficiency smart memory, “PIM (Processing-in-Memory)”, which is located in the high class of Memory ForEST, a new roadmap of SK hynix for tomorrow’s technology ecosystem. In addition, the company announced a new/ comprehensive ESG strategy framework called “PRISM” and concretized its strategies to achieve its ESG goals. Finally, the company got the Carbon Trust’s Carbon Footprint Certification for its eSSD and cSSD and become the first semiconductor company in Korea to receive IECQ QC 080000.



Jan 2022

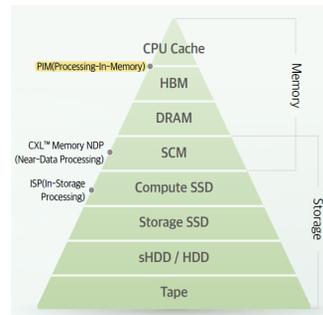
### Establishing Carbon Management Committee

To set a company-wide carbon reduction strategy and to implement it throughout the entire manufacturing process

Feb 2022

### Developing PIM

PIM (Processing-in-Memory), a next generation smart memory with power consumption reduced by as much as 80%



Jul 2022

### Establishing PRISM



Jun 2022

### Carbon Trust's Certification

Acquisition of the Carbon Trust's Carbon footprint certification for eSSD and cSSD



Jul 2022

### First TCFD Report



Jan 2023

### Publish SLB Framework with double SPO



Jan 2023

### Issuance of SLB & Green Bond

SK hynix	SK hynix
- Format: SLB	- Format: Green
- Currency: USD	- Currency: USD
- Size: USD1bn	- Size: USD750mn
- Coupon: 6.375%	- Coupon: 6.500%
- Tenor: 5-year	- Tenor: 10-year
- ISIN:US78392BAE74/ USY8085FBK58	- ISIN:US78392BAF40/ USY8085FBL32

## Green Bond Key Figures

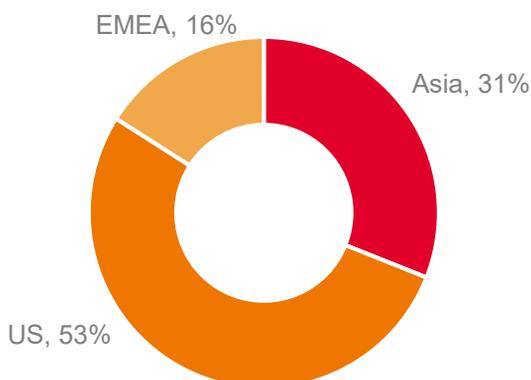
On 19 January 2021, SK hynix issued a USD 2.5bn triple-tranche Senior Unsecured bond, consisting of a USD 500m 3-year tranche, a USD 1bn 5-year tranche and a **USD 1bn 10-year Green tranche**. The net proceeds from the 10-year Green Bond will be allocated to eligible projects in accordance with the **SK hynix's Green Financing Framework**.

*SK hynix USD 1bn 10-year Senior Unsecured Green Bond was awarded as 'Best Green Bond-Corporate' by Asset Triple A and 'Best of Northeast Asia Deal' by Finance Asia.*

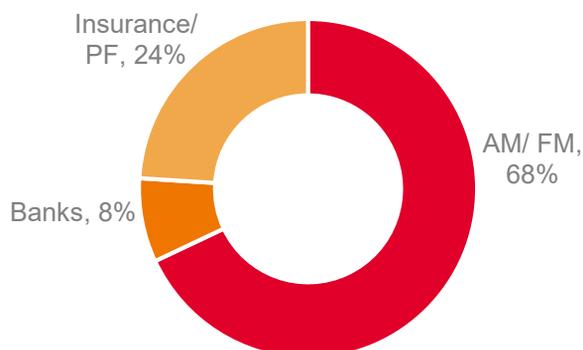
**(2022 reporting allocation: KRW 590,141,873,736; 2023 reporting allocation: KRW 505,975,715,136)**

