CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-000418

SITE DETAILS

Site: **Samsung Electronics - Hwaseong**

Address: Samsungjeonja-ro 1, Hwaseong-si, Gyeonggi-do 18448, 18448, Hwaseong-si, KOREA, REPUBLIC OF

Contact Person: Bomi Kim

AWS Reference Number: AWS-000541

Site Structure: Single Site

CERTIFICATION DETAILS

Certification status: Certified Platinum

Date of certification decision: 2023-Feb-14

Validity of certificate: 2026-Feb-14

AUDIT DETAILS

Audited Service(s): AWS Standard v2.0 (2019)

Audit Type(s): Initial Audit

Audit Start Date: 2022-Nov-07

Lead Auditor: Mia Antoni-Naidoo

Audit team participants:

Sa-Meong Gim

Naoya Ogawa

Joohyun Kim, Interpreter

Site Participants:

WooKyung Kim, Group Environment Conservation Leader

JungYoung Lee, Part Water Environment Leader

Taewon Koo, Part Member

DongHwan Kim, Part Member

Jisung Kim, Part Member

ByungMoo Park, Part Member

Sena Shim, Part Member

Jungbum Kim, Part Member

Youngll Ha, Part Member

Jungwon Lee, Part Member

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ADDITIONAL INFO

Summary of Audit Findings: A total of 25 findings were raised during the certification audit, 5 major non-conformities, 14 minor non-conformities, 6 observations.

The Client is requested to perform a root cause analysis and define corrective actions for each of the non-conformities and to submit these to WSAS within 60 days of receipt of the audit report by 20.02.2023

The major non-conformities must be sufficiently addressed and evidence submitted to WSAS within 90 days of receipt of the report 22.03.2023.

Minor non-conformities must be closed out by the time of the next annual audit.

The audit team recommends certification of Samsung Electronics - Hwaseong at Platinum level pending approval of the corrective actions plan [and closure of the major non-conformities.

CLOSURE OF FINDINGS AND CORRECTIVE ACTION PLAN:

The Client has successfully resolved the major non-conformities and submitted the corrective action plan addressing all findings.
Proof of implementation has been requested for the Minors and this will be evaluated during the Surveillance Audit.

Scope of Assessment: The scope of services covers the Initial certification audit for assessing conformity of Hwaseong Samsung against the AWS International Water Stewardship Standard Version 2.

The Samsung Electronics Hwaseong site was established in 1999 and is in charge of semiconductor parts such as memory and non-memory, System Large Scale Integration (LSI) and Foundry. In particular, it is a comprehensive semiconductor production base that starts with DRAM and NAND flash and produces EUV and image sensors. It is also the place where the world's first 1Gb DDR RAM was mass-produced in 2003. It has facilities for lines 13, 15, 16, 17, and 21 on a scale of about 1.57M□. As of 2022, approximately 40,000 employees are employed.

Samsung Electronics' Hwaseong Campus is based on the Han River, large area, and Anseong Stream, middle area, and is located in the river based on the lower Hwangguji Stream, small area. The site is located in Pyeongtaek Catchment.

The audit was conducted onsite on 7-11 November 2022.
The onsite site visit included the assessment of the water-related infrastructure and activities within the factory and catchment as part of the audit.

The following external stakeholders were interviewed during the audit: Suwon-si Municipality, K-water, Korea Environment Corporation and Osan Federation for Environmental Movement.

SCORE

97.00

FINDINGS

CERTIFICATION REPORT

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NUMBER OF FINDINGS PER LEVEL

Observation	6
Minor	14
Major	5

WSAS
2 Quality StreetNorth Berwick, EH39 4HW, UNITED KINGDOM

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FINDING DETAILS

Finding No:	TNR-002280
Checklist Item No:	1.2.1
Status:	Open
Finding level:	Observation
Checklist item:	Stakeholders and their water-related challenges shall be identified. The process used for stakeholder identification shall be identified. This process shall: - Inclusively cover all relevant stakeholder groups including vulnerable, women, minority, and Indigenous people; - Consider the physical scope identified, including stakeholders, representative of the site's ultimate water source and ultimate receiving water body or bodies; - Provide evidence of stakeholder consultation on water-related interests and challenges; - Note that the ability and/or willingness of stakeholders to participate may vary across the relevant stakeholder groups; - Identify the degree of stakeholder engagement based on their level of interest and influence.
Findings:	The site has not provided evidence of how they have considered the physical scope in the identification of the their stakeholders.

Finding No:	TNR-002027
Checklist Item No:	1.3.7
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	Annual water-related costs, revenues, and a description or quantification of the social, cultural, environmental, or economic water-related value generated by the site shall be identified and used to inform the evaluation of the plan in 4.1.2.
Findings:	The site has not provided information or a description or quantification of the social, cultural, environmental, or economic water-related value generated by the site
Corrective action:	Social, cultural and environmental benefits by us is specified in CDP water report in detail, which was submitted as evidence.

Finding No:	TNR-002033
Checklist Item No:	1.4.2
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	The embedded water use of outsourced services shall be identified, and where those services originate within the site's catchment, quantified.
Findings:	The site has not provided sufficient information on outsourced services and their embedded water use. The site has not correctly addressed the indicator, the information can be improved upon. Outsourced services such as delivery of products, pest control services, service providers have not been considered
Corrective action:	We will conduct an in depth survey on the outsourcing service.

Finding No:	TNR-002048
Checklist Item No:	1.5.3
Status:	Closed
Finding level:	Major
Due date:	2023-Feb-11
Checklist item:	The catchment water-balance, and where applicable, scarcity, shall be quantified, including indication of annual, and where appropriate, seasonal, variance.
Findings:	The site has provided detailed information on the major water source for the catchment but not a catchment balance as a whole. The site should work on expanding their understanding of the water balance for the catchment.
Corrective action:	Water flowing into the Hwaseong site is taken from Paldang Dam, and the annual water balance of Paldang Dam can be checked through information on the water level, inflow and discharge of the dam. Information on this can be found on the website of the "Han River Flood Control Office" and through data on water balance for about a year from November 2021 to October 2022, it was confirmed that the annual water level was maintained relatively consistent, and there were fluctuations in inflow and outflow due to the increase in precipitation in the summer season.
Evidence of implementation:	The site has defined it's water catchment as the Paldang Dam, as all incoming water is exclusively piped straight from the Dam to the site. Data on annual and seasonal variance has been supplied, with inflows and outflows.

Finding No:	TNR-002397
Checklist Item No:	1.5.4
Status:	Open
Finding level:	Observation
Checklist item:	Water quality, including physical, chemical, and biological status, of the catchment shall be identified, and where possible, quantified. Where there is a water-related challenge that would be a threat to good water quality status for people or environment, an indication of annual, and where appropriate, seasonal, high and low variances shall be identified.
Findings:	Although the site is aware of the water quality of the Dam and also the streams into which they discharge, they could benefit from understanding the broad picture of water quality within the catchment.

Finding No:	TNR-002398
Checklist Item No:	1.5.6
Status:	Open
Finding level:	Observation
Checklist item:	Existing and planned water-related infrastructure shall be identified, including condition and potential exposure to extreme events.
Findings:	As the evidence is provided in Korean it is not known if the potential for exposure to extreme events has been covered by the evidence provided.

Finding No:	TNR-002400
Checklist Item No:	1.7.1
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Dec-02
Checklist item:	Water risks faced by the site shall be identified, and prioritized, including likelihood and severity of impact within a given timeframe, potential costs and business impact.
Findings:	The site has given some information on the risks which the site is facing. With the exception of flood risk, the site has not provided a comprehensive summary which includes assessing likelihood and severity of impact within a given timeframe, potential costs and business impact.
Corrective action:	Water risk was analysed using WRI Aquaduct, and flood risk was analyzed in the area, and the potential cost risk and business impact were analyzed and submitted to CDP water.

Finding No:	TNR-002036
Checklist Item No:	1.8.2
Status:	Open
Finding level:	Observation
Checklist item:	Relevant sector and/or catchment best practice for water balance (either through water efficiency or less total water use) shall be identified.
Findings:	The site has provided information on the actions already implemented for Best Practice within Samsung and few examples of what other semi conductors have done but this needs to be improve upon. A list of identified activities what can be considered as potential future actions is what is required.

Finding No:	TNR-002401
Checklist Item No:	1.8.4
Status:	Closed
Finding level:	Major
Due date:	2023-Dec-02
Checklist item:	Relevant catchment best practice for site maintenance of Important Water-Related Areas shall be identified.
Findings:	The site has not expanded their identification of Best Practice for site maintenance of Important Water-Related Areas being work already conducted. To achieve conformity to this indicator the site must provide additional identified possible actions.
Corrective action:	For best practice research on IWRA, we analyzed the CSR reports of leading global companies. We studied TSMC, SK Hynix, Intel, Google, Apple, MS, Micron, ST, and Infineon, and comparative analysis with our IWRA strategy was performed.
Evidence of implementation:	The site has research best practice of a number of corporations and compared their approach with the maintenance activities conducted by the site.

Finding No:	TNR-002402
Checklist Item No:	1.8.5
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Dec-02
Checklist item:	Relevant sector and/or catchment best practice for site provision of equitable and adequate WASH services shall be identified.
Findings:	The site has only provided information on Best Practice towards WASH for activities already performed and not possible future ones. Using AWS WASH Guidance document the site will need to research possible actions which other companies in the catchment or even internationally are conducting. This pertains to both onsite activities and those within the greater catchment.
Corrective action:	We will understand the best practices related to WASH through the WASH guidelines by AWS.

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Finding No:	TNR-002029
Checklist Item No:	2.1.1
Status:	Closed
Finding level:	Major
Due date:	2023-Feb-11
Checklist item:	A signed and publicly disclosed site statement OR organizational document shall be identified. The statement or document shall include the following commitments: - That the site will implement and disclose progress on water stewardship program(s) to achieve improvements in AWS water stewardship outcomes - That the site implementation will be aligned to and in support of existing catchment sustainability plans - That the site's stakeholders will be engaged in an open and transparent way - That the site will allocate resources to implement the Standard.
Findings:	The site has provided no evidence that this signed commitment has been publicly disclosed. The site makes no mention: That the site's stakeholders will be engaged in an open and transparent way That the site will allocate resources to implement the Standard.
Corrective action:	We have published the AWS statement including the signature of Vice President Doogeun Song, the head of our EHS center, on our website.
Evidence of implementation:	The Korean statement is as follows: 1. Samsung Electronics will identify our own and national risks, community needs, challenges and opportunities to water resources. 2. Samsung Electronics will establish a water stewardship strategy to achieve AWS's five goals. 3. Samsung Electronics will actively participate in and implement national/regional water resource management plans. 4. Samsung Electronics will evaluate and continuously update its water stewardship strategy. 5. Samsung Electronics will share and communicate with stakeholders about the achievements of water stewardship.

Finding No:	TNR-002026
Checklist Item No:	2.3.1
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	A water stewardship strategy shall be identified that defines the overarching mission, vision, and goals of the organization towards good water stewardship in line with this AWS Standard.
Findings:	The site has provided examples of general water efficiency goals for the site, they have not developed a water stewardship strategy specific to the requirements of the AWS Standard.
Corrective action:	We will supplement the Stewardship plan by reflecting the AWS Standard requirements.
Evidence of implementation:	The site has made a suitable statement of intent and the strategy will be reviewed at the SU1 audit.

Finding No:	TNR-002037
Checklist Item No:	2.3.2
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	A water stewardship plan shall be identified, including for each target: - How it will be measured and monitored - Actions to achieve and maintain (or exceed) it - Planned timeframes to achieve it - Financial budgets allocated for actions - Positions of persons responsible for actions and achieving targets - Where available, note the link between each target and the achievement of best practice to help address shared water challenges and the AWS outcomes.
Findings:	The site has just recently developed a Water Stewardship Plan. In order to achieve full conformity to this indictor the site will need to make the following improvements: They have identified targets and actions. These targets and actions are non-specific and do not have quantified metrics associated with them. There is insufficient information provided on how it will be measured and monitored. Not all of the actions have a planned timeframes to achieve it. This needs to be more specific in the deadline/timeline to achieve. The site has made the link between each target and the achievement of AWS outcomes but not yet the link to best practice to help address shared water challenges.
Corrective action:	We will supplement the Stewardship plan by reflecting the AWS Standard requirements.

Finding No:	TNR-002031
Checklist Item No:	2.4.1
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	A plan to mitigate or adapt to identified water risks developed in co-ordination with relevant public-sector and infrastructure agencies shall be identified.
Findings:	The site has not been able to present a cohesive plan which addresses water risks (external and dependant on public infrastructure). The have shown how they have planned responses to drought and earthquake but have not linked the plan back to the risks in 1.7.1. The site needs to improve on the way in which they identify their risks and subsequently also how they plan to mitigate these with the support of public sector agencies.
Corrective action:	Although the risks that may arise from external risks outside the control of the site were analysed, countermeasures against them were insufficient. Therefore, based on the water risks analyzed by the government, we will prepare a plan that can work at the business site.

Finding No:	TNR-002039
Checklist Item No:	3.7.1
Status:	Closed
Finding level:	Major
Due date:	2023-Feb-11
Checklist item:	Evidence that indirect water use targets set in the water stewardship plan, as applicable, have been met shall be quantified.
Findings:	Although the site currently has drafted an indirect water use target in the WS Plan, there is no metric associated with the target, no assigned responsible person and no deadline. They have not yet worked with any suppliers on reducing their water use. The have collected data on the partners water use only. The site is required to identify relevant supplier and initiate water reduction actions within the site and add this to the WS Plan
Corrective action:	Indirect water management was not reflected in the stewardship plan, but an independent management plan has been established. Accordingly, the plan for indirect water management was reflected in the water stewardship plan.
Evidence of implementation:	The WSP has been updated to include a metric for indirect water use, including responsible person.

Finding No:	TNR-002032
Checklist Item No:	3.7.2
Status:	Closed
Finding level:	Major
Due date:	2023-Feb-11
Checklist item:	Evidence of engagement with suppliers and service providers, as well as, when applicable, actions they have taken in the catchment as a result of the site's engagement related to indirect water use, shall be identified.
Findings:	Although the site has shared with competitors and suppliers some of their own journey in water efficiency measure the site has not actively worked with anyone to influence or reduce their water use. Once the indicator for 1
Corrective action:	Although we were promoting activities to reduce water consumption in cooperation with actual suppliers, there was no process to confirm this. Therefore, we will cooperate with the actual supplier to confirm and submit the items that have reduced water consumption.
Evidence of implementation:	The site supplied evidence of a water reduction project with Dongwoo Fine Chem as an example of interactions with a supplier. The site will collect further evidence year-on-year and were able to demonstrate that they are undertaking water reduction activities with their suppliers.

Finding No:	TNR-002030
Checklist Item No:	4.1.1
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	Performance against targets in the site's water stewardship plan and the contribution to achieving water stewardship outcomes shall be evaluated.
Findings:	The site's WS Plan is too new for the site to have evaluated their performance against the targets in the plan. The site will need to describe how they will evaluate performance going forward.
Corrective action:	WS plan will be prepared in more detail so that the status of achievement for each goal can be more easily understood.

Finding No:	TNR-002499
Checklist Item No:	4.1.2
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Dec-13
Checklist item:	Value creation resulting from the water stewardship plan shall be evaluated.
Findings:	As the site has a newly developed WS Plan they are unable to demonstrated value creation from the plan, they will need to demonstrate how they plan to evaluate value creation going forward.
Corrective action:	We will supplement the details of the methodology for evaluating value creation in the WS plan. How to quantitatively evaluate the value that can be obtained through water conservation will be mentioned in particular. In addition, we will prepare for value creation for water pollutants and IWRA.

Finding No:	TNR-002500
Checklist Item No:	4.1.3
Status:	Open
Finding level:	Observation
Checklist item:	The shared value benefits in the catchment shall be identified and where applicable, quantified.
Findings:	The site has provided quantified shared value benefit to the catchment from their water stewardship activities. This can be further enhanced by linking it to the activities as set out in the water stewardship plan and and quantifying the impact of those activities for future improvement.

Finding No:	TNR-002038
Checklist Item No:	4.3.1
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	Consultation efforts with stakeholders on the site’s water stewardship performance shall be identified.
Findings:	The site does engage and consult extensively with stakeholders and does gather feedback, however, not in relation to the performance of the site against the water stewardship plan. The site should present their performance against the WS Plan to stakeholders and gather their feedback. The site will need to present how they intend to do tis going forward.
Corrective action:	During an in person communication briefing session with stakeholders, we will explain the WS plan and receive feedback.

Finding No:	TNR-002046
Checklist Item No:	4.4.1
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	The site’s water stewardship plan shall be modified and adapted to incorporate any relevant information and lessons learned from the evaluations in this step and these changes shall be identified.
Findings:	The site's WS Plan has only be been recently developed and therefore cannot demonstrate how the plan has evolved to represent continual improvement. The site must demonstrate how they intended to manage the evolution of the plan from lessons learned going forward.
Corrective action:	Since it was the first time, there was a lack of understanding of the WS Plan. We will keep studying. We will consult and learn with the AWS departments, internally and through consultation with the central government, local governments, and stakeholders externally.

Finding No:	TNR-002045
Checklist Item No:	5.1.1
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	The site’s water-related internal governance, including positions of those accountable for compliance with water-related laws and regulations shall be disclosed.
Findings:	The site has provided evidence of it's water-related internal governance, including positions of those accountable for compliance with water-related laws and regulations but has not provided evidence of disclosure.
Corrective action:	It was published with the position and the department externally.

Finding No:	TNR-002028
Checklist Item No:	5.2.1
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Nov-11
Checklist item:	The water stewardship plan, including how the water stewardship plan contributes to AWS Standard outcomes, shall be communicated to relevant stakeholders.
Findings:	The site's WS Plan has only recently been developed and has not been shared with stakeholders. The site has provided evidence of much water related activities which has been shared with stakeholders but this does not meet the requirement of the indicator. The site needs to demonstrate how they plan to share the water stewardship plan with their stakeholders
Corrective action:	So far the WS plan has been shared with major stakeholders by email and we received feedback by email, but we will communicate with stakeholders through in person meetings in the future.

