

Welcome to your CDP Climate Change Questionnaire 2020

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

ASELSAN is a face of technology in Turkey for decades and an inspiration for the manufacture of electrical /electronic equipment since its establishment in 1975.

ASELSAN's vision is being a national technology company that maintains its sustainable growth by creating value in the global market; preferred due to its competitiveness, trusted as a strategic partner, and caring for the environment and people.

Today ASELSAN is a world class brand in expanding systematically into the local and global markets, with over \$2.2 B in revenue and almost 8,000 employees. ASELSAN has become a high technology, multi-product defense electronics company by introducing state-of-the-art equipment and systems solutions for both military and professional applications in 3 continents and over 60 countries.

ASELSAN is a technology provider not only for the military but for Turkey in general. Military technologies are translated into novel products in a wide array of areas such as public safety, transportation, health, energy and automation systems, communication and high-end agricultural technologies. In addition to meeting the national technological needs in line with the mission, ASELSAN also enjoys the contribution of its export contracts to the progress of Turkey.

ASELSAN operates under five business sectors:

- Communications and Information Technologies Business Sector (HBT): Tactical Radios, Tactical Area Communication Systems, Avionic, Satellite and Naval Communication Systems, Public Safety Communication Systems
- Radar, Electronic Warfare Business Sector (REHIS): Radar Systems, Electronic Warfare Self Protection Systems, Electronic Warfare Intelligence and Attack Programs
- Defense Systems Technologies Business Sector (SST): Weapon Systems, Command Control (C4ISR) Systems, Naval Combat Systems, Air and Missile Defense
- Microelectronics, Guidance & Electro-Optics Business Sector (MGEO): Electro-Optic Systems, Guidance & Unmanned Systems, Avionic Systems, Microelectronics
- Transportation, Security, Energy, Automation & Health Systems Business Sector: Transportation Systems, Security Systems, Traffic and Automation Systems, Energy Systems, Homeland Security Systems, Health Systems.

The Company maintains engineering operations in Ankara, production and engineering operations in Macunköy, Akyurt and Gölbaşı. General Management is located in Ankara Macunköy. Some management offices are located in Istanbul Teknopark.

The Macunköy Facility was established over a total area of 186,000 m2 of which 110,000 m2, is closed. ASELSAN Macunköy Facility is home to the CEO, Communications and Information

Technologies Business Sector and Defense System Technologies Business Sector and Transportation, Security Energy Automation and Health Business Sector.

The Akyurt Facility was established on a total area of 231,000 m2 of which 54,000 m2 is closed. The Microelectronics Guidance and Electro-Optic Business Sector is located in the ASELSAN Akyurt Facility.

The Gölbaşı Facility was established in the Gölbaşı district of Ankara, and houses production plants for radar and electronic warfare systems for land, air, sea, space and unmanned platforms. This Facility was established on a total area of 350,000 m2, of which 75,000 m2 is closed. The Facility, the construction of which began in 2013, was inaugurated in 2015. In the reporting year two new office buildings Teknokent (Hacettepe) and Teknopark (İvedik) were included in the boundaries.

In ASELSAN, where decreasing carbon emission is one of the strategic goals, carbon emission is monitored since 2009. In 2018 ASELSAN was ranked in A (-) band, she is the first and only company that is ranked with the highest initial score among Defense Industry firms in Turkey and in the Region, participating in CDP survey. ASELSAN has decreased carbon emission significantly through its efforts, and continues its operations by increasing momentum in the fields of increasing energy efficiency in production, giving priority to production technologies that decrease carbon emission, switching to use of energy that does not cause carbon emission. Having certifications for ISO 14001 EMS and ISO 45001 WHS-IMS System; ASELSAN proceeds to take part in pioneer applications through actualization of national and international initiatives. In 2019, ASELSAN was the first company to initiate the zero-waste project in Turkey.