<b>Issuer</b>	<b>SK hynix Inc. ("SK hynix")</b>
<b>Issue type</b>	Senior Unsecured, 144A/ RegS, <b>Green Bond</b>
<b>Issue Rating</b>	Baa2 / BBB- (Moody's / S&P)
<b>Issue Date</b>	19 January 2021
<b>Amount Issued</b>	USD 1 billion
<b>Tenor</b>	10-year
<b>Coupon</b>	2.375%
<b>ISIN</b>	144A: US78392BAC19 RegS: USY8085FBD16

**Green Bond Allocation  
Distribution by Geography**



**Green Bond Allocation  
Distribution by Investor Type**



## Allocation Reporting

Total Allocation<sup>1</sup> : KRW 1,096,117,588,872 (Equiv. USD 897,335,418)

Refinancing Ratio<sup>2</sup> : 45.5%

Project Description	City <sup>3</sup>	Amount Allocated (KRW million)				
		2018	2019	2020	2021	2022 (1Q-3Q)
<b>Sustainable Water and Wastewater Management</b>						
Regional municipal water project 2nd phase	IC	909	17,273	36,531	30,127	4,545
Establishment of wastewater treatment plants and systems	IC	55,745	79,152	96,729	148,411	163,695
Improvement of trickling filter for wastewater reduction	IC, CJ	-	3,830	3,208	697	-
Construction of cooling tower drainage reuse system	IC	-	-	19,821	3,239	-
Expansion of sewage treatment plant	IC	-	883	-	-	-
Installation of wastewater reuse system and recycled water supply pipe	IC	-	25,704	-	-	-
Installation of temporary/ emergency storage for wastewater	IC	-	13,200	21,757	133	-
Improvement of water pollutant treatment	CJ	-	-	-	-	877
Investment in nonpoint pollutant treatment facility	IC	-	-	-	4,044	-
Installation of sludge treatment system	IC	-	-	-	2,576	2,699
<b>Energy Efficiency</b>						
Installation of LED lighting for energy saving	IC, CJ	-	1,862	292	-	-
Investment in energy savings for manufacturing facilities to improve low power efficiency	IC, CJ	-	-	3,101	1,535	88
Adoption of Heat Pump System for energy saving	CJ	-	1,114	-	-	-
Development of SSD	IC, CJ, BD	-	-	-	35,512 <sup>4</sup>	159,193
<b>Terrestrial and Aquatic Biodiversity Conservation</b>						
Icheon Eco Park Construction	IC	-	-	190	600	3,505
<b>Pollution Prevention and Control</b>						
Establishment of Self Ecosystem Assessment System	IC	-	-	-	1,240	-
Investment in Equipment for Environmental Analysis Center	IC	-	-	-	350	-
Installation of automatic water quality measurement equipment	IC	-	876	-	-	291
Installation of Telemonitoring system (TMS) for atmospheric management area	CJ	-	-	-	991	355
Establishment of nitrogen oxide (NOx) reduction infra	IC, CJ	-	14,377	26,779	40,692	559
Improvement of waste heat recovery and temperature reduction system	IC	-	8,411	54,163	2,977	-
Improvement in efficiency of nitrogen treatment facility	IC	-	-	-	629	-
Investment in VOCs reduction facility	CJ	-	-	-	652	-
<b>Allocation</b>		<b>56,654</b>	<b>166,682</b>	<b>262,571</b>	<b>274,404</b>	<b>335,807</b>

Notes:

1) 2018 – 3Q2021: KRW/ USD = 1,188.88 (as of end Dec 31, 2021); 4Q2021 – 3Q2022: KRW/ USD = 1,261.94 (as of end Dec 31, 2022)

2) Refinancing Ratio = Allocation from 2018-2020 / Allocation from 2018-2022.3Q

3) IC = Icheon; CJ = Cheongju; BD = Bundang

4) Reflecting allocation for only Q4 2021

# Impact Reporting<sup>1,2,3</sup>

## Sustainable Water and Wastewater Management<sup>4</sup>

Indicator	2018	2019	2020	2021	2022		
					1Q	2Q	3Q
Water Reuse (1,000m <sup>3</sup> )	18,644	21,631	26,932	34,463	8,114	8,738	9,818
Water Reuse Rate (%)	27	28	32	37	35	37	39
Water Consumption per Revenue (m <sup>3</sup> / 10 billion won)	2,899	4,250	3,267	3,143	2,468	2,628	3,884
Water Withdrawals per Revenue (m <sup>3</sup> / 10 billion won)	15,523	24,401	21,041	16,739	14,776	13,478	17,926
Wastewater Discharge (1,000m <sup>3</sup> )	51,057	54,390	56,699	58,461	14,961	14,986	15,423