Finding No:	TNR-002524
Checklist Item No:	5.3.1
Status:	In Progress - CA plan approved
Finding level:	Minor
Due date:	2023-Dec-14
Checklist item:	A summary of the site’s water stewardship performance, including quantified performance against targets, shall be disclosed annually at a minimum.
Findings:	The client usually discloses environmental performance via the CSR report annually. Evidence attached. Although there is useful environmental information on performance in this report it is not specific to water stewardship. This should be amended going forward. The site is required to specifically disclose the water stewardship performance as per evaluation of the plan.
Corrective action:	Since CSR report is published every June, it was not reflected due to lack of preparation. AWS will be reflected in reports published this year or other reports disclosed to the public.

Finding No:	TNR-002525
Checklist Item No:	5.4.2
Status:	Open
Finding level:	Observation
Checklist item:	Efforts made by the site to engage stakeholders and coordinate and support public-sector agencies shall be identified.
Findings:	The site is recommended to prepare better evidence to support conformity to this indicator.

CERTIFICATION REPORT

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WSAS WATER STEWARDSHIP ASSURANCE SERVICES

Report Details

Report	Value
Report prepared by	Mia Antoni-Naidoo
Report approved by	Tanya Christensen
Report approved on (Date)	22.12.2022

Surveillance

Proposed date for next audit
2023-Nov-07

Stakeholder Announcements

Date of publication	Location
2022-Oct-11	WSAS and AWS Website
2022-Oct-16	Samsung Website

Catchment Information

Catchment Information
Samsung Electronics operates three large production campuses in proximity to each other: Hwaseong, Giheung and Pyeongtaek. Samsung Electronics Hwaseong Campus, Giheung Campus and Pyeongtaek Campus are based on the Han River, which is a large basin and Anseong stream, which is medium-sized basin. Hwaseong Campus and Giheung Campus are located in Hwangguji stream, downstream.

Factories that manufacture semiconductors such as Hwaseong, Pyeongtaek, Giheung use a lot of water, and they are supplied with water from large rivers or dams near the factories. Plants in Hwaseong, Pyeongtaek, and Giheung are supplied with water from the Paldang Dam in the Han River Basin. The site uses large quantities of industrial water from the Paldang dam which they treat and purify on site, any municipal supply is for WASH purposes only.

The Hwaseong site is located in Pyeongtaek Catchment. The site monitors the water level and quality of the Paldang Dam in real time; the amount of water flowing out of Paldang Dam for raw water supply is currently 10.77 million tons/day.

Samsung Catchment1.jpg

Comment Very sparse catchment information

Client Description and Site Details

Client/Site Background

The Samsung Electronics Hwaseong site was established in 1999 and is home to the company's state-of-the-art manufacturing and R&D facilities for memory and logic solutions. It also became the first semiconductor site to earn the Carbon Trust Standard for Water. The site is in charge of semiconductor parts such as: memory and non-memory, System LSI and Foundry. The site is a comprehensive semiconductor production base that starts with DRAM and NAND flash and produces EUV and image sensors. It is also the place where the world's first 1Gb DDR RAM was mass-produced in 2003.

It has facilities for lines 13, 15, 16, 17, and 21 on a scale of about 1.57M and as of 2022, the site houses approximately 40,000 employees. The site operates significant water-related infrastructures on the large site: one water purification plant, 4 water utility plants, 4 wastewater treatment plants and 7 oil-water separators. Due to the site's expansion of semiconductor lines, the daily water intake is expected to more than double the current level in 2030. However, Samsung Electronics is aiming to increase the reuse of water as much as possible and freeze it at the 2021 level. The site has established an internal Water Conservation Committee which meets monthly and works on the site activities to reduce the use of water.

The site obtains its water from the Governmental provider City Water and the Supply Company K-water, which provides industrial water. The Industrial water is purified onsite and used in the production of products and City water is used for onsite WASH purpose.The site has invested in its water management practices e.g., using water filtration technology to increase its water recycling rate by treating wastewater and reusing it in utility facilities. Samsung employs a team of dedicated water experts who ensures that its water treatment technologies remain green. As a result, instead of chemical treatment options, the company utilizes eco-friendly processes, such as electro-deionization, and energy-saving equipment to produce the ultrapure water needed to manufacture semiconductors at the nanoscale. Semiconductors are fabricated in 'cleanrooms' where the environment is strictly managed to keep internal conditions, such as temperature, humidity and air pressure, at a constant level.

The site has a world class monitoring system for effluent and they discharge at a more stringent level than Korean legal requirements. The site's discharge water is so clean that it is used to recharge rivers and streams, to maintain flow and cleanliness levels. The site's wastewater is discharged directly into the river, not from the local government's public wastewater treatment plant, and is clean enough to be used for maintenance of the river, and surface water recharging. Before 2007 the site's clean wastewater was discharged to the Woncheon-ri Stream, but at the request of stakeholders it is now discharged into the Osan Stream to prevent it from drying up. Before Samsung Electronics' discharge, Osan Stream was classified as dry and the water quality was level 5, but after discharge, it was upgraded to level 2. Since 2007, Samsung have been conducting annual surveys and evaluations to understand the impact of effluent from each of the three business campuses on rivers, and this is being carried out in collaboration with local universities and NGOs. Results have confirmed that increased stream flow from the site's well-treated effluent contributes to water quality improvement and has a positive impact on the ecosystem.

Samsung.jpg

	Summary of Shared Water Challenges

Summary of Shared Water Challenges
The site has supplied a table that contains the following water challenges:

- Use of sufficiently purified water
- Sufficient amount of recycled water
- Suspension of supply of raw materials due to water shortages
- Quality of Suwon source water
- Abnormal water balance due to climate change
- Ecological impact near the business site
- Corporate compliance with water-related regulations

SWC.jpg

0.1	General Requirements for Single Sites, Multi-Sites and Groups	
0.1.1	*Eligibility Criteria*	
0.1.1.1	*The site(s) occupy one catchment OR an exception has been granted.*	Yes
Comment	The site occupies a single water catchment.	
0.1.1.2	*The scope of the proposed certification shall be under the control of a single management system.*	Yes
Comment	The scope of certification is under the control of a single management system.	
0.1.1.3	*The scope of the proposed certification shall be homogeneous with respect to primary production system, water management, product or service range, and the main market structures.*	Yes

1	STEP 1: GATHER AND UNDERSTAND	
1.1	*Gather information to define the site's physical scope for water stewardship purposes, including: its operational boundaries; the water sources from which the site draws; the locations to which the site returns its discharges; and the catchment(s) that the site affect(s) and upon which it is reliant.*	
1.1.1	*The physical scope of the site shall be mapped, considering the regulatory landscape and zone of stakeholder interests, including:* *- Site boundaries;* *- Water-related infrastructure, including piping network, owned or managed by the site or its parent organization;* *- Any water sources providing water to the site that are owned or managed by the site or its parent organization;* *- Water service provider (if applicable) and its ultimate water source;* *- Discharge points and waste water service provider (if applicable) and ultimate receiving water body or bodies;* *- Catchment(s) that the site affect(s) and is reliant upon for water.*	Yes
Comment	The site has provided a map which represents all the Samsung sites in relation to the water supply pump stations and the water purification plants. - The physical site boundaries of the Hwaseong, Giheung, and Pyeongtaek campuses include water inflow points, discharge points, facilities and related plants according to the use of water. - Hwaseong campus : 1, Samsung Electronics-ro, Hwaseong-si (Banwol-dong) Catchment - Samsung Electronics' Hwaseong Campus is based on the Han River, large area, and Anseong Stream, middle area, and is located in the river based on the lower Hwangguji Stream, small area. 3. Withdrawal and discharge - We get water from government (City Water) or company (K-water) providing water resources (Industrial Water). The Industrial water is mainly used in the production of products and City water is used for drinking water and water for living etc. The source of the water is Paldang Dam. In particular, factories that manufacture semiconductors such as Hwaseong, Pyeongtaek, Giheung use a lot of water, so they are supplied with water from large rivers or dams near the factories. Plants in Hwaseong, Pyeongtaek, and Giheung are supplied with water from the Paldang Dam in the Han River Basin. - Water from the Hwaseong Campus flows directly into Wonwonri Stream. The site is so large that detailed piping plan is not feasible.	
1.2	*Understand relevant stakeholders, their water related challenges, and the site's ability to influence beyond its boundaries.*	
1.2.1	*Stakeholders and their water-related challenges shall be identified. The process used for stakeholder identification shall be identified. This process shall:* *- Inclusively cover all relevant stakeholder groups including vulnerable, women, minority, and Indigenous people;* *- Consider the physical scope identified, including stakeholders, representative of the site's ultimate water source and ultimate receiving water body or bodies;* *- Provide evidence of stakeholder consultation on water-related interests and challenges;* *- Note that the ability and/or willingness of stakeholders to participate may vary across the relevant stakeholder groups;* *- Identify the degree of stakeholder engagement based on their level of interest and influence.*	Obs.

Comment	The Site has provided a list of stakeholders prior to the audit which includes a description of the the type of institution which they belong to and their position in it. This was a filtered group from the whole stakeholder database. Samsung Electronics defines stakeholders as governments (central and local governments), local communities, NGOs, academic research institutes, shareholders/investors, supply chains, customers, and employees. The site started with all groups they worked with over the course of time. The site presented a list of stakeholders identified through their ISO14001 process. It reflects the relative importance of the stakeholder to the site and their ability to influence the site. This list is updated annually. Not all of these stakeholders are water-related stakeholders. Summary has been uploaded to platform. Site says they surveyed businesses. Initial sustainability survey sent out to 60 000 groups in September of 2021. This is conducted by a third party service provider. The site responds to those whom they feel have influence over Samsung or they have the ability to influence. MA requested evidence. No mention of how the physical scope influenced selection. Has the site mapped where the stakeholders are located? No they have not.
1.2.2	*Current and potential degree of influence between site and stakeholder shall be identified, within the catchment and considering the site's ultimate water source and ultimate receiving water body for wastewater.* — Yes
Comment	Current and potential degree of influence between site and stakeholder has been identified in the evidence provided.
1.3	*Gather water-related data for the site, including: water balance; water quality, Important Water-Related Areas, water governance, WASH; water-related costs, revenues, and shared value creation.*
1.3.1	*Existing water-related incident response plans shall be identified.* — Yes
Comment	The site does not have one comprehensive emergency response plan, however, they have a robust system of response to chemical related emergencies. They have a comprehensive system for responding to oil spills including capturing oil which is washed to the drain in the storm water. The site has undertaken a risk assessment with regards to natural disasters such as flooding and earthquakes. See attached evidence. The scenario planning indicated that the site can be exposed to flooding and they have put in place measures to mitigate the possible impacts of flooding.
1.3.2	*Site water balance, including inflows, losses, storage, and outflows shall be identified and mapped* — Yes
Comment	The site has presented a simplified water map and well as a water flow diagram for the campus using Industrial Water. Industrial water is water coming directly from Paldang Dam and is untreated. The water is inexpensive and Samsung takes responsibility for treating this water before use. The maps reflect the inflows, all treatment processes and storage and where it is used in the process. The discharge points have been marked. The site also uses City Water but this represents 5% of total use. City Water is also from Paldang Dam and is treated by Hwaseong City water authorities. This water is used in toilets, showers, canteens and to water the many plants in the campus. The site will not use Industrial water for this as all the toilets in the campus are fitted with bidets and therefore require clean water.
1.3.3	*Site water balance, inflows, losses, storage, and outflows, including indication of annual variance in water usage rates, shall be quantified. Where there is a water-related challenge that would be a threat to good water balance for people or environment, an indication of annual high and low variances shall be quantified.* — Yes

Comment

The site has provided data which is has been presented on the water map and includes both the flowsIndustrial Water and City Water.

Samsung Electronics records data in the G-EHS system as part of management procedures such as water usage data for product production and wastewater treatment plant operation. Therefore, it is possible to manage the company's water usage, reuse amount, discharge amount, water quality operation log, and water-related KPIs in real time. In addition, these data are disclosed to the outside and the public through the sustainability report and environmental information disclosure system.
The company-wide integrated environmental information management system uses the Global Green Management System (G-EHS) to identify the water balance including inflow, loss, storage and outflow at each business site.

As of 2022, water mass balance is as follows:
- Hwaseong : Withdrawal 52 million ton / discharge 42 million ton / recycle 17.68 million ton

1.3.4 *Water quality of the site's water source(s), provided waters, effluent and receiving water bodies shall be quantified. Where there is a water-related challenge that would be a threat to good water quality status for people or environment, an indication of annual, and where appropriate, seasonal, high and low variances shall be quantified.*

Yes

Comment

The site has a very good online systems for monitoring incoming water and also discharge water. Attached as evidence annual variance monitoring.
The site monitors the incoming water because they have very strict requirements of the water which is used to clean to semiconductor parts for the products which they produce. They monitor the discharge water for compliance but voluntarily have far stricter internal limits. The audit team interviewed K-water who confirmed that they have full confidence in the results from Samsung's water monitoring.
The site has a discharge permit which has no expiry date but does have limits.
The site also has a real-time monitoring system for the stormwater system.

Information provided by Samsung
The file shows the hourly measurements of TP, pH, TOC, TN, SS of water in each building for one day on September 16, 2022.
1. Incoming water quality
- Samsung Electronics established the TMS (Tele-Monitoring System) to monitor the quality of water discharged from domestic business sites, which is our internal environmental, safety and health management system. TMS data is being reported to the government in real time. In addition, both domestic and overseas business sites use the G-EHS system to manage water quality by discharge standards at each business site and overseas corporation every month.
- The water quality of the water withdrawal source is monitored by receiving a monthly report from the water withdrawal source.
- The water quality of the water input to the process is monitored through the internal system, which are nitrogen and ammonia (representative items are listed in water quality concentration).

2. Effluent quality
- Samsung Electronics is taking both the method of discharging directly into rivers and of discharging it to a common sewage treatment plant. In case of direct discharge to a nearby river, BOD, COD, TP, etc. are measured in consideration of the ecological impact of the nearby river. If the wastewater treatment plant of the local government is entrusted with the treatment, there are relatively few or no pollutant measurement items because the wastewater is not treated directly.
- We are meeting the national standard for river discharge water quality, which is reported to the Ministry of Environment (National Pollution Source Investigation System) every year.
- The rivers that are affected by direct discharge at each business site are Osan Stream, Woncheonri Stream, and Jinwi Stream and water analysis is performed once a month for water quality management of each river. It is also reported to the OOO (Local Government or Management Agency) on a regular basis. In order to disclose this information to local residents and stakeholders, the Ministry of Environment regularly discloses related river water quality measurement data.

1.3.5	*Potential sources of pollution shall be identified and if applicable, mapped, including chemicals used or stored on site.*	Yes

Comment

The site follows government regulations for water pollutants, they have real-time monitoring for these. They have a comprehensive chemical management system to prevent pollution. The site works with other semiconductor sites via IRDS membership to standardise the state of the water which is released back into the environment. The site has removed the use of PFAS in their products as per EU and US regulations and installed a comprehensive pollution monitoring system into the stormwater management system for the site, which is over and above the regulated requirement. The site does not keep hazardous waste on the site, it is removed immediately. The site's waste area is completely surrounded by a double drain systems which prevents contaminated water from being released to the environment, it is re-routed to the WWTW.

The waste and chemical workers all wear protectively clothing, this is not washed but is worn until damaged and then recycled.

Information provided by Samsung
1. Potential Pollutant Assessment
- Through the iEES system built in-house, Samsung Electronics analyzed the leakage and pollutants of various chemicals, including nitrogen, ammonia, fluorine, and COD, according to the flow of wastewater containing chemicals.
- Real-time monitoring is carried out by identifying point and non-point pollutants that can be polluted through this system.

2. Pollutant Management System
- For each chemical used in the workplace, the possibility of contamination due to storage, transport, use, and disposal is identified in connection with the system.
- In addition, it is managed efficiently through internal management system guidelines, non-point pollutant prevention facilities, and a dedicated management department.

The file schematically shows the water use process and maps the installation status of the outflow blocking facility.

1.3.6	*On-site Important Water-Related Areas shall be identified and mapped, including a description of their status including Indigenous cultural values.*	Yes

Comment

The site has no IWRAs on site. This was confirmed by the audit team during the factory tour.

1.3.7	*Annual water-related costs, revenues, and a description or quantification of the social, cultural, environmental, or economic water-related value generated by the site shall be identified and used to inform the evaluation of the plan in 4.1.2.*	in progress

Comment

The site has provided information on water savings which have been realised through water efficiency measures. The units of the data have been provided in tons/day water. The site has provided information on the cost of providing and managing water for the site.

1. 2021 Water Savings Performance
- The Hwaseong Campus saved about 2.2 million tons of water compared to the previous year through investment in the water savings project, and the water saved corresponds to 14 days of water use by Hwaseong citizens.
- Water savings projects include development of technologies for reusing acid wastewater such as WSS Reuse and UT, reuse of concentrated water, optimization of water for manufacturing use, and improvement of effective facilities.
- I social, economic and environmental performance has been achieved through the implementation of the project.

2. Cost-benefit analysis
- Samsung Electronics discloses monthly water usage and cost through the G-EHS system, and based on this, financial factors are reflected in mid- to long-term water-related policies.
- For cost-benefit analysis, we conduct a benefit analysis by reviewing the mid- to long-term expected water usage and mid/long-term expected water savings, of the contents which is reported to the CEO.

Finding No: TNR-002027

1.3.8 *Levels of access and adequacy of WASH at the site shall be identified.*

Yes

Comment

The site provides drinking water for all employees in the form of water fountains in the cafeteria and bottled water provided in meeting rooms. The site ensures that there is sufficient drinking water for all employees through water fountains on every floor. The purchased water comes with a certificate from the supplier. Some suppliers check the quality monthly and some only quarterly. Internally drinking water quality is checked 6 times in a year.