The evaluation of corporate governance rating performed by SAHA Corporate Governance and Credit Rating Services were concluded during the last quarter of 2019. According to the review, the score of 12.12.2018, 9,20 was updated as 9,29 out of 10 on 12.12.2019. ASELSAN is among the 15 firms that were approved to be included in BIST Sustainability Index back in 2014, and preserved its place in the index since then.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Reporting year	January 1, 2019	December 31, 2019	No

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Turkey

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

TRY

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	<p>The Board Chair who has been assigned as CEO as of April 27, 2018 has a direct responsibility for climate related issues on behalf of the Board and EC. The CEO also has an execution responsibility in the field of social responsibility and environment. All members of the Board are responsible from the economic performance of the Company.</p> <p>The board consider climate-related issues when reviewing and guiding their business strategy. Following the Strategic Plan, the Board carry out oversight power on Sustainability Committee's Program integrated with climate related issues impacting economic, social and environmental performance of the company. In order to conduct its responsibilities ASELSAN's Board of Directors formed three committees:</p> <p>Audit Committee, Corporate Governance Committee, Early Detection and Management of Risk Committee. The 3rd one is comprised of two Board members who ensure the determination of the operational, strategic, financial and other climate related R&Os.</p> <p>ASELSAN CDP Execution Group was established in 2019. This group is working under the presidency of Corporate Management Vice President who is a member of Executive Board. The group's goal is to carry out science-based target studies and strategy review with scenario-base analyses. In this group there is one representative from each sector chair, including financial affairs and strategy department. Energy reduction projects that will serve as a basis for setting targets are also reported to the same group. In the reporting year, the Corporate Management Vice President started to assist the Board of Directors in fulfilling</p>

	oversight of CDP related issues with the collaboration of ERM within the organization.
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C1.1b

(C1.1b) Provide further details on the board’s oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	The Board review and guide climate related risk management policies as scheduled. The Corporate Management Vice President who leads the Sustainability Committee, briefs the executive committee (EC) of ASELSAN about climate related developments and practices by bringing the attention of the EC to social, legal and environmental R&O's that may have an impact on the Risk Management Policy of the Company. The CEO and the Board of Directors oversee policy by considering global climate related issues, government relations and corporate responsibility including reviewing and providing oversight of the Company's Environmental Sustainability Program. The board consider also climate-related issues when reviewing and guiding the whole business strategy, plans, risk management policies, budget plans as well as, setting organizational performance objectives, monitoring implementation and performance, and overseeing major capital expenditures, acquisitions and divestitures. In 2019 the following decisions were carried out for addressing climate-related risks and opportunities. As a smooth transition to the new ISO 14064: 2018 Standard and also in order to understand and manage the financial and temporal burdens of the supply chain management, it was necessary to step into the process more quickly. Adhering to the agenda; First, key personnel were trained. Then, workshops were executed, and in the 4th quarter of 2019, the procurement management process was initiated with internal and external communication activities. This process will be effective at the first quarter of 2021. At the end of these activities; The accurate risk detection and

		<p>assessment of our global suppliers located in vulnerable regions will be specified.</p> <p>And also, the criteria to evaluate the significant indirect emissions with their justification will be set-up. The boundary setting and assumptions related to supply and value chain emissions will be accurate, leading us to set a clear-cut new base year. With these efforts, a transition to LCA activities will be provided while strong and stable data source will be ready for Science Based Target setting.</p> <p>The second decision taken by the Board is as follows: ISO 50001:2018 Energy Management System preparations will be completed by 2020 and the certification will be provided in 2021.</p> <p>Another decision was to construct a new Leeds certified administrative building in Macunköy where emissions are at the highest rate. With this decision, future reduction targets will be met depending on the emission reduction project, in two years.</p>
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C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The direct responsibility for climate change within ASELSAN lies with Executive Committee headed by the CEO representing also the Board Chair.

The CEO informs the board of directors who oversight the company performance on climate related issues. The Board assign strategic and program management responsibility to applicable board committees. In order to conduct its duties and responsibilities in a healthy manner, ASELSAN's Board of Directors formed following committees to ensure the communication based integrated management of risks & opportunities.

Early Detection and Management of Risk Committee is comprised of two Board members. It is chaired by an independent Board member. Committee ensures the determination of the

operational, strategic, financial and other climate related risks and those risks are managed in compliance with company's enterprise risk-taking profile. The Committee assembles at least six times a year. It oversees the performance of the enterprise risk management system.

Audit Committee is comprised of three independent Board members. Its main duties are to ensure disclosure of the financial data and to oversee the functioning and effectiveness of the accounting, independent audit, internal audit and internal control systems of ASELSAN.