## Energy Efficiency<sup>5</sup>

### (1) Improving Energy Efficiency in Business Sites

Indicator	2018	2019	2020	2021	2022		
					1Q	2Q	3Q
Total Energy Consumption per Revenue (GJ/ 100 million won)	208	316	283	241	216	187	259

### (2-1) SSD Energy Efficiency Development\*

Generation**	Active Read/ Write Power	Seq.Read	Performance per Watt ((MB/s)/W)	Performance Improvement***
PE8110 E1.S	20W	6,400MB/s	320	100.0%
PE9110 E1.S	20W	6,600MB/s	330	103.1%
PS1010 E3.S	25W	14,500MB/s	580	181.3%

\*@8TB, Max Power

\*\* PE8110 (Previous Generation)/ PE9110 (Current Generation)/ PS1010 (Pre-release)

\*\*\* Baseline PE8110 E1.S

### (2-2) SSD vs HDD Performance Per Watt\*

Type (Model Code)	Power	Read (or Write)	Performance per Watt ((MB/s)/W)	HDD vs SSD**
HDD Model (A)***	5.3W	190MB/s	35.8	11.2%
HDD Model (B)***	6.2W	185MB/s	29.8	9.3%

\* @8TB, Max Power

\*\* HDD Performance per Watt vs SSD (PE8110 E1.S) Performance per Watt

\*\*\* Release Year: HDD Model (A) in 2017/ HDD Model (B) in 2021

#### Notes:

1) SK hynix decided not to disclose the impact by each of the allocated projects due to confidentiality

2) The indicators were made at the company level

3) Impact from 1Q22 to 3Q22 are before validation, so numbers could be changed in SK hynix 2023 Sustainability Report

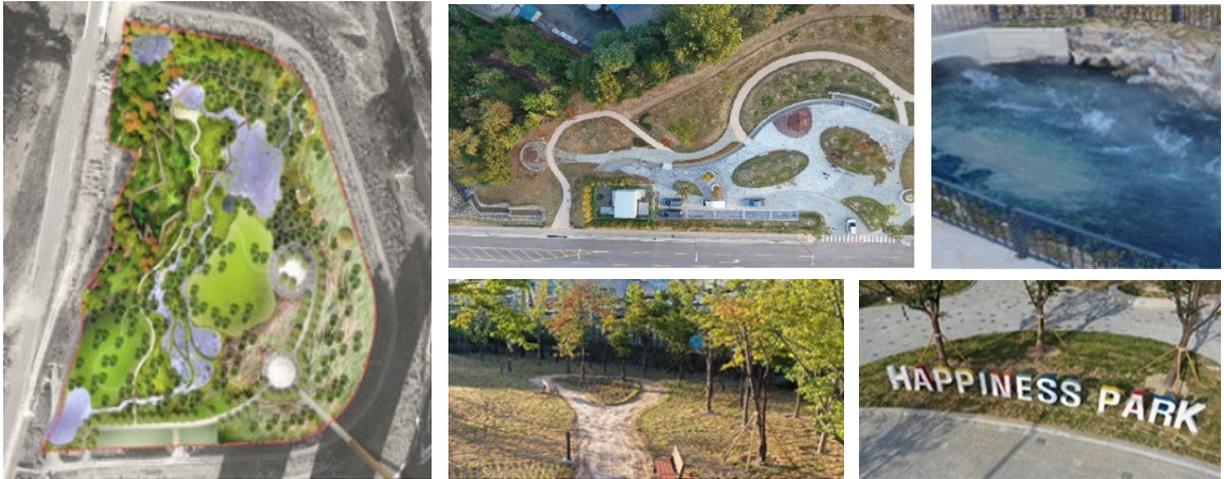
4) Given the allocations were mostly for domestic projects, limited the impact indicators to domestic figures