With regards to adequacy of access to WASH the relevant person is not available. MA requested evidence to be uploaded to the platform.

Samsung Electronics provides sufficient clean water for drinking, cooking, and sanitation for its employees, facilities for waste disposal and sewage treatment, sanitation-related information, and education and facilities related to water resources in all production facilities. In addition, by referring to the results of the 'Access to Water' section of the WRI Aqueduct, the causes are analyzed for sites with relatively high risk. If an employee's access to WASH service is low, it will affect Samsung Electronics' employee welfare and job satisfaction, so it is reflected in the water risk assessment. In addition, every year, through the RBA self-evaluation for all business sites, the accessibility of employees to WASH service is evaluated and improvement is carried out.
- For food and drinking water, in-house canteen and outsourced business offices, and low-water quality management, it is conducted once a month in summer and once a year in winter.
[tank test result]
- test subject : 42 Giheung/Hwaseong/DSR tank
- test item : general bacteria, total coliform group, fecal coliform, free residual chlorine, hydrogen ion concentration, turbidity
- test result : conform
[drinking water test result]
- test subject : 236 Hwaseong sites
- test item : total coliform group, turbidity
- test result : conform

2. Operating system for WASH compliance
- Internal facility regulations and guidelines (documented guidelines) for WASH-related facilities and water supply are in place and based on that, we monitor and disclose the results on the internal bulletin board or SOP system.

1.4 *Gather data on the site's indirect water use, including: its primary inputs; the water use embedded in the production of those primary inputs the status of the waters at the origin of the inputs (where they can be identified); and water used in out-sourced water-related services.*

1.4.1 *The embedded water use of primary inputs, including quantity, quality and level of water risk within the site's catchment, shall be identified.* Yes

Comment

Indirect water usage
Samsung Electronics is supplied with semiconductors and electrical-related parts from many partners. These semiconductor and component manufacturing processes require large quantities of fresh water of sufficient quality. The OLED and semiconductor wafer processing process of mobile phones requires a washing process and requires a lot of water.

As a result of a survey of 500 suppliers based on sales, water usage in 2020 is 70,128 megaliters, which is an increase of about 6% compared to 66,317 megaliters in 2019.- Samsung Electronics checks the water consumption of its suppliers and uses the WRI Aqueduct Water Risk Atlas to check whether the suppliers are located in a water famine or shortage country, and use them in risk analysis.

The site provided the Carbon Trust water footprint certificate for a representative product (memory stick). The fact that Samsung will be the first in the semiconductor industry to obtain the certification is highlighted.

1.4.2 *The embedded water use of outsourced services shall be identified, and where those services originate within the site's catchment, quantified.* in progress

Comment

The site has indicated only one outsourced service, which is not logistically possible. The site has not correctly addressed the indicator, the information can be improved upon.

1. Status of water use of external services for operation
- The only external service we use is a car wash system, which uses about 80 tons/month.

Finding No: TNR-002033

1.4.3 *Advanced Indicator*
The embedded water use of primary inputs in catchment(s) of origin shall be quantified. Yes

Comment

The site has collected data for their primary inputs, with the quantities used. The quantities have been adjusted to reflect only the portion which relates to providing the product to Samsung. Evidence has been attached.

The main raw material in the semiconductor manufacturing process is defined as wafer. During manufacturing, wafers are used to produce semiconductor chips through various processes such as deposition, etching, cleaning, and bonding using chemicals and technologies.

According to the process use of the defined primary input, 7 million tons of water are required, which plays a major role in the clean process. The clean process occupies a large proportion, accounting for about 30% of the total water usage. In the clean process, water is mainly used for cleaning after using various chemicals, and in addition, it is also used to dilute chemicals to a desired concentration.

Score 7

1.5 *Gather water-related data for the catchment, including water governance, water balance, water quality, Important Water-Related Areas, infrastructure, and WASH*

1.5.1 *Water governance initiatives shall be identified, including catchment plan(s), water-related public policies, major publicly-led initiatives under way, and relevant goals to help inform site of possible opportunities for water stewardship collective action.* Yes

Comment

The site presented multiple examples of water governance initiatives of which they were aware and often engaging with. The site indicated that the Ministry of Environment considers the relationship to be confidential and not for public disclosure. We viewed on the screen a presentation by the Ministry of Environment sharing their new strategy and an attendee list was provided in Korean.

Samsung Electronics is establishing internal water management goals and governance systems that are linked to the national basin plans, water-related public policies, and ongoing initiatives of the "National Water Management Master Plan for '21-30" published by the Ministry of Environment. In addition, they check the master plan for water supply maintenance of the relevant local governments to confirm the mid- to long-term plans for water supply of the local governments. Regarding water reuse, they check the "National Water Reuse Basic Plan" to confirm mid- to long-term reuse policies and implementation plans.
In addition, they are preparing a water resource-related consultative body with K-water to maintain a close cooperative relationship between the central government and industry to respond to external water resource issues. The Paldang dam is governed by one of the departments of K-Water which the site is working closely with.

Internal Water Management Governance
The site has an internal team which manages governance called the Environmental Management Committee and it meets every month to address environmental issues arising at the site. There is also Water Conservation committee which meets monthly and works on the site activities to reduce the use of water.
Samsung Electronics receives water from the government or companies that provide water resources and uses it mainly for product manufacturing processes, and some uses water for drinking and household use. In particular, if the quality of water is reduced or there is insufficient water, production will be disrupted or the cost of water treatment will increase rapidly. In addition, if a supplier's production is disrupted due to a lack of sufficient quality freshwater, product production and customer delivery may be disrupted. Accordingly, for intensive water management, each business site carries out tasks such as establishing strategies/goals for water management, performance management, and operating system based on the environment team. For this internal system, their water resource policy is disclosed throughout the company including all legal entities through the annual CSR report.

External Water Initiatives
In order to respond to water risks at business sites, Samsung are establishing a response strategy by applying the international water resource management techniques of FAO, WBCSD, and WRI. To minimize the deterioration of water resources, they set a mid- to long-term goal of 50 tons/billion won by 2020 and disclosed it to the public. In addition, for SDGs #6, 9, and 15, we plan to achieve 50 tons/billion KRW in water resource use by 2020 through water resource risk management and water resource monitoring. Second, we completed the installation of semi-permanent drinking water facilities and supplied drinking water stably in a total of 10 kindergartens in Vietnam together with the Societies and Engineers Without Borders. Third, they check the ecological status of nearby rivers every year in collaboration with specialized organizations. In order to fulfill their water resource responsibilities jointly through the pledge of water resource responsibility and joint action, they signed a ‘one company, one river’ joint agreement with the local environmental agency to promote ecosystem conservation activities.

The file is a statement about the environmental safety policy signed by the president and vice president of Samsung, and it contains strengthening of the global environmental and safety management system, practice of responsibility throughout the product life cycle, production of eco-friendly production processes, implementation of climate change policies, realization of safe workplaces, and the formation of win-win partnership.

1.5.2 *Applicable water-related legal and regulatory requirements shall be identified, including legally-defined and/or stakeholder-verified customary water rights.*

Yes

Comment

The site have staff in each division which monitor the legal compliance. They are consider a green company and are invited to comment on environmental policy. The have permits, to discharge water, has limits which regulate the condition of the water. The permit does not expire but the site provides real time data to the government, they report every couple of month on changes to quantities of discharge and condition of water. As a Part of the permit the water system is mapped with the requirements of what and when to report to authorities. The site has an agreement with K-water on water supply but there is not a limit, just an average quantity.

Regional regulatory and tariff changes affect water operations and compliance. Samsung Electronics uses the WRI Aqueduct ”Regulatory & Reputation Risk” and an internal monitoring system to monitor policy changes of regulatory agencies or the emergence of new regulators. In particular, they are closely monitoring changes in water resources-related laws, enforcement regulations, and local government ordinances. In addition, they are continuously monitoring policy changes by attending policy briefing sessions of regulatory agencies. When a regulatory agency establishes a policy, it indirectly participates in establishing policy by conveying the company's opinions through communication channels such as associations. If related laws or tariffs are strengthened, it may pose a water risk to Samsung Electronics, such as an increase in product production cost.

The Ministry of Environment, Water Environment Conservation Act, Water Reuse Promotion, Waterworks Act, and Sewerage Act are subject to relevant laws.
Through our system, we are monitoring and checking for changes in water-related legal regulations. Due to the revision of the Waterworks Act in January 2022, the existing sewage reuse water could not be introduced into the regional water supply pipe. However, as the revised contents acknowledge sewage reuse water as a regional water supply, legal regulations that can expand reuse have been relaxed.

1.5.3 *The catchment water-balance, and where applicable, scarcity, shall be quantified, including indication of annual, and where appropriate, seasonal, variance.*

closed

Comment

Gaps: The site is located in Pyeongtaek Catchment. The site has provided information on the only water supply for Industrial Water and they monitor in real-time the levels of Paldang Dam. They have not provided information on the entire water balance for the catchment in which they are located.

Changes in water inflow and storage capacity of catchment. The water level capacity of Paldang Dam, our first source, is being managed through a real-time system. (https://m.water.or.kr/disaster/flood/flood01_01_detail.do?damCD=1017310&damNM=%ED%8C%94%EB%8B%B9%EB%8C%90) First source of the Giheung/Hwaseong/Pyeongtaek campuses are Paldang Dam, of which the water level and quality of can be monitored in real time, which the site is monitoring. The amount of water flowing out of Paldang Dam for raw water supply is currently 10.77 million tons/day, and this information can be monitored through the real-time system.

Finding No: TNR-002048

1.5.4 *Water quality, including physical, chemical, and biological status, of the catchment shall be identified, and where possible, quantified. Where there is a water-related challenge that would be a threat to good water quality status for people or environment, an indication of annual, and where appropriate, seasonal, high and low variances shall be identified.*

Obs.

Comment

The site has provided a file which shows that the weekly water quality status of the Paldang water source can be checked along with various variables, and it guides the main countermeasures such as pH control, pollutant control, strengthening chlorine injection rate, and effluent control when water quality abnormalities occur.

The water quality of Paldang source water, our first source of water, is regularly disclosed through the government website. (https://water.nier.go.kr/web/waterMeasure?pMENU_NO=2) The water quality of the water source is analyzed for water temperature, pH, turbidity, electrical conductivity, TOC, alkalinity, ammonia nitrogen, etc which is announced by the government.

The site conducts monthly water quality analysis at their discharge points for each discharge stream area. There are COD, TN, and TP as analysis items, and the effect of improving river water quality has been confirmed through visual check of the laboratory results during the audit. Industrial water enters the ultrapure water manufacturing facility through our water purification plant and is treated, which has become the world's cleanest ultrapure water and is being used in semiconductor processing. The site also adjusts the temperature of the water before discharging to prevent damaging the receiving environment's ecosystem.

1.5.5 *Important Water-Related Areas shall be identified, and where appropriate, mapped,and their status assessed including any threats to people or the natural environment, using scientific information and through stakeholder engagement.*

Yes

Comment

Eco system monitoring began in 2010 at the discharge points and these have been mapped and the condition assessed in the attached evidence. The monitoring is conducted by the Kyunghee University, water quality factors were monitoring, temp, ph, conductivity, COD, flow rate. The ecological parameters were also monitor fish life and macro invertebrate, mammals, birds and vegetation. Korean guidelines for riverine health and riparian habitat. The water quality monitoring at the discharge points has been conducted over many years.

In the attached evidence is presented:
Paldang Wonsu, the first source of water, has been designated as a water resource conservation area and managed by K-water. In addition, the Pangyo Pressurization Plant, which manages industrial water supplied to business sites, is evaluated as an important IWRA. The effluent from the site is discharged directly to the river, not from the local government's public wastewater treatment plant. Accordingly, IWRA, which is affected by business activities, defines the Woncheon-ri Stream, which is Samsung's discharge stream, as an IWRA.

Management of IWRA
Water quality, fish, and aquatic ecology are monitored at the major points (about 5 to 10 points) in the effluent stream identified earlier and the IWRA related to catchment. In addition, the monitoring of the water withdrawal is performed in real time and water analysis is performed in parallel. Samsung are conducting periodic ecological surveys by selecting major points (Woncheonri Stream, Osan Stream, and Seojeongri Stream) among the site's discharge points. Implementing institutions are specialized institutions, including universities and NGOs. Research results are reported through a biennial sharing meeting, and the basin management plan is reflected in risk assessment.

Current management plans for rivers and basins around business sites have a significant impact on the supply of sufficient fresh water and production of products. By referring to the analysis results of “Upstream storage” of WRI Aqueduct, Samsung are monitoring the amount of water resources in the surrounding basin. Although Samsung Electronics does not directly establish basin management plans, it closely monitors basin management plans of government agencies (the basin administration) and actively cooperates with basin management plans. If the basin management plan changes significantly, it may come as a regulatory change for Samsung Electronics, so the basin management plan of the government or local government is reflected in the water risk assessment.

1.5.6 *Existing and planned water-related infrastructure shall be identified, including condition and potential exposure to extreme events.*

No

Comment	The site has provided a file reflecting both existing and planned infrastructure managed in the catchment by K-Water. The condition of each facility is described. ***Finding No: TNR-002398***

1.5.7 *The adequacy of available WASH services within the catchment shall be identified.* Yes

Comment

The site has made a comment that the Hwaseong City, where the business site is located, supplies water to the local community based on each water purification plant based on the water source of Paldang Dam. There is a sewage system which is connected to all residents in the city.

The site has presented data on the sewage supply statistics for the region, the drinking water quality standards which are applied to the tap water which is supplied to residents of the city. Drinking water safety plans have been provided including statistics on water treatment plants available to treat water supplied for human consumption.

1.5.8 *Advanced Indicator*
Efforts by the site to support and undertake catchment level water-related data collection shall be identified. Yes

Comment

1. Site water quality monitoring
Samsung Electronics regularly monitors the quantity and water quality of its discharge streams. The internal system is monitoring through TMS, and it is reported to the relevant authorities as "aquatic ecology research report". In addition, Samsung Electronics' domestic business sites disclose related information, such as water resource usage and water pollutant emissions, annually to the Environmental Information Disclosure System of the Ministry of Environment. (https://www.env-info.kr/member/open/environment.do)

2. Stakeholder sharing and cooperation on monitoring
Samsung Electronics regularly shares monitoring results with basins, rivers, and local governments that may be affected by the site's business activities. This is being done by disclosure through the governance platform, regular public hearings, and reporting sessions. In addition, the site is promoting research projects on environmental impacts with our own budgets with local governments and related organizations for continuous and long-term interest in and resolution of the impacts of basins and rivers and ecosystem problems.

In the water management stage, the impact between the company and stakeholders (Ministry of Environment, affiliated organizations, local governments, etc.) is mainly related to the impact of effluent on rivers. Since 2007, Samsung have been conducting annual surveys and evaluations to understand the impact of effluent from each business site on rivers, and this is being carried out in collaboration with specialized institutions such as local universities and NGOs. The survey includes water quality analysis of effluent, investigation of fish and benthic aquatic ecosystems, and health evaluation. Results to date have confirmed that increased stream flow from the site's well-treated effluent contributes to water quality improvement and has a positive impact on the ecosystem. In addition, in the case of specific substance harmful to the quality of water designated by the government, the results of the investigation are separately submitted to the Ministry of Environment and disclosed to the public online. As a result of these activities, the inhabitation of otters (keystone species of river ecosystems, first-class endangered wildlife, and natural monuments), which are indicators of healthy rivers, were confirmed in Sasmsung discharge streams, and the site is currently working to increase the number of them.

The file is a screen of Samsung's internal system, TMS (Tele-Monitoring System), and indicates normal or maintenance for various water quality indicators.

Score 6

1.5.9 *Advanced Indicator*
The adequacy of WASH provision within the catchments of origin of primary inputs shall be identified. No

Comment	Evidence viewed during the audit for the site pertains to the site and those of partner/supplier companies. The site has not identified the catchment associated with each supplier and has not identified the adequacy of WASH in greater catchments of the country. The site has not provided information on, and adequacy of, WASH provision for its primary inputs.
1.6	*Understand current and future shared water challenges in the catchment, by linking the water challenges identified by stakeholders with the site's water challenges.*
1.6.1	*Shared water challenges shall be identified and prioritized from the information gathered.* ✓ Yes
Comment	The site has provided information on shared water challenges in the catchment. After reviewing and analyzing water resource issues in the basin with stakeholders, the resolution of water shortage was selected as the biggest issue. The site has provided further share water challenges relating water quality. Samsung has analysed the relative relevance of the SWC to the site and also to the stakeholders in the catchment. The site has further provided the prioritisation of the each challenges and provided a rationale for the rating. A brief description of the initiatives by the site to address these has been provided.
1.6.2	*Initiatives to address shared water challenges shall be identified.* ✓ Yes
Comment	The site has provided information on shared water challenges in the catchment. After reviewing and analyzing water resource issues in the basin with stakeholders, the resolution of water shortage was selected as the biggest issue. The site has provided further share water challenges relating water quality. Samsung has analysed the relative relevance of the SWC to the site and also to the stakeholders in the catchment. The site has further provided the prioritisation of the each challenges and provided a rationale for the rating. A brief description of the initiatives by the site to address these has been provided.
1.6.3	*Advanced Indicator* *Future water issues shall be identified, including anticipated impacts and trends* ✓ Yes

Comment

The site has presented evidence to show that they have modeled a future water risk status for their region. Korea's water usage has increased sixfold over the past 100 years, and has been increasing by about 1% annually worldwide due to population growth, socio-economic development, and changes in consumption patterns since the 1980s. - In the future, as water demand increases in industry and households, global water demand is expected to increase at a similar rate until 2050 and is expected to increase by 20-30% of current water usage. The rate of increase in available water resources is falling short of the rate of population growth, and water consumption is expected to increase even more.