Internal Audit Presidency's main duties are to ensure the follow-up of enterprise risk management system aligned with ASELSAN's strategy, politics and other process. It oversees the functioning and effectiveness of the risk management system processes. Internal Audit Presidency reports directly to Audit Committee and Board of Directors. The committee assembles at least four times a year

Enterprise Risk Management Coordination Committee, is responsible to assign a risk representative who has the duties to prepare risk detection and management documents and to make the coordination of related activities which are reported to Early Detection and Management of Risk Committee. ASELSAN's vision is to be the national defense industry company by maintaining its sustainable growth with creating value in the global market and to be preferred due to its competitiveness, to be trusted as a strategic partner, and to care for the environment and people. In line with this vision, the Company prepare five-year strategic plans that are updated every year, as well as operational plans and three-year budgets. Through this method, the Company's short- and mid-term targets are determined by taking long-term targets into account with resource planning, process improvement and other development activities. One of the EC core members who is the Vice President of Shared Services presides the Sustainability Committee for sustainability and climate related actions. Vice Presidencies carry out the necessary activities in line with the targets, while their performances are evaluated through the Balanced Scorecard Method.

The Sustainability Committee develops and implements economic, environmental and social sustainability strategies focusing on responsible consumption and production by setting targets to reduce the impact of identified risks and making performance reviews. The seize of identified opportunities are also discussed in this committee.

The Corporate Management Vice President is the authorized person who drives and adapts climate related decisions of the company. The activities are executed by the following positions in the Sustainability Committee: Management Director of Infrastructure and Facilities who performs energy related legal and operational issues in the operational field.

Finance Director, Strategy Management Director, Investors Relations Manager, Enterprise Risk and Process Manager, Supply Chain Management Manager provide all guidance on their own expertise about climate management issues by reporting to Vice President.

The Integrated Management Systems (IMS) Manager works with all facilities' leaders to drive an integrated, enterprise-wide management that includes the products, services, processes, operations, contractors and employees. IMS ensures to drive the calculation of carbon footprint value of the facilities annually in compliance with ISO 14064 International Standard for Greenhouse Gases Emissions Inventories and Verification, making notifications to national/international initiatives in connection therewith. ASELSAN's objective "to minimize the impact on global climate change by monitoring and reporting of greenhouse gas emissions in a transparent approach" was included in the Environmental Management System Policy by the top management of ASELSAN, with the guidance of IMS. The information forming base on climate related R&Os are updated first by the IMS position. With the collaboration of internal

control manager, the risk mapping is updated for identifying the potential risks of flooding and storms, but also the consequences of these events: environmental, property damage, impact on the business, etc.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	ASELSAN incentives certain behaviors and performances for responsible production and consumption.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction target	The CEO carries out performance assessments and decisions in line with support to Sustainability and CDP Reporting. Performance of the activities' incentive metrics is reported to the Board of Directors and factor into executive compensation through the Balanced Scorecard Method.
Other C-Suite Officer	Monetary reward	Emissions reduction project	The Corporate Management Vice President carries out performance assessments and decisions in line with support to Sustainability and CDP Reporting. Performance of the activities' incentive metrics is reported to the Board of Directors and factor into executive compensation through the Balanced Scorecard Method.
Environment/Sustainability manager	Monetary reward	Emissions reduction project	Performance indicators cover CO2 emission reduction, energy and natural resources consumption reduction, support for Sustainability and CDP reporting. And these indicators find place as a target in the Balanced Score Card Method. The

			<p>corporate and personal performance is evaluated through the Balanced Scorecard Method and the realization scores has a direct impact on the salary increase.</p>
All employees	Monetary reward	Efficiency target	<p>In ASELSAN, there is suggestion system called "Idea Management System" in the intranet since 2013. This system is accessible for all employees. An employee who has an innovative idea on climate change, energy efficiency or improvement on any other topic can send his/her idea note to the Strategy Department through this suggestion system.</p> <p>The Strategy Department evaluates the idea and if it is feasible, the idea note is shared with the related department. The employee is entitled with a monetary reward if the idea is assessed to be applicable and profitable for the company.</p> <p>If the proposal results with an emission reduction the reward is 3 gold coins.</p> <p>Other rewards:</p> <p>1-In the districts designated in Ankara, together with the Ministry of National Education, we are organizing an environment, energy and climate change painting competition (classes 5.6.7.8). Some gold coin rewards are given to the top three.</p> <p>2. We hold a Question Cube competition every 3 months among ASELSAN employees. In the Question Cube competition, we ask to the staff 6 questions about climate change and the environment. We reward 3 people chosen by lot from among those who answer the questions correctly.</p> <p>3. The Information Cube is published quarterly. Here we deal with issues such as climate change, cardboard cup reduction, energy reduction</p> <p>4. We added environmental clauses to the competition held every year among the Sector Presidencies. Thus, we try to improve the employee knowledge in terms of raising awareness.</p>