5) Total energy consumption includes both overseas and domestic businesses such as Icheon, Cheongju, Bundang, Wuxi and Chongqing. Due to confidentiality, the company cannot disclose data based on geography

# Impact Reporting<sup>1,2</sup>

## Terrestrial and Aquatic Biodiversity Conservation

Location	Area <sup>3</sup> (m <sup>2</sup> )	Impact
Icheon, Korea	20,334	Construction of ecological park to improve environment and secure biodiversity



Icheon Eco Park Construction

## Pollution Prevention and Control

Indicator	2018	2019	2020	2021	2022 (1Q-3Q)
Installation of Environment Analysis System (unit)	-	-	-	2	-
Installation of Water Quality Measurement system (unit)	-	3	1	-	1

Notes:

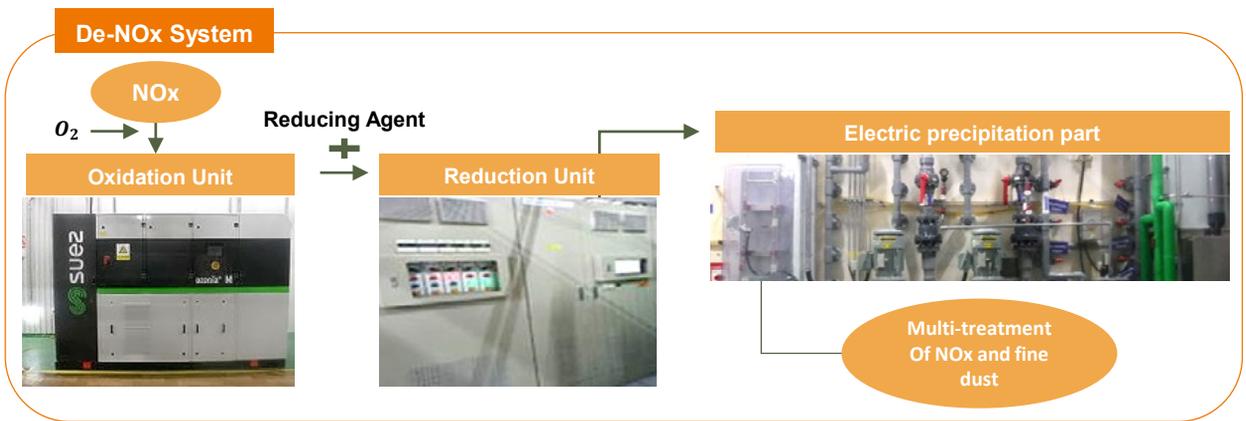
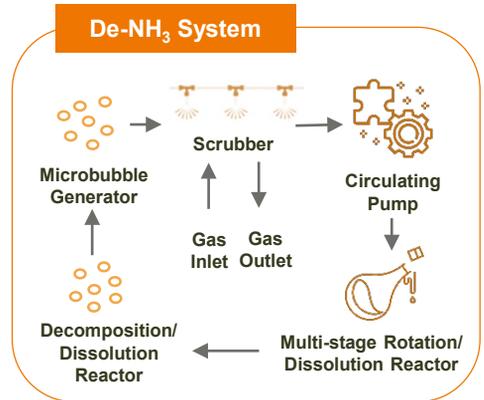
1) SK hynix decided not to disclose the impact by each of the allocated projects due to confidentiality

2) The indicators were made at the company level

3) Upon completion of final measurements, the area of the Icheon Eco Park has been revised from 20,419m<sup>3</sup> which was reported in the previous annual reporting