Korea is a country with a high water stress index at level 3 or 4, where water stress is the most severe among OECD countries. Accordingly, it is predicted that Korea will become a 'water starvation country' by 2025. 'It is predicted that 470 million people will experience water shortage in 45 large cities in 2030, including Tokyo, LA, and Seoul. It is expected that the water stress at the DS site is rather high in 2022, and high in 2030. - In Korea, the temperature has risen by 1.7°C over the past 100 years, which is higher than the global temperature increase of 0.7°C and it is expected that the variation in precipitation between the dry and wet season will increase, which will intensify the water shortage. Since 63% of the country is mountainous, the basin area is small, and the river length is short, and precipitation on a steep slope drains into the sea in a short time.

Korea's long-term average precipitation (1,274 mm) is higher than the global average (807 mm), but the total available water resource per capita (1,553 tons/year/person) is about 18% of the global average (8,372 tons/person). Paldang Dam, which is in charge of supply, may experience a shortage of water while demand for water increases due to local population growth, climate influences, and industrial changes in 2030. In 2030, in response to the shortage of industrial water available in Paldang, we are implementing a mid- to long-term strategy to reduce water withdrawal, and working with the government to utilize reused water from public sewage treatment plants to reduce water withdrawal. - Samsung Electronics is conducting risk assessments related to water. Internal evaluation indicators are reflected here, and WRI Aquaduct, a credible evaluation tool, is used.

2. Water management long-term goals and strategies
- It is inevitable that water usage and water withdrawal will increase every year due to business diversification, an increase in overseas expansion, and internalization of mobile phone parts. Therefore, in terms of environmental efficiency, we set a mid-to-long-term target of 50 tons/billion by 2020, and disclosed this target externally through the sustainability report. The goals after 2020 will be publicly disclosed in 2020.- As of 2020, the water withdrawal at all Samsung Electronics business sites is 134,479 mega liters(134,230 in 2018). The water reuse rate is about 51%. The cost of water withdrawal and water treatment is steadily increasing year by year. In order to achieve long-term goals, Samsung Electronics is continuously investing and supplementing water-related facilities to closely analyze processes for each water usage, increase the reuse rate, reduce costs and improve environmental efficiency.- To achieve the goal, we manage the amount of water used and reused by all corporations every month. We also aggregate and manage costs related to investment and operation of water-related facilities. As of 2019, as a result of checking the water reuse rate for all business sites, 68,555 megaliters of water were reused, a 10% increase from the previous year.- Samsung Electronics' water capex and water OPEX increased by 1122% and 7%, respectively, compared to the previous year, due to the completion of investment in wastewater treatment facilities at the Pyeongtaek plant, which was newly established in 2019. In addition, in 2020, the new investment in the semiconductor line is expected to increase the facility investment in water-related facilities.

Score

3

1.6.4

Advanced Indicator
Potential water-related social impacts from the site shall be identified, resulting in a social impact assessment with a particular focus on water.

No

Comment

The site has conducted and EIA for the site. The site has not conducted any socially-related impact studies. They have got information/feedback from stakeholders on the impact of water-related activities conducted by the site. Water-related activities at the Hwaseong campus are evaluated for social impact in connection with environmental impact assessments.

1.7 *Understand the site's water risks and opportunities: Assess and prioritize the water risks and opportunities affecting the site based upon the status of the site, existing risk management plans and/or the issues and future risk trends identified in 1.6.*

1.7.1 *Water risks faced by the site shall be identified, and prioritized, including likelihood and severity of impact within a given timeframe, potential costs and business impact.*

in progress

Comment

The site has presented the CDP report which shows the environmental Aspects which have impact to the site, water risks have been included. This includes the primary potential impact, costs etc. The site also has WRI aqueduct exercise which establish the risks of the site. The site has also reviewed their flood risk as a site looking at highest ever rainfall/day scenario and simulation exercises which showed the site to have low risk to flooding because the site has been designed to manage high rainfall. The site has also done simulations for landside risk and taken actions to mitigate the possible impacts. MA requested document.

The site has defined it's water risks using WRI Aqueduct Water Risk Atlas. Water risks that have a significant impact on Samsung Electronics' business, operations, sales or costs are defined as follows. Definition of significant impact : It is defined as a substantial production disruption or decrease in sales caused by the impact of water resource risks. For example, it means that the number of working days at the business site is reduced by one or more days or the operation is stopped due to a disruption in the water supply.
A site where the base line water stress category is 3 or higher (water stress or scarcity countries) in the WRI Aqueduct Water Risk Atlas as well as with an overall water risk of high risk (3-4) and extremely high risk (4-5) in the WRI Aqueduct is considered a site with water risk. Using these tools, the site has analyzed the water risk of the relevant business site and calculate the risk amount by converting the number of units produced per day for each business site into sales, assuming that the water supply is interrupted at the relevant business site.- indicator : Indicators used to define significant change include damage to people and property, violations of laws and reputational damage. Among the material damage, the daily loss of production due to the interruption of operation is applied as an indicator. Threshold value : Thresholds for judging whether a significant change has occurred include whether or not there are human casualties, violations of laws (fines, suspension of operation, etc.), deterioration of company reputation (reported by major media), and material loss. The most commonly used threshold is a decrease in sales due to a one-day or more shutdown for each business site. This is applied differently for each site as the production capacity is different for each site.

Finding No: TNR-002400

1.7.2 *Water-related opportunities shall be identified, including how the site may participate, assessment and prioritization of potential savings, and business opportunities.*

Yes

Comment

The site has identified water-related opportunities in their CDP report. There are three examples of opportunities which the site can do and also those which the site has committed to. The information provides how the site can achieve these, and what the savings and revenues associated can be.

It is recommended that the site reviews and updates their opportunities on an annual basis.

1.8 *Understand best practice towards achieving AWS outcomes: Determining sectoral best practices having a local/catchment, regional, or national relevance.*

1.8.1 *Relevant catchment best practice for water governance shall be identified.*

Yes

Comment	The site has provided a list of all the work they are doing towards Best Practice for good water governance already performed. Best Practice by Samsung 1. To maximize the efficiency of water resource use, we minimize the use of water and purify and reuse the used water. In particular, to increase the reuse rate of water in the manufacturing process, water resources are classified and managed by each business site into sewage, wastewater, process water, and ultrapure water. Each business site calculates the reuse amount of each water resource item every month and enters it into the global green management system, an integrated management system for company-wide environmental information. 2. Water-related stakeholder activities of special stakeholder groups determined by local law may have a positive/or negative impact on Samsung Electronics' water resource management, so it is reflected in the water risk assessment. As a representative example, we joined the Green Business Council, an excellent eco-friendly company group certified by the Ministry of Environment, to jointly respond to water risks. 3. In addition, we share our water resources policy and environmental management level by visiting our wastewater treatment plant on a quarterly basis for communication with the local community. 4. In addition, we benchmark companies eligible for the Green Business Council every year and share cases such as water resource management know-how and announcement of new technologies. The site has also provide a list of Best Practice which has been undertaken by other semiconductor companies in support of Good Water Governance.	
1.8.2	*Relevant sector and/or catchment best practice for water balance (either through water efficiency or less total water use) shall be identified.*	No

Comment

The site has provided a list of all the work they are doing towards Best Practice for good water balance already performed. Best Practice by Samsung:

1. Samsung Electronics' status
Samsung Electronics intends to utilize up to 450,000 tons/day of reuse of effluent from public sewage treatment plants per day to reduce water withdrawal and through this, 450,000 tons/day of usable water at Paldang Dam was added. This figure is the amount of water used for daily living by more than 2 million people in the metropolitan area, which is considered to have a very large social and environmental impact.

2. Semiconductor environmental index (SEPI)
At our domestic business sites, we manage the ecological impact by periodically measuring water quality indicators such as chemical oxygen demand (COD), biological oxygen demand (BOD), and acidity (pH). It also conducts fish and bird surveys, habitat monitoring and improvement activities. To monitor and improve aquatic ecosystem and to protect the biodiversity of the rivers near the business site, in accordance with 'Guidelines for quality management of aquatic ecosystem status survey method 1)', we identify the impact on the ecosystem by regularly monitoring the status of fish and other aquatic ecosystems, ecotoxicity, meteorological and precipitation, etc. in rivers near our business sites. In addition, we conduct improvement activities by surveying fish and birds and monitoring habitats.

3.Samsung Electronics supplied an average of 45,000 tons of purified effluent a day to the Osan Stream near the business site, and the ecological environment has been improved to the extent that otters, a wild animal, have been found. In addition, additional ecological environment improvement was carried out, such as planting irises, a water purification plant, supplying eco-friendly microbial fermentation broth, and discharging native fish. In addition, we sponsored the Osan Stream Butterfly Path Project to restore the endangered species of Sericinus.

4. Cases of benchmarks and sharing efficiency
Our company conducts a monthly research meeting with professors who are experts on water environment to conserve water resources. (Professor Seok-hwan Chang from Daejin university).
In addition, we are conducting global water resource community activities such as Korean Waterworks association, AWWA (American Waterworks Association), IRDS(International roadmap for device and system), UPM(Ultra pure micro) to identify domestic and international water resource trends.

Finding No: TNR-002036

1.8.3 *Relevant sector and/or catchment best practice for water quality shall be identified, including rationale for data source.* Yes

Comment

The site has provided a list of all the work they are doing towards Best Practice for good water quality already performed. Best Practice in water quality by Samsung:

1. Cases of water quality management in similar industries
Compared to our competitors around the world, we thoroughly manage water pollutants. In particular, compared to TSMC, it emits about 10 times lower in COD standards and regarding TMAH, a material difficult to be decomposed, it is included in the effluent at TSMC, but we treat and discharge the entire amount.

2. Samsung Electronics' water quality management case
The Osan Stream, one of our discharge streams, had a very poor water quality rating of 5 before our discharge. However, the river water quality has been continuously improved since our discharge, and it is currently managed at a level of 1 or 2 grades. An otter, a natural monument, was found in Osan Stream, representing the excellence of our water quality management.- Samsung Electronics cleanly purifies chemicals and water pollutants used at all business sites and discharges them into rivers. We strive to minimize the negative impact of pollutants on the aquatic ecosystem. We have enacted and managed in-house regulations that are much stronger than legal standards such as pollutant concentration, water temperature, and ecotoxicity. To minimize the discharge of water pollutants at all semiconductor business sites, we are developing and applying technologies to reduce pollutants, such as reducing the amount of chemical substances used, developing alternatives for hazardous substances, and improving the efficiency of wastewater treatment processes. In addition, we are reducing major ionic chemicals such as sulfuric acid, chlorine, and fluorine by developing chemical filters, improving processes, and securing crystallization technology.- In order to establish a multi-defence system against water pollution, we are reducing pollutant emissions and preparing for environmental accidents that may occur at wastewater treatment plants in case of emergency. A triple interlock was installed throughout the wastewater treatment plant's inlet, process, and discharge stages. Each interlock measures water pollutants in real time and establishes a multi-defence system that recovers when the standard concentration is exceeded.

The site has also provided a list of Best Practices identified by other semiconductors for good water quality.

1.8.4 *Relevant catchment best practice for site maintenance of Important Water-Related Areas shall be identified.*

closed

Comment

The site has provided examples of work that they have already performed but have not identified a list of possible Best Practice activities for IWRAs.
Samsung Activities towards Best Practice:
1. Management status according to IWRA settings
- Hwaseong City, where the business site is located, supplies water to the local community based on each water purification plant based on the water source of Paldang Dam. The effluent from our business sites is discharged directly from the river, not from the local government's public wastewater treatment plant. Accordingly, the IWRA, which is affected by the business activities of each campus, defines the Woncheonri Stream, which is our discharge river, as an IWRA.

2. Management of IWRA
- We are monitoring the water quality, fish, and aquatic ecology of the identified major points (about 5 to 10 points) within the river. In addition, our effluent monitoring is performed in real time and water analysis.
- Woncheon-ri Stream(Hwaseong campus) : We are monitoring water quality, aquatic ecosystems and terrestrial ecosystems at 6 points including the direct upstream, downstream and downstream affected sections centering on the discharge point.

Finding No: TNR-002401

1.8.5 *Relevant sector and/or catchment best practice for site provision of equitable and adequate WASH services shall be identified.*

in progress

Comment	The site has provided a list of all the work they are doing towards Best Practice for WASH already performed. Samsung Best Practice activities: 1. WASH self evaluation - Basically, Samsung Electronics provides sufficient clean water for drinking, cooking, and sanitation, facilities for waste treatment and sewage treatment, and sanitation-related information and water resource education for its employees at all production facilities. In addition, by referring to the results of the 'Access to Water' section of the WRI Aqueduct, the causes are analyzed for sites with relatively high risk. - If an employee's access to WASH service is low, it will affect Samsung Electronics' employee welfare and job satisfaction, so it is reflected in the water risk assessment. In addition, every year, through the RBA self-evaluation for all business sites, the accessibility of employees to WASH service is evaluated and improvement is carried out. 2. Cases of application of WASH evaluation results - We inspected the WASH service through RBA diagnosis and self-diagnosis of Samsung Electronics' partner companies, and replaced or improved the shower facilities and water supply facilities for employees of partner companies with low WASH checklists. (Described RBA in detail) ***Finding No: TNR-002402***

2	STEP 2: COMMIT & PLAN - Commit to be a responsible water steward and develop a Water Stewardship Plan	
2.1	*Commit to water stewardship by having the senior-most manager in charge of water at the site, or if necessary, a suitable individual within the organization head office, sign and publicly disclose a commitment to water stewardship, the implementation of the AWS Standard and achieving its five outcomes, and the allocation of required resources.*	
2.1.1	*A signed and publicly disclosed site statement OR organizational document shall be identified. The statement or document shall include the following commitments:* *- That the site will implement and disclose progress on water stewardship program(s) to achieve improvements in AWS water stewardship outcomes* *- That the site implementation will be aligned to and in support of existing catchment sustainability plans* *- That the site's stakeholders will be engaged in an open and transparent way* *- That the site will allocate resources to implement the Standard.*	✓ closed
Comment	The site has provided a sign commitment to AWS which includes the following references: - That the site will implement and disclose progress on water stewardship program(s) to achieve improvements in AWS water stewardship outcomes - hat the site implementation will be aligned to and in support of existing catchment sustainability plans It has been signed by: Vice President / Director of Environmental Safety Centre. The has provided no evidence that this signed commitment has been publicly disclosed. The commitment makes no mention: - That the site's stakeholders will be engaged in an open and transparent way - That the site will allocate resources to implement the Standard. ***Finding No: TNR-002029***	
2.1.2	*Advanced Indicator* *A statement that explicitly covers all requirements set out in Indicator 2.1.1 and is signed by the organization's senior-most executive or governance body and publicly disclosed shall be identified.*	↗ No
Comment	The site has not explicitly covered all the requirements in 2.1.1.	
2.2	*Develop and document a process to achieve and maintain legal and regulatory compliance.*	
2.2.1	*The system to maintain compliance obligations for water and wastewater management shall be identified, including:* *- Identification of responsible persons/positions within facility organizational structure* *- Process for submissions to regulatory agencies.*	✓ Yes
Comment	The site has indicated that they have Samsung Electronics operates the Environmental Safety Committee three times a year. Attended by the CFO and environmental safety executives, the meeting will report and discuss significant water-related issues if they arise. In the DS division, environmental safety meetings, which the CEO attended, are held 6 times a year. The meeting covers the same subject matter as in the Environmental Safety Committee, dealing with appropriate ones for DS division. In addition, the DS Environmental Safety Center, which was established under the direct control of the CEO, handles tasks such as responding to water issues related to semiconductors. The compliance of business sites with regulations is also evaluated through ISO 14001 audits. The site also discloses to the regulatory bodies on disclosure of water usage and water pollutant emissions, submission of gray water usage, investigation of specific water pollutant emissions, nationwide pollutant source investigation, real-time information delivery through TMS through Environmental Information Disclosure System(env-info.kr/member/main/main.do). The site has provided information on the system and the people responsible for maintaining compliance. The process of submission to regulatory agencies is via email and has been shown during the audit, the evidence, however is in Korean only.	

2.3 *Create a water stewardship strategy and plan including addressing risks (to and from the site), shared catchment water challenges, and opportunities.*

2.3.1 *A water stewardship strategy shall be identified that defines the overarching mission, vision, and goals of the organization towards good water stewardship in line with this AWS Standard.*

in progress

Comment

The site has provided examples of general water efficiency goals for the site and a water stewardship plan, they have not developed a water stewardship strategy specific to the requirements of the AWS Standard.

The Site has not identified a WS Strategy that defines the overarching mission, vision, and goals of the organization towards good water stewardship in line with this AWS Standard.

Finding No: TNR-002026

2.3.2 *A water stewardship plan shall be identified, including for each target:*
- How it will be measured and monitored
- Actions to achieve and maintain (or exceed) it
- Planned timeframes to achieve it
- Financial budgets allocated for actions
- Positions of persons responsible for actions and achieving targets
- Where available, note the link between each target and the achievement of best practice to help address shared water challenges and the AWS outcomes.

in progress

Comment

The site only recently developed a Water Stewardship Plan. They have identified targets and actions. These targets and actions are non-specific and do not have quantified metrics associated with them. There is insufficient information provided on how it will be measured and monitored.

Not all of the actions have a planned timeframes to achieve it. This needs to be more specific in the deadline/timeline to achieve.
Financial budgets allocated for actions has been allocated.
Persons responsible for actions and achieving targets have been provided.
The site has made the link between each target and the achievement of AWS outcomes but not yet the link to best practice to help address shared water challenges.

Finding No: TNR-002037

2.3.3 *Advanced Indicator*
The site's partnership/water stewardship activities with other sites within the same catchment (which may or may not be under the same organisational ownership) shall be identified and described.

Yes

Comment

The site has taken the following actions with other bodies:

1.To fulfil our water resource responsibilities jointly, we are promoting ecosystem conservation activities by signing a “one company, one river” joint agreement with the local environmental agency.