			The zero- waste project behavior change pursuance with training was the first topic of the reporting year.
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C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	1	Major global, national and enterprise risks and opportunities which have potential impacts on our operations and life of our assets according to the profile of the climate related risks that we may face are considered in 1 year period for short-term time horizon.
Medium-term	1	3	Major global, national and enterprise risks and opportunities which have potential impacts on our operations and life of our assets according to the profile of the climate related risks that we may face are considered in 3 years period for medium-term time horizon.
Long-term	3	5	Major global, national and enterprise risks and opportunities which have potential impacts on our operations and life of our assets according to the profile of the climate related risks that we may face are considered in 5 years period for long-term time horizon.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

At ASELSAN's practice; there is a great bonding between Corporate Strategy and Enterprise Risk Management system. We believe this understanding contributes positively on ASELSAN's sustainability. In this approach; every risk factor that could be an obstacle by meaning of achieving ASELSAN's goals, are being defined. In risk assessment phase ASELSAN applies a risk matrix where risks are placed by their impact and likelihood. This is a 5x5 matrix and the impact degree is ranged from Very Low to Very High. Furthermore; to evaluate, to monitor and to diversify the risks better, every risk is categorized under 4 components (Financial, Operational, Compliance and Strategic).

In order to minimize and prevent from the impacts of climate change; yearly a very comprehensive insurance policy is being taken by ASELSAN. Risks such as; snowstorm, tornado, flood (increase in severity and frequency of extreme weather events) are some of the subjects of this policy, moreover every employee and ASELSAN's all four facilities are fully covered.

Financial risks and non-financial risks that can significantly have an impact on our business objectives or financial condition vary in different conditions. Based on our context of risk assessment procedure, the substantive risks can be measured depending on assessment factors; impact of occurrence and size of potential impact. In case to find out whether the issue is a significant risk or not, we conduct a risk assessment according to these criteria to prioritize the risk. The assessment method is applicable for every risk.

ASELSAN defines substantive potential impact on its business as the change to operations and cost and considers reputation risks having negative impact on company's own business, operations, revenue, profitability and overall market value in Borsa Istanbul.

On the financial side, an impact which results >3% decrease in revenues is defined as a substantive impact.

Sustainability and environment friendly practices are gaining more and more importance all around the globe. The investors' approach to companies' such practices is also evolving accordingly. As days pass by, the number of corporate funds which are including sustainability as a separate parameter to their evaluation criteria and even investing only to firms with high ESG scores are increasing. Our efforts on climate change mitigation will help ASELSAN positively differ from other publicly traded companies on the eye of current and prospective investors. Taking these concerns into account, we consider the most important aspect of climate change that influences the strategy as the opportunity to develop a green business. **From this point of view, ASELSAN foresees climate change not only as a risk factor but also as an opportunity for widening its environment friendly solutions, as ASELSAN is a technology company.**

We define substantive financial impact; as risks ending with a daily production disruption in our main facilities.