## Case Study: De-NOx and De-NH<sub>3</sub> Systems

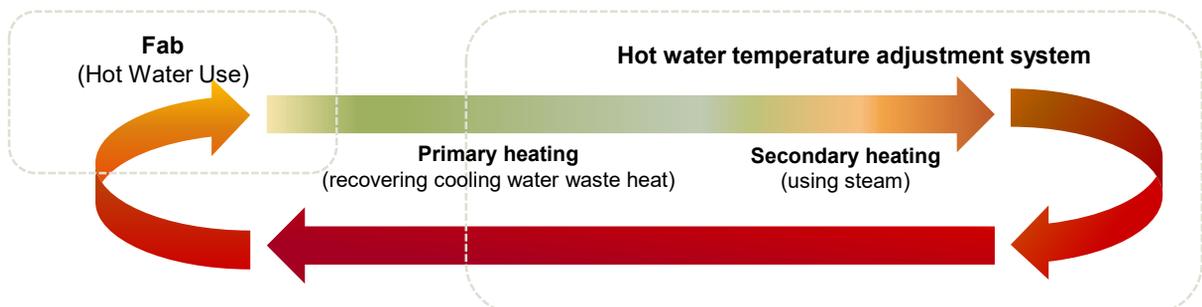
Recognizing the importance of fluorinated-gases (F-gases) in manufacturing processes, SK hynix set a goal to reduce GHG emissions from process gases by 40% by 2030 compared to 2020. To achieve the goal, SK hynix considers replacing NF<sub>3</sub> gas with F<sub>2</sub> gas and has been developing abatement systems for F-gases treatment such as de-NOx system. In 2021, SK hynix installed 25 de-NOx devices and 6 de-NH<sub>3</sub> devices, reducing air pollutant emissions by 74% relative to 2020. Instead of the usual treatment with sulfuric acid, SK hynix's de-NH<sub>3</sub> system eliminates ammonia by applying a carbonated solvent with microbubbles. SK hynix strives to develop a range of technologies to increase the removal treatment efficiency from the current 90%.



## Case Study: Energy Conservation Heating Water

Lukewarm (33-40°C) water is continuously delivered to the semiconductor fabrication plant (or fab), where it is used in production processes or for indoor heating. Heated water used in semiconductor production processes must be kept at a constant temperature, but the volume and permissible temperature range of the water needed for indoor heating will vary depending on the temperature of the air outside.

SK hynix examined how much of the heated water supplied to M14 Fab was being used for indoor heating, and make the process consume lower energy without having an effect on the production processes. As a result, optimizing the hot water temperature at M14 lowered the annual volume of steam used by 120,000 tons, which lowered the consumption of energy by 331TJ.



## Framework and Second Party Opinion

The SK hynix Green Financing Framework (“Framework”) sets out the criteria, governance and processes under which the Company, intends to issue green bonds, loans, private placements or any other financing instruments.

### Use of proceeds



- Any Green Financing Instruments issued by SK hynix will be used to finance and/ or re-finance new or existing projects, under construction and/ or in operation (“Eligible Projects”) from any of the Eligible Green Categories.

#### Eligible green Categories

- Sustainable water and wastewater management
- Energy Efficiency
- Pollution prevention and control
- Terrestrial and aquatic biodiversity conservation

### Project selection and evaluation



- An internal ESG Working Group which is composed of Finance Management organization, ESG-related departments, and environment-related departments evaluates and selects potential Eligible Projects.
- Looking at the process in more detail, any department related to ESG activities can propose a green investment project. Once a proposal has been made, then the infrastructure team, responsible for project construction, calculates budget and plans construction method and associated timeline.
- The existing ESG Management Committee, which includes the CEO, then reviews the preliminarily selected potential Eligible Projects for final approval.

### Management of proceeds



- SK hynix intends to allocate the proceeds to fund Eligible Projects under the Eligible Green Categories, selected in accordance with the use of proceeds criteria and evaluation and selection process
- SK hynix will initially deposit the proceeds from any Green Financing Instrument into the general funding accounts of SK hynix.
- A Green Financing Register will be established to earmark the proceeds of the Green Financing Instruments against assessed and selected Eligible Projects

### Reporting



- A Green Financing Report will be made available to investors and lenders within one year from the date of the issuance of the Green Financing Instruments and thereafter once a year until the proceeds have been fully allocated.

## Second Party Opinion



V.E is of the opinion that SK hynix’s Framework is aligned with the four core components of the Green Bond Principles 2018 (“GBP”) and the Green Loan Principles 2020 (“GLP”).