2. We maintain cooperative relationships with the Ministry of Environment, Korea Environment Corporation, local governments (Suwon City, Pyeongtaek City, etc.), Korea Water Resources Corporation, and NGOs to identify and resolve local water-related issues. In particular, in the mid- to long-term, water supply from Paldang Dam, a water source, is limited and industrial water to be used is increasing, which can cause water shortages. In order to reduce the expected water intake in 2030 to 750,000 tons/day to 300,000 tons/day, we are in the process of establishing strategies with relevant departments to take the lead in resolving the national water shortage issue by reducing the amount of water withdrawn by introducing effluent reuse technology from a public sewage treatment plant.

3. Environmental Conservation Committee
- Environmental Conservation Committee is held on a regular basis (once every other month). the main agenda is to reduce the concentration of sulfate ions and fluoride ions in the effluent.
- For sulfate ions, although it is not subject to regulation, remodeling work is continued to replace or recycle DSP in the process to reduce the concentration in effluent.
- For fluoride ions, although it is being managed below the regulated concentration of 50%, it is being studied considering various methods such as advanced treatment methods to continuously reduce the concentration. The site has worked in Woncheon River to re-introduce fish species and introduce new plant species.

4. The site has not conducted projects with other site outside the organisation but has done some projects with other Samsung campuses on water efficiency and water quality management.

Score 4

2.3.4 *Advanced Indicator*

The site’s partnership/water stewardship activities with other sites in another catchment(s) (either under same corporate structure or with another corporate site) shall be identified.

Yes

Comment

In cooperation with institutions in other catchment, Samsung carried out the following activities to preserve the ecosystem.
- Sohwang Sand Dunes Ecological Conservation
- Conservation of native bees / creation of wild flower colonies
- Creation of a silver grass colony in Gokgyocheon
- Post-management support for natural purification ecological wetlands
- Creek Restoration Campaign with Citizens

Score 4

2.3.5 *Advanced Indicator*

Stakeholder consensus shall be sought on the site’s water stewardship plan. Consensus should be achieved on at least one target. A list of targets that have consensus and in which stakeholders are involved shall be identified.

Yes

Comment

The site only recently developed a Water Stewardship Plan and has managed to get some meaningful feedback from relevant stakeholders on their WS Plan. Please refence the attached evidence for the detailed feedback.

Score 7

2.4 *Demonstrate the site’s responsiveness and resilience to respond to water risks*

2.4.1 *A plan to mitigate or adapt to identified water risks developed in co-ordination with relevant public-sector and infrastructure agencies shall be identified.*

in progress

Comment	As stakeholders related to the Hangang basin, the Ministry of Environment, Hangang Basin Environment Agency, K-water, Korea Environment Corporation, Suwon City, Pyeongtaek City, Hwaseong City, and Osan City formed a consultative body for water resource management to establish strategies for national water shortage and water resource management. In order to reduce the amount of natural water intake for conservation of water resources, public sewage treatment plant effluent is reused to utilize the natural water intake in areas with insufficient water. The site has presented a plan from K-water on water substitute options should water supply be reduced or compromised. There are two scenarios planned for: drought and earthquake.

Finding No: TNR-002031

2.4.2 *Advanced Indicator* — No

A plan to mitigate or adapt to water risks associated with climate change projections developed in co-ordination with relevant public-sector and infrastructure agencies shall be identified.

Comment	The site has provided two studies which have been developed in conjunction with public sector agencies to address risks. There is no evidence to suggest that these have been developed in response to climate change scenario planning.

3	STEP 3: IMPLEMENT - Implement the site's stewardship plan and improve impacts

3.1 *Implement plan to participate positively in catchment governance.*

3.1.1 *Evidence that the site has supported good catchment governance shall be identified.* Yes

Comment

The site has demonstrated very good relations and interactions with water governance authorities in their basin. Evidence of these interactions were observed during the audit. Attached as evidence are the minutes of the meeting between K-water and Samsung and a meeting invitation from the Ministry of Environment to discuss the re-use of effluent by Samsung to reduce the load on the WWTW and reduce the use of "clean" water which is anticipated to be in short supply. There is a also the PDF of a presentation from IRDS meeting where it was discussed all the possibilities for water reduction and re-use measures.

Information from Samsung
1. Collaboration with river basin management agencies
- Degradation of site's basin ecosystems can act as a water risk. Therefore, Samsung Electronics is actively participating in activities to preserve the ecosystem of river basins every year in cooperation with nearby basin management agencies. Ecosystem conservation activities include information on endangered species and research on the impact of river ecosystems, participation in basin clean-up campaigns, participation in campaigns on eradication of ecosystem-disrupting species, and participation in World Water Day.
- In accordance with the 'Guidelines for quality management of aquatic ecosystem status survey methods', the Hwaseong Plant regularly monitors the current status of aquatic ecosystems, including fish, ecotoxicity, weather and precipitation, etc. in rivers near the plant to identify the impact on the ecosystem. In addition, we conduct improvement activities by surveying fish and birds and monitoring habitats.
- It has been confirmed that fish and invertebrates live in the Woncheon stream of the Hwaseong site, and that the effluent has no effect on the stream.
- Enhancing water quality by basin management agencies has a significant impact on water supply and product production. Therefore, Samsung Electronics closely monitors basin management plans of basin management agencies and actively cooperates with basin management plans.
- We continue to carry out activities such as planting air-purifying plants, biodiversity education, planting water-purifying plants, releasing fry, and planting irises.

2. Perform basin storage monitoring
- Water availability in the basin of the business site affects product production. Samsung Electronics uses WRI Aqueduct and WWF's Aqua Risk Filter to compare basin data and conduct risk analysis.
- In particular, we are monitoring the amount of water stored in the adjacent basin by referring to the results of the "Upstream Storage" analysis of WRI Aqueduct.

3. Participation in the national water management master plan and water reuse master plan
- Even if the country develops and supplies technologies to expand water reuse, if companies do not cooperate with the national water policy and do not use recycled water, the policy will not be successful. Samsung Electronics is actively participating in the expansion of water reuse, a national policy listed in the national master plan for water management and water reuse to conserve national and global water resources.
- As stakeholders related to the Han River basin, the Ministry of Environment, Han River Basin Environment Agency, K-water, Korea Environment Corporation, Suwon City, Pyeongtaek City, Hwaseong City, and Osan City formed a consultative body for water resource management to establish strategies for national water shortage and water resource management.

3.1.2 *Measures identified to respect the water rights of others including Indigenous peoples, that are not part of 3.2 shall be implemented.* Yes

Comment	The site uses industrial water from Paldang dam which is not treated and they treat the water themselves at their own cost, they are not using "city water" which has been treated by the authorities. There is a government scheme to control and regulate the quantity of water used by Samsung. It has been pre-agreed, 10 years prior for current use levels. Evidence of this contract has been uploaded. Information provided by Samsung: 1. Installation of water vapor reduction device - Although it has been confirmed that the vapor generated by Samsung Electronics' business activities is harmless to the human body, we installed a water vapor reduction device to remove vapor to relieve the anxiety of local residents near the business site. - In addition to the water vapor reduction device, the harmlessness of water vapor is continuously analyzed and shared. Translation of contract for "raw water" which shows the contract: (1.5.2,+3.1.2,+3.2.1,+3.2.2)+Water+withdrawal+contract.pdf Title : Tap water use (change) contract application Comment (Local Auditor) : This contract contains the contents of the water supply contract between Samsung and K-water. Contents 1. Applicant Information 2. Contract Details a. Contracted quantity - 150,000 m3/day b. Maximum Capacity c. Type of water - raw water d. Expected Date of Use - 25.08.2016 e. Contract Period - 25.08.2016 - 24.08.2017 f. Name of Water Inlet - Hwaseong (5), (6)
3.1.3	*Advanced Indicator* *Evidence of improvements in water governance capacity from a site-selected baseline date shall be identified.*

Yes

Comment

In 2018 there was no department for Water Management. Since then they have created a new department under Environmental Safety which is Water Management and Bureau for Sustainability. They have 11 staff members which is a considerable increase in staff compliment dedicated to water management for Samsung. The audit team has met these staff members during the audit. There is a presentation attached as evidence which shows the size of the current environmental team dedicated good water stewardship and governance.

Information provided by Samsung
1. Reinforcement of water management manpower and reinforcement of employee responsibilities
- Samsung Electronics established the Environmental Safety Center as an organization directly under the CEO to respond to water issues related to semiconductors. In addition, as a detailed part within the Environmental Safety Center, a water environment part was newly established to manage water resources.
- We have established the Sustainability Management Bureau to respond to global water-related issues and establish mid- to long-term goals to promote sustainable water resource management.
- Executive MBO(management by objectives) includes the amount of water usage reduction, and we are adopting a comprehensive water resource management goal through water reuse and reduction of water usage as an internal policy.
- The water reduction target was set at about 30,000 tons/day this year, which is reflected in the MBO of the executives of the relevant departments to reflect the monthly performance, which is managed and shared through the G_EHS system.

Basic explanation of the contents of the evidence:

(3.1.3)+Environment+management+SOP.pdf
Title : Environmental management regulations within the company
Comment (Local Auditor) :
This SOP covers Samsung's record obligations regarding environmental management, the CEO's legal responsibility, and standards for various pollutants.
Contents
1. Revision history
2. Purpose
3. Coverage
4. Definition of term
5. Responsibility and authority
a. CEO directs remediation and pollution prevention and preventive measures against significant environmental impacts.
b. CEO is legally responsible for administrative dispositions caused by deviations from the legal standards, and finally approves the plans and results of corrective actions established by the environment, safety and energy team leader.
6. Related regulations
7. Work flow chart
8. Working process
9. Record
a. Operation log
b. TMS measurement data
c. Air quality, water quality, soil, noise pollution data, external measurement data
10. Attachment
a. Air/water emission standard
b. Noise management standard
c. Soil pollution management standard
d. Environmental management measurement cycle
e. Standards of luminance and illuminance for outdoor lighting facilities
f. Air pollution control facility exhaust connection standard
g. Atmospheric environment management regulations
h. Refrigerant Management Regulations

(3.1.3)+Organization+of+Samsung+Environment+team.pdf
Title : ESH Policy
Comment (Local Auditor) :
This file shows Samsung's environmental safety policy and the roles and goals of each department.
Contents
1. Environmental safety policy
2. Environmental safety 10 commandments
3. ESH Center's Mission & Vision
4. ESH Organization chart
5. Environmental Team organization chart

Score 2

3.1.4 *Advanced Indicator*
Evidence from a representative range of stakeholders showing consensus that the site is seen as positively contributing to the good water governance of the catchment shall be identified.

Yes

Comment The site has provided some evidence of interactions with stakeholders which contain confirmation of positive feedback regarding their water stewardship activities. See attached evidence.

Information provided by Samsung
1. Formation of a consultative body with basin-related stakeholders
Samsung Electronics formed a consultative body with the Ministry of Environment, Han River Basin Environment Agency, K-water, Korea Environment Corporation, Suwon City, Pyeongtaek City, Hwaseong City, and Osan City, stakeholders related to the Han River basin, to manage water resource, which is establishing strategies for managing national water scarcity and water resources. In addition, in order to reduce the expected water withdrawal in 2030 to 300,000 tons/day and to conserve water resources, we plan to introduce a technology to reuse effluent from public sewage treatment plants and utilize it in areas with insufficient water.

2. Issue a sustainability report and conduct a survey
- We publish a sustainability report every year to identify ESG issues as well as water-related issues for our stakeholders, and conduct a survey on water-related issues and related issues through a materiality test.

3. Operating call center, media, platform regarding disclosure of information
- In the 2021 and 2022 invitational briefing sessions for environmental groups, we shared information on the results of ecological surveys around the business sites and the status of wastewater treatment, and listened to and communicated with stakeholders.
- For communication with stakeholders, we are operating channels using an ESG department, a communication-only call center, media promotion, and information disclosure platform.

Score 2

3.2 *Implement system to comply with water-related legal and regulatory requirements and respect water rights.*

3.2.1 *A process to verify full legal and regulatory compliance shall be implemented.*

Yes

Comment

The TMS has alert system, which alerts the government if the discharge water quality is out of specification, the alerts come in the form of email or messages to the cell phone. This system was visually confirmed during the site visit to the control room. This system is controlled by a government approved external service provided to ensure that Samsung cannot interfere with the monitoring system. The site has a SOP for general internal environmental regulation which dictates the actions taken to ensure compliance. The document contains the legal limits and the internal limits at which alerts are triggered. Samsung also has a legal team which ensures that the site remains legal compliant for all environmental legislation which applies to them.

Information provided by Samsung
1. Operation of automatic water quality measurement equipment (TMS, tele monitoring system)
- For the purpose of managing effluent quality and complying with laws, Samsung Electronics has attached an automatic water quality measurement equipment (TMS, tele monitoring system) operated under the management of the Ministry of Environment, to link and display effluent water quality data in real time.
- Since wastewater is treated by applying internal standards that are stricter than the legal standard allowance, there has been no case of exceeding the TMS emission limit from 2019 to 2021.

2. Disclosure of environmental information disclosure system
- Samsung Electronics prepares the previous year's environmental information by the end of June every year through the Environmental Information Disclosure Verification System (www.env-info.kr), operated by the Korea Environmental Industry and Technology Institute, an organization affiliated with the Ministry of Environment, and discloses it to the public in December.
- Since 2009, we have been disclosing water-related information such as water consumption, water pollutant emissions, and violations of environmental laws.
- From 2019 to 2021, the number of violations of environmental laws and regulations was 0 and the fine was 0 won, of which contents were disclosed through the environmental information disclosure system.

3.2.2 *Where water rights are part of legal and regulatory requirements, measures identified to respect the water rights of others including Indigenous peoples, shall be implemented.*

Yes

Comment

The site is legally required to separate the use of water into City Water (treated and prepared by government) and Industrial Water (source directly from the dam). The site uses 90% of industrial water which leaves more clean water for other users of water.

Information provided by Samsung:
The Hwaseong site used an estimated 140,000 tons of water in the environmental impact assessment, but it is currently using 13.4 tons, which is less than expected, so additional water can be supplied to nearby residents.

3.3 *Implement plan to achieve site water balance targets.*

3.3.1 *Status of progress towards meeting water balance targets set in the water stewardship plan shall be identified.*

Yes

Comment

The site has a few water use targets in the plan which they are tracking the progress on.
Summary Translation of attached evidence:

(3.3.1,+3.9.2,+3.9.7)+Water+balance+management(KPI,+Pl.pdf
Title : Monthly KPI management of water conservation amount
* KPI - Key Performance Indicator
Comment (Local Auditor) :
This file shows the quantified water usage reduction performance data of Samsung
Contents
1. 20% reduction in environmental safety accidents
2. Securing global top-level fire brigade capabilities
3. Zero Violation of Laws
4. On-site potential risk improvement
5. Achieving 35% Carbon Neutrality
6. Achievement of Global Top Tier for Resource Recycling
a. Departmental & monthly water usage reduction plan, performance, achievement rate

Information provided by Samsung
1. Reduction of water consumption and expansion of reuse
- Samsung Electronics recognizes that water resources are an important resource for maintaining a sustainable society and corporate management, and has established a water management plan under the basic philosophy of fulfilling social responsibilities as a global company to protect them and monitor the progress.- Samsung Electronics minimizes water use and reuses water to maximize the efficiency of water resource use by carrying out daily saving activities such as optimizing business sites, replacing outdated facilities and improving operating standards, and structural improvement activities such as improving manufacturing process and establishing recycling system.
- We set a water reduction goal every year and are working on it. In 2021, we saved an average of 6,857 tons of water per day, and reused 93.94 million tons of water (a 34% increase from the previous year). In the future, we are planning not only to expand the reuse of water, but also to reuse the effluent from public sewage treatment plants.
- The Hwaseong site recycles about 70,000 tons/day, which is managed daily through the G-EHS system. In addition, in order to reduce the amount of water used in manufacturing, we receive savings items from relevant departments at the end of the month to manage performance against the target. The performance is also managed through the G-EHS system.

3.3.2 *Where water scarcity is a shared water challenge, annual targets to improve the site's water use efficiency, or if practical and applicable, reduce volumetric total use shall be implemented.*

Yes

Comment

The site has robust targets sets out in the document which is Performance for reducing water 2022. Evidence has been uploaded and below is a summary translation of the document.

Title: Minute of water conservation
Comment (Local Auditor) :
This minutes show that Samsung is sharing water reduction activities internally. but no mention of best practices
Contents
1. Meeting attendees
2. Meeting purpose
3. Meeting results
a. Share water reduction activities
b. Introduction to carbon trust certification
c. Suggestion of water reduction target guide
d. Expanding the scope of water-saving business sites
4. Task background, reduction activity status, task management, etc.

Information provided by Samsung
1. Annual target to reduce water use
- Samsung Electronics classifies and manages sewage, wastewater, process water, and ultrapure water to increase the water use rate in the manufacturing process, calculates the monthly reuse amount, and inputs it into the global green management system, an integrated company-wide environmental information management system, for management.
- In September 2020, we announced the new environmental policy. Specifically, due to the expansion of semiconductor lines, the daily water intake required at semiconductor business sites is expected to more than double the current level in 2030. However, Samsung Electronics is aiming to increase the reuse of water as much as possible and freeze it at the 2021 level.

2. How much has been achieved
- As of 2021, a total of 93.94 million tons of water was reused, an increase of about 34% compared to the previous year.
- In addition, the amount of reuse is increasing every year.

3. Future implementation plan
- Structural improvement activities such as continuous improvement of the manufacturing process and establishment of a reuse system are being carried out to maximize the water reuse rate.
- In the future, we are planning not only to expand the reuse of water, but also to reuse the effluent from public sewage treatment plants.

3.3.3 *Legally-binding documentation, if applicable, for the re-allocation of water to social, cultural or environmental needs shall be identified.*

Yes

Comment

The site's discharge water is so clean that it is used to recharge rivers and streams to maintain flow and cleanliness levels. There are three discharge points and some were established upon request but local authorities. Evidence attached.