The risks are identified and assessed based on their potential impact to cause a facility shut-off. In the reporting period, the substantive impact of a daily shut-off of our production facilities was around 57 mio TRY.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

- Direct operations
- Upstream
- Downstream

Risk management process

- Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

At both company and asset levels, climate change related risks and opportunities include, changes in fuel and energy prices, climate related laws and regulations, global competitiveness, changing customer needs and suppliers' profile, potential threats of national security and employee related issues. The climate related risks and opportunities at the company level are assessed by the Sustainability Committee. Risks and opportunities associated with the environment or climate change are often coupled with energy-related activity and are subject to our Risk & Opportunity Evaluation Process. The Strategy Department in coordination with the Sustainability Committee is responsible of setting targets to reduce the impact of identified risks and making performance reviews to assess whether the climate related targets are met and also decides on how and when the identified opportunities can be seized. Sustainability Committee and the Early Detection and Management of Risk Committee review and finalize all climate related risk analysis and present the critical risks that are assessed to be of "High" importance to the Board of Directors according to the scoring methodology defined below. They also present a report to Board of Directors about the financial and operational measures that need to be taken by ASELSAN to prevent the occurrence of the identified risks. The Board of Directors decides which measures shall be applied and the evaluations are then reported to the Early Detection and Management of Risk Committee to be monitored and brought into action.

Additionally, when the relative significance of climate-related risks is determined by the strategic decision makers after a comparable structured review, they are itemized as implementation plan within the scope of ISO 14001:2015 for a detailed assessment and planning.

The risks are first analysed at the facility and activity level as project risks, operational risks, management and adaptation risks. These are assessed according to the methodology given as process(es) for managing climate-related risks and opportunities. The identified risks are then classified to be; very low, low, medium, high and very high (critical). The results of the evaluation are reported to the EC, which in turn makes decisions. ASELSAN's overall risk management objective is to reduce controllable risk impacts and minimize the impact of the ones that cannot be controlled. We analyse short, med and long-term risks and opportunities having the potential of substantive strategic and financial impact on the organization.

On the financial side, an impact which results >3% decrease in revenues is defined as a substantive impact. We define substantive financial impact; as risks ending with a daily production disruption in our main facilities.

The risks are identified and assessed based on their potential impact to cause a facility shut-off. In the reporting period, the substantive impact of a daily shut-off of our

production facilities was around 57 mio TRY.

Process(es) for managing climate-related risks and opportunities: The major climate related risks and opportunities at the asset level are the events that may have a major impact on the GHG emissions of ASELSAN.

These events usually are related to energy and fossil fuel consumption.

Renovations in product design enabling less energy consumption are assessed as an opportunity, and increased consumption of fossil fuel during production is assessed as a major climate related risk. The process is described as follows:

First, the probability of occurrence of the identified risk is scored as given below:

1. Very low: 0%-10% occurrence
2. Low: 11% - 30% occurrence
3. Medium: 31% - 70% occurrence
4. High: 71% - 90% occurrence
5. Very high: 91% - 100% occurrence

Then, the impact of the identified risk event is determined:

1. Not important: Financial and reputation impact is negligible
2. Low: Reasonable financial and reputation impact
3. Medium: Likely to have moderate financial and reputation impact
4. Important: Material financial and reputation impact
5. Critical: Crucial financial and reputation threat for ASELSAN

The risk rating matrix is compiled according to the combined score (risk level) as shown below.

According to this final score the risks and opportunities are prioritized:

0-2 Very low: No immediate action

3-4 Low: No immediate action but the risk event needs to be monitored annually

5-12 Medium: Actions need to be planned

13-16 High: Poses a threat and shall be dealt with. The risk event and the measures to be applied are reported to the Board of Directors

17-25: Critical: Immediate actions need to be planned.

The opportunities are evaluated by related department and reported to the Board of Directors. If there are new opportunities detected for med-term and long-term time horizon, they are integrated in the annual budget planning.

Loss of productive labor force as a consequence of health problems caused by environment and climate related problems ending by facility shut-off, is an example of physical risk assessment realized by ASELSAN's OHS department.

In 2023, zero waste project will be implemented in Turkey. With zero waste application, it is aimed to earn 20 million dollars annually and employ 100 thousand people in the country, the date on which all regulations will come into full force.

Zero-waste transition base R&O assessment was put into practice by Integrated Management Department in 2019. As the best proof of emission mitigation opportunity coupled from upstream and downstream activities, within the framework of ASELSAN's waste management; By mitigating 137 tons of waste starting from the second quarter of 2019; 3 tonnes of

CO₂-e was reduced, and 72.000 TL was saved. These figures will increase further depending on the number of employees and expansion activities for every reporting year.