Information from Samsung
1. Use of effluent for maintenance of river
- The effluent generated from business activities is discharged directly into the river and is used as water for maintenance of the river.
- Before Samsung Electronics' discharge, Osan Stream was classified as dry and the water quality was level 5, but after discharge, it was upgraded to level 2.
- Before 2007, our effluent was discharged to Woncheon-ri Stream, but at the request of the local community, we moved the effluent to Osan Stream after 2010 to prevent the Osan Stream from becoming dry, which resulted in improved water quality in Osan Stream and the recent discovery of otters.

3.3.4	*Advanced Indicator* *The total volume of water voluntarily re-allocated (from site water savings) for social, cultural and environmental needs shall be quantified.*	Yes
Comment	The site does quantify the discharge water to the river annually. The site showed the real time data for discharge reaching back to 2010. The site has continually and consistently been maintaining water level discharges and therefore river levels for 12 years. Information from Samsung 1. Use of effluent for maintenance of river - In 2021, 4.5 tons/day of effluent generated from business activities was discharged directly to Osan Stream and used as river maintenance water. - The amount of reallocated water has been confirmed by Yongin City	
Score	6	
3.4	*Implement plan to achieve site water quality targets*	
3.4.1	*Status of progress towards meeting water quality targets set in the water stewardship plan shall be identified.*	Yes

Comment

The site has many internal water quality targets, some of which are reflected in the WS Plan. Samsung water quality targets are more stringent than Korean legally appliable ones. Below is the description of the water quality targets. The site's most common pollutants include sulphates, fluorides and chlorine. They also have a medium term year which introduces new technologies for removal of the pollutant. The evidence is attached a summary translation below:

(3.4.1)+Progress+towards+water+quality+improvement
Title : Water Pollution Reduction - Status and Goals
Comment (Local Auditor) :
This file briefly explains Samsung's water pollutant reduction goals and technologies to achieve them.
Contents
1. Water Pollution Reduction -
2. Status and Goals
a. Reduction target
b. Reduction plan
c. Required cost ('22-'30)
3. System diagram
4. Concentration Target and Technology Roadmap
a. Concentration targets for chlorine, sulfuric acid, nitrogen, and fluorine ions
b. Required technology development timeline
5. Major Implementation Plans
a. Estimated emission of chlorine and sulfate ions when technology is applied
6. Overview of Treatment Technology
7. Reduction Technology (Details)
a. Chlorine, sulfuric acid, nitrogen, fluorine ion reduction technology details

Information from Samsung
1. Reduction of water pollutants
- Samsung Electronics has been operating the company-wide Environmental Conservation Committee/Council since 2022 to reduce water pollutants.
- The Environmental Conservation Committee establishes mid- to long-term water pollutant reduction targets, develops applicable technologies, and manages performance against quarterly targets.
- A reduction target has been established for each business site, and the annual target, generation amount, and target achievement rate are as follows.- The Hwaseong Plant has set and managed the reduction target for SO4, Cl, F, and T-N emissions from 2022 to 2040 in order to achieve zero pollutants and zero increase in water withdrawal. SO4 has been reduced by 22% from 2020 to the present.
- In order to reduce water pollutants, we are developing various technologies to introduce advanced fluorine treatment method and separation membrane process technology.

3.4.2 *Where water quality is a shared water challenge, continual improvement to achieve best practice for the site's effluent shall be identified and where applicable, quantified.*

Yes

Comment

The site has a world class monitoring system for effluent and they discharge at a more stringent level than Korean legal requirements. The site presented a data trend of BOD over several years which showed an overall downward trend which represents continual improvement. MA requested a copy of the trend data.

Information from Samsung
1. Apply strict in-house water quality standards
- Samsung Electronics is applying its own water quality standards that are stricter than legal standards to minimize negative impacts on the aquatic ecosystem.
- The legal standards for water pollutants in the Hwaseong site are as follows.
- COD : 90 / BOD : 80 / SS : 80
- The in-house water quality standards for the Hwaseong site are as follows.
- COD : 8mg/L / BOD : 7mg/L / SS : 7mg/L
- In 2021, the achievement rate of the in-house water quality standards at the Hwaseong site is 100%.

3.5	*Implement plan to maintain or improve the site's and/or catchment's Important Water-Related Areas.*	
3.5.1	*Practices set in the water stewardship plan to maintain and/or enhance the site's Important Water-Related Areas shall be implemented.*	Yes
Comment	The site conducts chemical (6/year) and ecological testing (4/year) at the site's discharge points. Mammal surveys are conducted twice a year. Research is conducted by Kyunnghee University (evaluation of influence of Discharge on ecological toxicity of Wancheon Stream.) The consistent discharge of clean water to the stream has improved the ecosystem and allowed it to be maintained and even enhanced. The site has focused on a limited number of IWRAs but can show a consistent history of monitoring of the parameters and studies which show improvement. Information provided by Samsung 1. Apply strict in-house water quality standards - Samsung Electronics is applying its own water quality standards that are stricter than legal standards to minimize negative impacts on the aquatic ecosystem. .	
3.5.2	*Advanced Indicator* *Evidence of completed restoration of non-functioning or severely degraded Important Water-Related Areas including where appropriate cultural values from a site-selected baseline date shall be identified. Restored areas may be outside of the site, but within the catchment.*	Yes

Comment	The site has worked on several projects pre-covid whereby volunteers from Samsung and from the Samsung environmental department worked to rehabilitate sections of two streams into which the site discharges. Wetland plants were introduced and fish species into the river. Evidence has been attached to support. Information provided by Samsung 1. Habitat creation - Based on the results of monitoring the aquatic ecosystem through an external institution, Samsung Electronics conducts improvement activities by surveying fish and birds and monitoring habitats. - At the Hwaseong site, the Korea Ecological Research Center and the Osan Environmental Movement Association conduct annual surveys of the Osan Stream, ' - Through the monitoring of the aquatic ecosystem, we are exploring the relationship between the physicochemical factors of rivers and the ecology. In addition, the health of rivers is continuously managed by excavating endangered species and investigating the presence of alien species. 2. Water purification plant planting activities - Local NGOs, employees, and their families are carrying out iris planting activities in the Woncheonri Stream and Osan Stream near the Hwaseong Plant. - 100 irises, moss daisies, shasta daisies, and echinacea are planted respectively on a one-time basis, and about 2 million won is invested in each activity. - Before COVID19, it was held 3 to 4 times a year, and once in 2022 where 60 employees and their families participated in the event. - Through the water purification plant planting activities, we not only maintain a friendly relationship with local NGOs, but also provide the environmental education for children as employees participate together with their children. 3. Fry discharge business - Local NGOs, executives and employees, and their families are conducting volunteer activities to release fry together in the Woncheonri Stream and Osan Stream near the Hwaseong site. - Based on one activity, 1 kg of fry (loach) is released, . - Before COVID19, it was held 3 to 4 times a year, and once in 2022 where 60 employees and their families participated in the event. - It has the effect of activating the circulation of accumulated organic matter in the lower part of the river and preventing the anaerobic decomposition of microorganisms through discharging loach.
Score	6

3.5.3	*Advanced Indicator* *Evidence from a representative range of stakeholders showing consensus that the site is seen as positively contributing to the healthy status of Important Water-Related Areas in the catchment shall be identified.*	Yes

Comment	The site invited stakeholders to feedback on the work done on enhancing the IWRAs. They received feed back from questionnaire and also further requests to reduce water temperature, test fish for heavy metals. Evidence to support that stakeholders agree that the site has a positive influence on the IWRA has been uploaded. Information provided by Samsung 1. Invitation briefing sessions for environmental group 2 times (`21.Nov.17, `22.Jun.8) . Target : 24 Pyeongtaek Citizen's Environment Organization, 2 local educational institution . Content : Description of the results of the river ecology survey around the business site, explanation of the status of wastewater treatment, tour of the wastewater treatment site, and Q&A session 2. Invitational briefing session for environmental workers ('22 3 times) . Target : 60 Local environmental workers . Content : Description of cutting-edge water management technology, sharing of environmental facility management know-how, tour of the wastewater treatment site 3. Communication with local residents (4 times a year) . Operating a regular communication consultative body including the environment field with 27 resident representatives around the business site * Hwaseong(since 2013), Yong-in(since 2014), Pyeongtaek(since 2018) . Content : River purification activities around business sites, explanation of ecological survey results, discussion on environmental improvement activities, ESG publicity and Q&A session 4. Various other communication channels in operation : 30 people in 6 departments at ESG dedicated organization and communication organization, operating a dedicated communication call center : Media publicity (Samsung Semiconductor Story https://www.samsungsemiconstory.com/, Youtube https://www.youtube.com/c/samsungsemiconductor/) : Disclosure of specific water hazardous substance emission survey results (https://wems/nier.go.kr)
Score	2

3.6 *Implement plan to provide access to safe drinking water, effective sanitation, and protective hygiene (WASH) for all workers at all premises under the site's control.*

3.6.1 *Evidence of the site's provision of adequate access to safe drinking water, effective sanitation, and protective hygiene (WASH) for all workers onsite shall be identified and where applicable, quantified.* Yes

Comment	The site has installed modern facilities for toilets, showers and access to drinking water throughout the several campuses owned by Samsung. These were confirmed visually during the factory tour. The site is Platinum certified to RBA. See details below. 1. Water quality checks - Basically, Samsung Electronics provides sufficient clean water for drinking, cooking, and sanitation, facilities for waste treatment and sewage treatment, and sanitation-related information and water resource education for its employees at all production facilities. - We are writing in detail the status of water quality monitoring (monitoring cycle, method, subject, result, etc.) 2. RBA check - Every year, through the RBA self-evaluation for all business sites, the accessibility of employees to WASH service is evaluated and improvement is made. - Total coliform group and turbidity analysis were performed, 236 sites in Hwaseong were analyzed and all test results were found to be acceptable. The survey is conducted monthly. - In addition, general bacteria, total coliform, fecal coliform, free residual chlorine, hydrogen ion concentration, and turbidity are analyzed in 42 water tanks, which are also considered conform every month.

3.6.2	*Evidence that the site is not impinging on the human right to safe water and sanitation of communities through their operations, and that traditional access rights for indigenous and local communities are being respected, and that remedial actions are in place where this is not the case, and that these are effective.*	Yes
Comment	The site is not over abstracting and is releasing clean water into the rivers and therefore is not impinging on the rights of others to safe water. The site is rigorous in the internal policies and procedures for providing excellent WASH facilities to their staff compliment. See RBA Report Information provided by Samsung. '- Samsung Electronics' Hwaseong site complies with the approved water withdrawal (55 million tons) at the time of permission to establish a plant, and the water used for business operation does not infringe on the rights of local residents to use water. - Also, there is no history of issues with the supply of drinking water to local communities due to Samsung Electronics' business operations.	
3.6.3	*Advanced Indicator* *A list of actions taken to support the provision to stakeholders in the catchment of access to safe drinking water, adequate sanitation and hygiene awareness shall be identified.*	Yes
Comment	The site has a contract with City Water for 9000m3 per day but is only using 7000m3. This under use contributes to the city have sufficient water to provide to other communities. The site indicates that tap water is freely available in Korea and of sufficient quality for drinking. The majority of households have access to flush toilets and hygiene awareness is extensively covered in Korean school curriculum. Information to be checked against the Catchment WASH data. Samsung corporate research department is developing a waterless toilet in conjunction with the Melinda and Bill Gates Foundation for going to market in the future. Information provided by Samsung 1. World Water Day event - To celebrate World Water Day every year, global manufacturing sites are carrying out river and marine ecosystem conservation activities with local governments, civic groups, and nearby schools. In 2020, a total of 22 business sites participated, and in consideration of the COVID-19 situation, non-face-to-face events such as environmental idea contests, environmental education, and ecology exhibitions were held. - In 2021, due to the impact of COVID-19, the event was mainly held for environmental cleanup activities near business sites and non-face-to-face water resource campaigns. About 20 business sites held water resource exhibitions, idea contests, and environmental education. 2. Environmental protection activities in community - In 2021, we carried out activities to preserve the river ecosystem near our business sites through the local community service center and the local community council.	
Score	5	
3.6.4	*Advanced Indicator:* *In catchments where WASH has been identified as a shared water challenge, evidence of efforts taken with relevant public-sector agencies to share information and to advocate for change to address access to safe drinking water and sanitation shall be identified.*	No
Comment	WASH is not a shared water challenge in South Korea.	
Score	1	
3.7	*Implement plan to maintain or improve indirect water use within the catchment:*	
3.7.1	*Evidence that indirect water use targets set in the water stewardship plan, as applicable, have been met shall be quantified.*	closed

Comment

SK Siltron supply wafer to Samsung as their largest supplier and largest water user. They have been working together in a business sense but are competitors. The site has inputted an indirect water use target into the plan, however there is no metric, no assigned responsible person and no deadline. They have not yet worked with any suppliers on reducing their water use. The have collected data on the partners water use only.

Information provided by Samsung.
1. Reduction of water use by partners
- Samsung Electronics receives semiconductors and electrical-related parts from many suppliers. These semiconductor and component manufacturing processes require large quantities of fresh water of sufficient quality. The semiconductor wafer processing process requires a washing process and a lot of water.
- Samsung Electronics' major suppliers also reuse water. Ultrapure water generated in the semiconductor production process is reused in other production processes, and the wastewater is recycled and used.
- The water usage of partners is collected and managed every year.

The site has provided evidence but this does not relate to indirect water use. It relates to sewage reuse.
(3.7.1,+3.7.2)+□□□□□□□□□□□+□□□□□□□+□□□□□□+□□□□+□□□+□□□□□□+□□□□□.pdf
Title : Sewage Reuse Project Meeting Result and Email
Comment (Local Auditor) :
This file contains e-mails and materials informing that Samsung is planning a meeting (in May, Aug, Sep this year) with companies that have experience in the sewage reuse business.
Contents
1. Email with companies with experience in public sewage treatment plant reuse projects
a. Meeting schedule
2. Meeting material - Four eco-friendly strategies and water intake reduction progress
a. Project progress - in a planning stage
b. Budget Required
(

Finding No: TNR-002039

3.7.2 *Evidence of engagement with suppliers and service providers, as well as, when applicable, actions they have taken in the catchment as a result of the site's engagement related to indirect water use, shall be identified.*

closed

Comment

The site has not engaged with suppliers on the issue of setting targets and intentions to reduce their water use. They have, however, presented their water efficiency measures at Environmental Safety Innovation Day.

Information provided by Samsung
1. Environmental safety innovation day
- We share the achievements of water reduction every year with our partners by holding the Environmental safety innovation day.
- It was held on October 6 2021 and 5 parts companies (DS, SDI, SDC, Electricity, Biologics) will participate in the event on November 16 2022. The environmental safety session consisted of a total of 4 divisions including the eco-friendly division. The eco-friendly Division announces and promotes technological advancements on internal and external water resource reuse measures, such as recycling wastewater treatment and reuse of effluent from public sewage treatment plants.

Finding No: TNR-002032

3.7.3 *Advanced Indicator*
Actions taken to address water related risks and challenges related to indirect water use outside the catchment shall be documented and evaluated.

No

Comment	The site has presented evidence for direct water use and not indirect water use. The site has provided the motivation below but it is insufficient to me the requirement of the indicator. 1. Supplier monitoring - Samsung Electronics encourages partners to set goals for water resource management and water reduction, and monitors water reduction performance every year. - We requested information from the top 500 out of a total of 2,122 suppliers in terms of sales. (23.5%) These 500 suppliers account for 90% of the total supplier sales, and are managed by Samsung Electronics' win-win cooperation center. In 2020, the total purchase cost of Samsung Electronics to its partners is KRW 168.7 trillion. - At the same time, they are subject to the Samsung Electronics supplier code of conduct guide, and these suppliers are essential and important in supplying Samsung Electronics' parts as primary suppliers. In order to promote reporting information, we award prizes at the environmental safety innovation contest every year to suppliers with excellent performance through supplier evaluation.. 2. Type of information - As a result of a survey of 500 suppliers, water usage in 2020 is 70,128 megaliters. - This is an increase of approximately 6% compared to 66,317 megaliters in 2019. 3. How to use information - Samsung Electronics checks the water usage of its suppliers and uses the WRI Aqueduct Water Risk Atalas to check whether the suppliers are in a water shortage or scarcity country, and use them in risk analysis. 4. How to measure performance - Samsung Electronics has enacted the Supplier code of conduct guide and requires its suppliers to comply. All suppliers must comply with the Code, and sub-contractors that provide assembly, parts, raw materials and packaging to suppliers must also comply with it. The supplier code of conduct was created by reflecting domestic laws such as the Labor Standards Act and the Industrial Safety and Health Act, and provides detailed guidelines for labor, safety, environment, ethics, and management systems to help suppliers easily understand and practice the code of conduct.
3.8	*Implement plan to engage with and notify the owners of any shared water-related infrastructure of any concerns the site may have.*
3.8.1	*Evidence of engagement, and the key messages relayed with confirmation of receipt, shall be identified.* — Yes
Comment	The site is currently in discussions with K-water (management of WWTW) to take their waste water and use it as incoming water. Evidence to support this has been attached. Information provided by Samsung We support commercialization by forming a sewage treatment water reuse council, check the supply amount of sewage treatment plants by local governments and coordinate the supply scenarios, and review standards for water quality and quantity of reused water.
3.9	*Implement actions to achieve best practice towards AWS outcomes: continually improve towards achieving sectoral best practice having a local/catchment, regional, or national relevance.*
3.9.1	*Actions towards achieving best practice, related to water governance, as applicable, shall be implemented.* — Yes

Comment	Please reference indicator 1.8. K-water has approached Samsung to form a partnership to improvement water management in general, they request the assistance of Samsung to solve issues they are facing. In this way Samsung is contributing to Best Practice in governance. Information provided by Samsung 1.External Water Management Governance - Samsung Electronics is establishing internal water management goals and governance systems that are linked to the national basin plans, water-related public policies, and ongoing initiatives of the "National Water Management Master Plan for '21-30" published by the Ministry of Environment. In addition, we check the master plan for water supply maintenance of the relevant local governments to confirm the mid- to long-term plans for water supply of the local governments. Regarding water reuse, we check the "National Water Reuse Basic Plan" to confirm mid- to long-term reuse policies and implementation plans. - In addition, we are preparing a water resource-related consultative body with K-water to maintain a close cooperative relationship between the central government and industry to respond to external water resource issues. 2. Internal Water Management Governance - Samsung Electronics receives water from the government or companies that provide water resources and uses it mainly for product manufacturing processes, and some uses water for drinking and household use. In particular, if the quality of water is reduced or there is insufficient water, production will be disrupted or the cost of water treatment will increase rapidly. In addition, if a supplier's production is disrupted due to a lack of sufficient quality freshwater, product production and customer delivery may be disrupted. - Accordingly, for intensive water management, each business site carries out tasks such as establishing strategies/goals for water management, performance management, and operating system based on the environment team. For this internal system, our water resource policy is disclosed throughout the company including all legal entities through the annual CSR report. 3. External Water Initiatives - In order to respond to water risks at business sites, we are establishing a response strategy by applying the international water resource management techniques of FAO, WBCSD, and WRI. To minimize the deterioration of water resources, we set a mid- to long-term goal of 50 tons/billion won by 2020 and disclosed it to the public. - Our company declared a new environmental strategy and declared a strategy to maintain the water withdrawal from nature without increase even if the estimated water withdrawal in 2030 will be more than doubled to preserve water withdrawal. - In order to fulfill our water resource responsibilities jointly through the pledge of water resource responsibility and joint action, we signed a ‘one company, one river’ joint agreement with the local environmental agency to promote ecosystem conservation activities.	
3.9.2	*Actions towards achieving best practice, related to targets in terms of water balance shall be implemented.*	Yes

Comment

Samsung has already implemented a variety of cutting edge technological improvements to their waste water management system which introduced water efficiency measures. Evidence has been uploaded.

Below is a translation summary of what is in the evidence:
(3.9.2)+Actions+toward+water+balance.pdf
Title : Analysis of water-related ESG strategies of major companies
Comment (Local Auditor) :
This file presents a very short analysis of other IT companies' water management strategies and Samsung's plans to conserve water resources.
Contents
1. Water resources and water quality strategies for each IT company
2. Samsung Electronics Semiconductor Water Resources Conservation Mid- to Long-term Plan
a. Reuse of Samsung's treated wastewater, reuse of effluent from public sewage treatment plants
b. Target, Timeline

Information on Samsung
1. Detailed water mass balance by sites
As of 2022, water mass balance for each site is as follows.
- Hwaseong campus : withdrawal 52 million ton / discharge 42 million ton, it has an inflow/outflow balance and in the case of storage tanks, the usable capacity of the facility can be stored for about 10 days.

2. Monitoring annual variability in water usage
- Samsung Electronics is managing the water level capacity of Paldang Dam, the first supplier, through a real-time system.
https://m.water.or.kr/disaster/flood/flood01_01_detail.do?damCD=1017310&damNM=%ED%8C%94%EB%8B%B9%EB%8C%90
- Water balance can be also checked through the internal system G-EHS.
- Although the water level of Paldang Dam is fluid, there is no seasonal change in the water supplied to the Hwaseong Campus, and the seasonal rate system is not applied accordingly. A fixed amount is paid according to the supply unit price contracted with the Water Resources Corporation.

3. We maintain cooperative relationships with the Ministry of Environment, Korea Environment Corporation, local governments (Suwon City, Pyeongtaek City, etc.), Korea Water Resources Corporation, and NGOs to identify and resolve local water-related issues. In particular, in the mid- to long-term, water supply from Paldang Dam, a water source, is limited and industrial water to be used is increasing, which can cause water shortages. We are establishing strategies with relevant departments to take the lead in resolving the national water shortage issue by reducing water withdrawal by introducing effluent reuse technology from public sewage treatment plants to reduce the expected water withdrawal in 2030 from 750,000 tons/day to 300,000 tons/day.

4. Goal achievement result
- Every year we publish a CSR report and disclose information about water resources to local communities and stakeholders.
- Samsung Electronics is maximizing the water reuse rate by carrying out daily saving activities such as optimizing business sites, replacing old equipment, and improving operating standards, as well as structural improvement activities such as improving manufacturing process and establishing of a recycling system. The semiconductor business site, which uses a lot of water, saved an average of 6,857 tons of water per day by changing the process control value and the wastewater treatment method, and optimizing the operation. In addition, we are maximizing the water reuse rate by carrying out structural improvement activities such as improving manufacturing process and the establishing a reuse system. As a result, in 2021, a total of 93.94 million tons of water was reused, increased 34% from the previous year. In the future, we are planning not only to further expand the reuse of water, but also to reuse the effluent from public sewage treatment plants.

3.9.3	*Actions towards achieving best practice, related to targets in terms of water quality shall be implemented.*	Yes
Comment	Please reference indicator 1.8.3 on the very high standard of water quality monitoring. The site is achieving Best Practice on Water quality if the water they release into the stream is so clean it is improving the water quality of the river. Evidences attached. Information from Samsung. 1. Reduction of water pollutants Environmental Conservation Committee is held on a regular basis (once every other month). the main agenda is to reduce the concentration of sulfate ions and fluoride ions in the effluent. 2. Effluent water quality - Samsung Electronics is taking both the method of discharging directly into rivers and of discharging it to a common sewage treatment plant. In case of direct discharge to a nearby river, BOD, COD, TP, etc. are measured in consideration of the ecological impact of the nearby river. If the wastewater treatment plant of the local government is entrusted with the treatment, there are relatively few or no pollutant measurement items because the wastewater is not treated directly. - We are meeting the national standard for river discharge water quality, which is reported to the Ministry of Environment (National Pollution Source Investigation System) every year. - The rivers affected by direct discharge from the business site are Woncheonri Stream, and water quality management for the rivers is analyzed once a month which is also reported to Gyeonggi-do on a regular basis. In order to disclose this information to local residents and stakeholders, the Ministry of Environment regularly discloses related river water quality measurement data.	
3.9.4	*Actions towards achieving best practice, related to targets in terms of the site's maintenance of Important Water-Related Areas shall be implemented.*	Yes

Comment	Samsung has a history of ecosystem monitoring at the discharge points from the factory and there are plans to expand the monitoring network to further catchments. The reports from the ecosystem monitoring for these projects have been attached as evidence. TRanslation summary from one of the evidences. (3.5.2,+3.5.3,+3.9.4,+3.9.9)+Evidences+from+goverm (1).pdf Title : Data officially reported by stakeholders on Samsung Electronics' excellence in water management Comment (Local Auditor) : This file contains public press releases on Samsung's water reuse and river ecological restoration. Contents 1. Ministry of Environment official press release a. Press date b. Responsible department and contact information c. 1 Company 1 River Movement 2nd Prize Award (Samsung Woncheon-ri stream) d. Improvement of water quality in Wonwon-ri was introduced as a model case e. List of products and companies certified for water footprint by the Ministry of Environment f. Ecological River Restoration Project Best Case Contest - Osan Stream 2nd Prize (2017, 2018) 2. Suwon city official press release a. Mention of water quality improvement in Osan Stream 3. Osan Environmental Movement Association official press release a. Osan stream and otters b. Mention of the national river maintenance project Information provided by Samsung 1. IWRA settings - Hwaseong City, where the business site is located, supplies water to the local community based on each water purification plant based on the water source of Paldang Dam. - The effluent from our business sites is discharged directly from the river, not from the local government's public wastewater treatment plant. Accordingly, the IWRA, which is affected by the business activities of each campus, defines the Woncheonri Stream, which is our discharge river, as an IWRA. 2. Management of IWRA - We are monitoring the water quality, fish, and aquatic ecology of the identified major points (about 5 to 10 points) within the river. In addition, our effluent monitoring is performed in real time and water analysis. - Woncheon-ri Stream(Hwaseong campus) : We are monitoring water quality, aquatic ecosystems and terrestrial ecosystems at 6 points including the direct upstream, downstream and downstream affected sections centering on the discharge point.	
3.9.5	*Actions towards achieving best practice related to targets in terms of WASH shall be implemented.*	Yes

Comment	Take from 1.8. They are constantly monitoring the water in provided to the site for drinking and also the water in the bathrooms. Test are conducted for legionella. Evidence for the best practice has been uploaded. Information taken from Samsung 1. water quality check - Samsung Electronics provides all its employees with clean water for drinking, cooking, and sanitation, facilities for waste disposal and sewage treatment, sanitation-related information, and education on water resources. 2. WASH compliance status by sites - Basically, Samsung Electronics provides sufficient clean water for drinking, cooking, and sanitation for its employees, facilities for waste disposal and sewage treatment, sanitation-related information, and education and facilities related to water resources in all production facilities. In addition, by referring to the results of the 'Access to Water' section of the WRI Aqueduct, the causes are analyzed for sites with relatively high risk. If an employee's access to WASH service is low, it will affect Samsung Electronics' employee welfare and job satisfaction, so it is reflected in the water risk assessment. In addition, every year, through the RBA self-evaluation for all business sites, the accessibility of employees to WASH service is evaluated and improvement is carried out. - For food and drinking water, in-house canteen and outsourced business offices, and low-water quality management, it is conducted once a month in summer and once a year in winter. [tank test result] - test subject : 42 Giheung/Hwaseong/DSR tank - test item : general bacteria, total coliform group, fecal coliform, free residual chlorine, hydrogen ion concentration, turbidity - test result : conform [drinking water test result] - test subject : 236 Hwaseong sites - test item : total coliform group, turbidity - test result : conform 3. Operating system for WASH compliance - Internal facility regulations and guidelines (documented guidelines) for WASH-related facilities and water supply are in place and based on that, we monitor and disclose the results on the internal bulletin board or SOP system. - Every year, through the RBA self-evaluation for all business sites, the accessibility of employees to WASH service is evaluated and improvement is made. - Total coliform group and turbidity analysis were performed, 236 sites in Hwaseong were analyzed and all test results were found to be conform. The survey is conducted monthly. - In addition, general bacteria, total coliform, fecal coliform, free residual chlorine, hydrogen ion concentration, and turbidity are analyzed in 42 water tanks, which are also considered conform every month.
3.9.6	*Advanced Indicator* *Achievement of identified best practice related to targets in terms of good water governance shall be quantified.*

No

Comment	This advanced indicator has not yet been addressed by the site, the evidence presented did not meet the requirement of this advanced indicator. 1.External Water Management Governance - Samsung Electronics is establishing internal water management goals and governance systems that are linked to the national basin plans, water-related public policies, and ongoing initiatives of the "National Water Management Master Plan for '21-30" published by the Ministry of Environment. In addition, we check the master plan for water supply maintenance of the relevant local governments to confirm the mid- to long-term plans for water supply of the local governments. Regarding water reuse, we check the "National Water Reuse Basic Plan" to confirm mid- to long-term reuse policies and implementation plans. - In addition, we are preparing a water resource-related consultative body with K-water to maintain a close cooperative relationship between the central government and industry to respond to external water resource issues. 2. Internal Water Management Governance - Samsung Electronics receives water from the government or companies that provide water resources and uses it mainly for product manufacturing processes, and some uses water for drinking and household use. In particular, if the quality of water is reduced or there is insufficient water, production will be disrupted or the cost of water treatment will increase rapidly. In addition, if a supplier's production is disrupted due to a lack of sufficient quality freshwater, product production and customer delivery may be disrupted. - Accordingly, for intensive water management, each business site carries out tasks such as establishing strategies/goals for water management, performance management, and operating system based on the environment team. For this internal system, our water resource policy is disclosed throughout the company including all legal entities through the annual CSR report. 3. External Water Initiatives - In order to respond to water risks at business sites, we are establishing a response strategy by applying the international water resource management techniques of FAO, WBCSD, and WRI. To minimize the deterioration of water resources, we set a mid- to long-term goal of 50 tons/billion won by 2020 and disclosed it to the public. - Our company declared a new environmental strategy and declared a strategy to maintain the water withdrawal from nature without increase even if the estimated water withdrawal in 2030 will be more than doubled to preserve water withdrawal. - In order to fulfill our water resource responsibilities jointly through the pledge of water resource responsibility and joint action, we signed a ‘one company, one river’ joint agreement with the local environmental agency to promote ecosystem conservation activities.
3.9.7	*Advanced Indicator* *Achievement of identified best practice related to targets in terms of sustainable water balance shall be quantified.* — Yes
Comment	The site has quantified their best practice for water balance as is seen from the evidence attached, in the form of monthly KPI management of water conservation data.
Score	8
3.9.8	*Advanced Indicator* *Achievement of identified best practices related to targets in terms of water quality shall be quantified* — Yes
Comment	The site has quantified their best practice for water balance as is seen from the evidence attached. This demonstrates that the site has improved the river water quality (grade 3 to grade 2) by reducing the effluent ecotoxicity. The site also supplied supporting data on the site's continuous improvement process for the site's effluent.
Score	8

3.9.9	*Advanced Indicator* *Achievement of identified best practices related to targets in terms of the site's maintenance of Important Water-Related Areas have been implemented.*	Yes
Comment	The site has implemented best practice for IWRAs as per the evidence attached, which includes, but is not limited to, the following: - Evidences of stream restoration, from results in Final Report of Osan Stream Survey. - Evidence of expansion of stream survey scope - 2022 DS River Water Quality and Ecosystem Survey (Giheung-Osan Stream) - 2022 DS River Water Quality and Ecosystem Survey (Hwaseong-Woncheonricheon)	
Score	8	
3.9.10	*Advanced Indicator* *Achievement of identified best practice related to targets in terms of WASH shall be quantified.*	Yes
Comment	The site has quantified only the test results with regards to best practice quantification for WASH. 1. tank test result - test subject : 42 Giheung/Hwaseong/DSR tank - test item : general bacteria, total coliform group, fecal coliform, free residual chlorine, hydrogen ion concentration, turbidity - test result : conform 2. drinking water test result - test subject : 236 Hwaseong sites - test item : total coliform group, turbidity - test result : conform	
Score	4	
3.9.11	*Advanced Indicator* *A list of efforts to spread best practices shall be identified.*	Yes
Comment	The site has shared their own experiences of best practice for water efficiency and water quality monitoring on a weekly basis, they are a member of International Roadmap Device and Solutions Taskforce in which IT companies meet and share experiences. There is a presentation which shows the subjects which are discussed at these meetings. This is an excellent platform for collaboration on water management issues. The site publishes on their website some of their best practices towards water replenishment. Information from Samsung 1. Sharing effluent reuse technology with partners - At the request of the partner company, Pyeongtaek A Gas, we shared the technology to reduce the amount of natural water withdrawal by reusing effluent. - Since July 22, the contents have been shared through the consultative body of the Ministry of Environment.	
Score	3	
3.9.12	*Advanced Indicator* *A list of collective action efforts, including the organizations involved, positions of responsible persons of other entities involved, and a description of the role played by the site shall be identified.*	Yes

Comment	The proposed collaboration between K-water and Suwon (sp) Municipality to re-use the city's sewage as incoming water. The project will take 5 years to construct the pipeline and works required to complete this. Information from Samsung. 1. Consultative body with basin-related stakeholders - Samsung Electronics has formed a consultative body for water resource management with stakeholders related to the Hangang River Basin: the Ministry of Environment, Korea Environment Corporation, local governments (Suwon, Pyeongtaek, Hwaseong, Osan, etc.), Korea Water Resources Corporation, and the Han River Basin Environment Agency. 2. Green Business Council - Since 2018, the Green Business Council has been formed with the Han River Basin Environment Agency and local officials to hold regular policy meetings. - This meeting is a place to discuss the impact of business activities such as rivers and ecosystems near the company and come up with countermeasures. - Among them, a working-level council, a small organization, is formed to separately conduct working-level consultations more than 10 times a year.
Score	8

3.9.13	*Advanced Indicator* *Evidence of the quantified improvement that has resulted from the collective action relative to a site-selected baseline date shall be identified and evidence from an appropriate range of stakeholders linked to the collective action (including both those implementing the action and those affected by the action) that the site is materially and positively contributing to the achievement of the collective action shall be identified.*	No

Comment

The site has provided insufficient evidence to conform to this indicator.

Information from Samsung
1. Expected effect of the country
◦ (restore nature) Reduce pollution load, improve river aquatic environment and water circulation
◦ (secure water reserve) Contribute to securing multi-purpose clean water by replacing existing water sources
◦ (living environment improvement) Provide a friendly environment such as improving odor, shelter and residents' welfare
◦ (climate change adaptation) Enhance study safety, establish stable water supply system at all times
◦ (water industry development) Foster high value-added water market and overseas expansion, promote technology advancement

2. Expected effects of local governments
◦ (revitalize the local economy) Expected to create sustainable green industry jobs*
* When the project cost of 600 billion won is executed, the employment effect is about 3,360 people (Considering the employment coefficient of 5.6)
◦ (promote regional development) Reduce total water pollution*, possible increase in development demand of local governments
* Considering the supply of sewage treatment plants in 2020 (94.5%), reuse is the best alternative to reduce the pollution load
◦ (financial incentives) When water reuse goals are achieved, incentives (state subsidy) are expected
◦ (generate revenue from reuse) Depending on the business and the way of participation, it is possible to create a source of income*
* Collect sewage water fees (direct participation in funding), partial allocate excess revenue (BTO-a), etc.

3. Expected effects of businesses
◦ (practise ESG management) Satisfy the corporate value required by the market and contribute to product sales
◦ (reduce water usage charges) It is possible to save 170 won/m3 imposed on the raw water of Paldang Dam.
◦ (secure clear water) It is expected to contribute to corporate management such as reducing reprocessing costs by receiving stable, high-quality water at all times.
* (reference) Samsung Electronics (Tangjeong) receives raw water produced from ultra-pure water as sewage reuse water (22,000□/day).

4	STEP 4: EVALUATE - Evaluate the site's performance.

4.1 *Evaluate the site's performance in light of its actions and targets from its water stewardship plan and demonstrate its contribution to achieving water stewardship outcomes.*

4.1.1 *Performance against targets in the site's water stewardship plan and the contribution to achieving water stewardship outcomes shall be evaluated.* in progress

Comment The site's WS Plan is too new for the site to have evaluated their performance against the targets in the plan. No evaluation was performed at the time of the audit.

Finding No: TNR-002030

4.1.2 *Value creation resulting from the water stewardship plan shall be evaluated.* in progress

Comment As the site has a newly developed WS Plan they are unable to demonstrated value creation from the plan, they can, however, demonstrate value creation from their water management activities. The site has assessed the value creation by providing information on the benefit of savings associated with water efficiency measures. The public interaction of Samsung on their water efficiency measures also has value to the site in terms of increased reputation as a company which takes the lead on water management. Within the CDP report on pg 19 they mentioned the increased brand value which has resulted in the work done by Samsung in this regards. However, they have not assessed the value created in environmental, social and cultural spheres for Samsung.

Information provided by Samsung
Samsung Electronics conducts a benefit analysis in consideration of the value creation effect and investment cost to create water-related mid- to long-term strategies.
In 2020, a total of 70,181,000 tons of water was reused, increased 1.2% from the previous year, and an average of 4,953 tons of water was saved per day through which we saved about 800 million won in water use costs per year.

Finding No: TNR-002499

4.1.3 *The shared value benefits in the catchment shall be identified and where applicable, quantified.* Obs.

Comment The site has provided shared value benefit to the catchment through their water discharge programme. The additional clean water which has been introduced to the rivers has allowed the eco-system to regenerate and the additional work to restore the area, undertaken through partnership with NGOs, has resulted in a previously degraded area being transformed into a vibrant riverine ecosystem and also a well-used area where people can sit and appreciate nature. the new bridge allows for a safe and pleasant throughfare for daily commuters.

Information provided by Samsung
We provide about 45,000 tons of effluent per day for use as river maintenance water. This provides a reduction in pollutant concentrations and an increase in water resources in the basin.

4.1.4 *Advanced Indicator*
A governance or executive-level review, including discussion of shared water challenges, water risks, and opportunities, and any water-related cost savings or benefits realized, and any relevant incidents shall be identified. Yes

Comment	The site presented a meeting in August 2022 with CEO where water conservation was addressed as an example. Information provided by Samsung 1. Water maintenance governance - The Water Reuse Expansion Committee was formed to hold regular meetings once a month. In order to increase the water reuse rate and reduce water intake, everything from technology development and evaluation to environmental licensing and construction activities is covered. 2. Example of decision-making - Water Reuse Expansion Committee : in 2022 May, we shared understanding of the composition of the committee, detailed action plans for each division, and checked the status of related approval and licensing progress. - DS/SDC ESG Environmental Safety Conference : As a committee composed of the DS division CEO and team leaders of related departments, the ESG and environmental safety agendas were announced and reports on the progress of the division's synergy tasks were carried out. This committee is held once a quarter. - DS Sustainability Management Meeting : At a regular meeting with the head of the DS division's management support department, the progress was checked in connection with our sustainability management strategy in each environmental and social sector. This meeting is held regularly once a month. - DS Sustainability Management Bureau Meeting : A meeting was held to review the promotion and implementation of sustainability management issues between the division and the business affairs bureau, led by the head of the DS division, and is held regularly once a month.
Score	3
4.2	*Evaluate the impacts of water-related emergency incidents (including extreme events), if any occurred, and determine the effectiveness of corrective and preventative measures.*
4.2.1	*A written annual review and (where appropriate) root-cause analysis of the year's emergency incident(s) shall be prepared and the site's response to the incident(s) shall be evaluated and proposed preventative and corrective actions and mitigations against future incidents shall be identified.* — Yes
Comment	The site presented a report for 2021 where all environmental incidents to-date have been reported. All incidents were considered to be minor. There is root cause analysis and corrective and preventive actions in the report. The worst incidents recorded were chemical and oil spills. The report was a summarised version of the environmental incident log which captures systematically all the environmental incidents recorded at the location. The report was addressed to Vice President. All at risk areas were observed by the audit team to have environmental drains which capture and contain any spills. Pollution risks are well controlled at the site.
4.3	*Evaluate stakeholders' consultation feedback regarding the site's water stewardship performance, including the effectiveness of the site's engagement process.*
4.3.1	*Consultation efforts with stakeholders on the site's water stewardship performance shall be identified.* — in progress

Comment

The site presented a meeting from June 2022, with 21 attendees from the environmental committee, local council, university attended the site and viewed the water management interventions undertaken by the site. This type of meeting takes place 4 times a year. More information on interactions with stakeholders has been presented below.

The site has conducted questionnaire surveys and asked the stakeholders their opinion on the site's activities. Although not related to water stewardship plan, the comments do pertain to the water management work which the site has implemented. The site has a well established history of engaging with stakeholders but needs to incorporate the water stewardship performance into this consultation.

Information provided by Samsung
The Ministry of Environment, local governments, and our company have formed a water reuse council to devise and discuss various scenarios for securing water.
1. Invitation briefing sessions for environmental group 2 times (`21.Nov.17, `22.Jun.8)
. Target : 24 Pyeongtaek Citizen's Environment Organization, 2 local educational institution
. Content : Description of the results of the river ecology survey around the business site, explanation of the status of wastewater treatment, tour of the wastewater treatment site, and Q&A session
2. Invitational briefing session for environmental workers ('22 3 times)
. Target : 60 Local environmental workers
. Content : Description of cutting-edge water management technology, sharing of environmental facility management know-how, tour of the wastewater treatment site
3. Communication with local residents (4 times a year)
. Operating a regular communication consultative body including the environment field with 27 resident representatives around the business site
* Hwaseong(since 2013), Yong-in(since 2014), Pyeongtaek(since 2018)
. Content : River purification activities around business sites, explanation of ecological survey results, discussion on environmental improvement activities, ESG publicity and Q&A session
4. Various other communication channels in operation
: 30 people in 6 departments at ESG dedicated organization and communication organization, operating a dedicated communication call center : Media publicity (Samsung Semiconductor Story https://www.samsungsemiconstory.com/, Youtube https://www.youtube.com/c/samsungsemiconductor/)
: Disclosure of specific water hazardous substance emission survey results (https://wems/nier.go.kr)

Finding No: TNR-002038

4.3.2 *Advanced Indicator*

The site's efforts to address shared water challenges shall be evaluated by stakeholders. This shall include stakeholder reviewing of the site's efforts across all five outcome areas, and their suggestions for continual improvement.

No

Comment

The site has not addressed this indicator at this time as their water stewardship implementation is too new.

The Ministry of Environment, nearby local governments, and K-Water of the Korea Environment Corporation checked the availability of reused water through consultation with suppliers and site visits, and are also reviewing the possibility through water quality testing.

4.4 *Evaluate and update the site's water stewardship plan, incorporating the information obtained from the evaluation process in the context of continual improvement.*

4.4.1 *The site's water stewardship plan shall be modified and adapted to incorporate any relevant information and lessons learned from the evaluations in this step and these changes shall be identified.*

in progress

Comment	The site's Water Stewardship Plan is too newly formed and therefore they cannot demonstrate how the plan has evolved from lessons learned. Information provided by Samsung Samsung Electronics has a process to evaluate plans and update the results through semi-annual environmental performance evaluation (committee). These standards will be updated with the contents applied to the Hwaseong site to implement AWS standards. The performance and improvement needs evaluated through this are delivered to the AWS TF group and senior management reporting meeting for sharing and feedback. Details on this will be posted in the CSR report issued annually. ***Finding No: TNR-002046***

5	STEP 5: COMMUNICATE & DISCLOSE - Communicate about water stewardship and disclose the site's stewardship efforts

5.1 *Disclose water-related internal governance of the site's management, including the positions of those accountable for legal compliance with water-related local laws and regulations.*

5.1.1 *The site's water-related internal governance, including positions of those accountable for compliance with water-related laws and regulations shall be disclosed.*

in progress

Comment

The site has provided evidence of it's water-related internal governance, including positions of those accountable for compliance with water-related laws and regulations but has not provided evidence of disclosure.

Information provided by Samsung
1. Disclosure of internal governance related to water
- Samsung Electronics is preparing mid- to long-term environmental management strategies and specific action plans to respond to the most urgent environmental agenda of the international community and minimize environmental impacts from corporate activities. Water resource issues are an important area that directly affects business operation and financial performance, and are reported to the Board of Directors, the highest decision-making body who oversees the main activities of the company on resource circulation.
- The CEO has the responsibility and authority for major issues such as establishing strategies for environmental management, identifying implementation tasks and executing investments. The CEO establishes an environmental management plan and reviews implementation performance by operating the company-wide sustainability management council and a company-wide consultative body composed of environmental executives together with the chief executives in each major sector. In addition, the environmental management TF establishes environmental management execution tasks and checks progress.
- At the environmental safety meeting by business sector, environmental management issues are monitored and major issues are discussed.
- The Eco Council establishes strategies for developing eco-friendly products and discusses performance. The Reuse Expansion Committee and the Environmental Conservation Committee regularly report to the CSO on water management and water pollutants.
- Such water-related internal governance is disclosed through CDP, web pages, and sustainability reports.

Finding No: TNR-002045

5.2 *Communicate the water stewardship plan with relevant stakeholders.*

5.2.1 *The water stewardship plan, including how the water stewardship plan contributes to AWS Standard outcomes, shall be communicated to relevant stakeholders.*

in progress

Comment

The site's Water Stewardship Plan has only recently been developed and has not been shared with stakeholders. The site has provided evidence of much water related activities which has been shared with stakeholders but this does not meet the requirement of the indicator.

Information provided by Samsung
1. Stakeholder communications
- Samsung Electronics discusses its water management strategy with stakeholders through the Reuse Committee hosted by the Ministry of Environment.
- Samsung Electronics' water management policy, water consumption, discharge amount, and recycling amount are disclosed through the online sustainability report on our website.
- Analysis of water-related risks according to overall management is analyzed by FAO Aquastat, WBCSD Global Water Tool and WRI Aqueduct.
Samsung Electronics publishes its CSR report annually and discloses information on water resources to key stakeholders such as employees, local communities and NGOs. In addition, Samsung Electronics conducts river ecosystem conservation activities with NGOs and the communities.

Finding No: TNR-002028

5.3 *Disclose annual site water stewardship summary, including: the relevant information about the site's annual water stewardship performance and results against the site's targets.*

5.3.1 *A summary of the site's water stewardship performance, including quantified performance against targets, shall be disclosed annually at a minimum.*

in progress

Comment

The client usually discloses environmental performance via the CSR report annually. Evidence attached. Although there is useful environmental information on performance in this report it is not specific to water stewardship. This should be amended going forward.

Information provided by Samsung
1. Target achievement outcome
- Every year we publish CSR report and disclose information about water resources to local communities and stakeholders.
- Samsung Electronics is maximizing the water reuse rate by carrying out daily saving activities such as optimizing business sites, replacing old equipment, and improving operating standards, as well as structural improvement activities such as manufacturing process improvement and the establishment of a recycling system. The semiconductor business site, which uses a lot of water, saved an average of 6,857 tons of water per day by changing the process control value, changing the wastewater treatment method, and optimizing the operation. In addition, the water reuse rate is maximised by carrying out structural improvement activities such as improving manufacturing process and establishing a reuse system. As a result, in 2021, a total of 93.94 million tons of water was reused, increased 34% from the previous year. In the future, we are planning not only to further expand the reuse of water, but also to reuse the effluent from public sewage treatment plants.

2. The way performance is disclosed
- We'll many activities for SDGs #6,9,15. First, we manage water risks at our sites& monitoring water resource.
- We plan to continuously increase the amount of water recycled through water resource risk management and water resource monitoring.
- Second, As a part of water-related human rights and health policy we completed installated semi-permanent drinking water facilities with Scientists and Engineers Without Borders in Vietnam.
- Third, we're confirming the ecological status of the surrounding rivers with professional institution.

Finding No: TNR-002524

5.3.2 *Advanced Indicator*
The site's efforts to implement the AWS Standard shall be disclosed in the organization's annual report.

No

Comment	The site has not fully implemented the Standard at the time of the therefore has not yet had the opportunity to disclose in the annual report.	
5.3.3	*Advanced Indicator* *Benefits to the site and stakeholders from implementation of the AWS Standard shall be quantified in the organization's annual report.*	No
Comment	The site has not fully implemented the Standard at the time of the therefore has not yet had the opportunity to disclose in the annual report.	
5.4	*Disclose efforts to collectively address shared water challenges, including: associated efforts to address the challenges;engagement with stakeholders; and co-ordination with public-sector agencies.*	
5.4.1	*The site's shared water-related challenges and efforts made to address these challenges shall be disclosed.*	Yes
Comment	The site has collated their shared water challenges in a robust manner, in the CDP Report attached Information provided by Samsung . Shared Water Issue Priority - The process of reviewing and analyzing water resource issues in the watershed with stakeholders was selected, and the resolution of water shortage was selected as the biggest issue. - There is a prospect that the supply of Paldang Dam, the source of water intake, may become insufficient in the mid- to long-term (National Water Reuse Basic Plan), so we plan to establish and implement a mid- to long-term water intake reduction strategy to contribute to the contribution of water resources. In order to reduce the amount of natural water withdrawal, we established a strategy to treat and reuse the effluent from public sewage treatment plants, and are in the process of establishing a strategy to use the Paldang supply for other uses by using it as industrial water. 2. Shared water problem solving method and communication - Some of our plants discharge wastewater to nearby rivers. The residents of nearby rivers use the water discharged by Samsung Electronics as agricultural water for farm households. Therefore, quality of discharged water should be reflected in the risk assessment. We also monitor the quality of water resources in the region and open water treatment facilities and processes to public through local communication channel. - Our domestic semiconductor plant discloses the results of the ecological environment survey in the nearby watershed to local community representatives through annual sustainability reports and regular communication councils	
5.4.2	*Efforts made by the site to engage stakeholders and coordinate and support public-sector agencies shall be identified.*	Obs.

Comment	This site engages with high level experts when encountering water challenges, they work up a solution and disclose to stakeholders on their actions. The site shares information relevant to each type of stakeholders. Although not formally prepared for doing this, the site is already managing this type of interaction well. The site has not provided evidence of the engagement but extensive evidence has been provided in previous indicators. Information provided by Samsung 1. Site's water management effort - Samsung Electronics is operating an external consultative body composed of the Ministry of Environment, the Han River Basin Environment Agency, the Environment Corporation, K-water, Suwon City, Pyeongtaek City, Osan City, and Hwaseong City to implement the reuse of effluent from public sewage treatment plants for the purpose of reducing water withdrawal in the mid- to long-term. 2. Response to water management regulations - Regulators are reflected in water risk assessment as an evaluation element. Regional regulatory and tariff changes affect water operations and regulatory compliance. Samsung monitors changes in regulatory policies or the emergence of new regulators. When establishing regulatory policy by regulators, we indirectly involved in policy making by communicating feedback. In addition, we attend policy briefing sessions of regulatory agencies for regularly monitor policies that are changed. When establishing the policy of the regulatory agency, we communicate the opinions of the company through the communication channels of the association and indirectly participate in policy formulation. - For example, our domestic business sites every year, we disclose related information such as water consumption and water pollutant emissions. (https://www.envinfo.kr/member/open/environment.do)
5.5	*Communicate transparency in water-related compliance: make any site water-related compliance violations available upon request as well as any corrective actions the site has taken to prevent future occurrences.*
5.5.1	*Any site water-related compliance violations and associated corrections shall be disclosed.* ✓ Yes
Comment	The site has shared the environmental incident register which shows that no significant events have occurred. They have a Green Business report which reflects that no incidents have taken place. N/A if there are no violations.
5.5.2	*Necessary corrective actions taken by the site to prevent future occurrences shall be disclosed if applicable.* ✓ Yes
Comment	The site has not had any incidents but has a corrective action procedure to handle this should it arise. 1. Regulatory violations - In 2018-2020, there were 0 cases of violation of environmental laws.
5.5.3	*Any site water-related violation that may pose significant risk and threat to human or ecosystem health shall be immediately communicated to relevant public agencies and disclosed.* ✓ Yes
Comment	Information provided by Samsung 1. Regulatory violations - In 2018-2020, there were 0 cases of violation of environmental laws. 2. Disclosure of violations - Through the environmental information disclosure system (env-info.kr/member/main/main.do), annual water usage and water pollutant emissions are disclosed.

Photographic Evidence from Audit

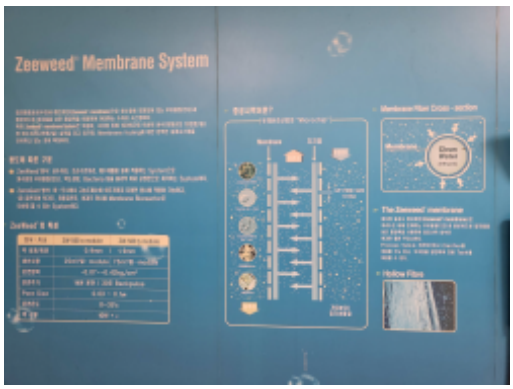
Yes

Real-time monitoring data at control room

[SecuCam]taewoan.koo@samsung.com_20221107101432.jpg

Samsung discharge point into the river

IMG_5915.jpg



[SecuCam]kiwoo55.lee@samsung.com_20221107103850_1.jpg

Osan Riverine Restoration Project

IMG_5919.jpg

[SecuCam]taewoan.koo@samsung.com_20221108131737.jpg

Samsung 2nd discharge point into the river after temperature correction

IMG_5906.jpg

Water treatment

[SecuCam]taewoan.koo@samsung.com_20221107121029.jpg

Samsung Temperature correction facility

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Osan Restoration Project

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