Another example of transition risk is to make some additional modifications in the performance parameters of designed products as a consequence of climate related

conditions. (Specific confidentiality constraints prohibiting the disclosure)
 ASELSAN has been in BIST-50 Index of Borsa Istanbul as well as Corporate Governance Index since 2012 and Sustainability Index since its inception and has also been in BIST-30 Index since April 2017. Corporate governance rating is a prerequisite for presence in Corporate Governance Index of BIST and with the latest revisions in Corporate Governance Principles; sustainability has become a new dimension for corporate governance rating of companies. Thus, climate change aspect is now embedded in the corporate governance rating. The evaluation of corporate governance rating performed by SAHA Corporate Governance and Credit Rating Services were concluded during the last quarter of 2019. According to the review, the score of 12.12.2018, 9,20 was updated to 9,29 out of 10 on 12.12.2019.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	<p>ASELSAN is always in compliance with current regulation, when a current regulation- based climate related potential risk is detected, it is forwarded to Enterprise Risk Management Coordination Committee Representative via “Risk Cards”. ASELSAN management identified with a form the risks and opportunities which have impact on Integrated Management Systems’ performance (IMS). This form is called AS-F-81-Environmental Risk and Opportunities Assessment Form. The climate related detailed R&Os (e.g. MRV, PMR activities etc.) are assessed based on the context of the company.</p> <p>Although ASELSAN is not in the scope of MRV; in 2019, Current National MRV regulation was reviewed with an approach of detecting potential risks that our industry may face in mid-term period referring PMR project of the Ministry.</p> <p>Sustainability Committee and the Early Detection and Management of Risk Committee reviews and finalizes all climate related risk analysis, and presents the critical risks that are assessed to be of high importance to the Board of Directors, according to process and the scoring methodology defined in C 2.2 They also present a report to Board of Directors about the financial and operational measures that need to be taken by ASELSAN to prevent the occurrence of the identified risks. The Board of Directors decides which measures shall be applied and the evaluations are then reported to the Early Detection and Management of Risk Committee to be monitored and brought into action.</p> <p>Additionally when the relative significance of current regulation risks are identified and assessed by the strategic decision makers after a comparable structured review, they are itemized as implementation</p>

		<p>plan within the scope of ISO 14001:2015 for a detailed management. Risk rating is classified as low- medium and high rate. When high rated climate related risks are identified, the action planning commence with the initiation of IMS department. Risks and Opportunities document is annually updated and reviewed with the collaboration of IMS Department and Enterprise Risk Management Coordination Committee Representative.</p>
Emerging regulation	Relevant, always included	<p>Emerging Regulatory risks indicate the potential increase in costs (carbon taxes related with energy and raw material or future cap & trade implementation plans) and the discouragement for the establishment of new production facilities. These potential threats are always assessed by the Sustainability Committee who is responsible of bringing attention to these potential impacts. When an emerging regulation-based climate related potential risk is detected, it is forwarded to Enterprise Risk Management Coordination Committee Representative via "Risk Cards". ASELSAN management identified with a form the R&O's which have impact on Integrated Management Systems' performance. (IMS). This form is called AS-F-81- Environmental Risks and Opportunities Assessment Form. The climate related detailed R and O's are assessed based on the context of the company. In 2019, Draft National Climate Change Law and By Law on Greenhouse Emission Trading were studied covering mid-term time period. The Sustainability Committee and the Early Detection and Management of Risk Committee reviews and finalizes all climate related risk analysis, and presents the critical risks that are assessed to be of high importance to the Board of Directors according to process and the scoring methodology defined in C 2.2 They also present a report to Board of Directors about the financial and operational measures that need to be taken by ASELSAN to prevent the occurrence of the identified risks. The Board of Directors decides which measures shall be applied and the evaluations are then reported to the Early Detection and Management of Risk Committee to be monitored and brought into action.</p> <p>Additionally when the relative significance of emerging regulation risks are identified and assessed by the strategic decision makers after a comparable structured review, they are itemized also as implementation plan within the scope of ISO 14001:2015 for a detailed management. Risk rating is classified as low, medium and high rate. When high rated climate related risks are identified, the action planning commence with the initiation of IMS department. Risk and Opportunities document is annually updated and reviewed with the collaboration of IMS Department and Enterprise Risk Management Coordination Committee Representative.</p>
Technology	Not relevant, included	<p>Substitution of existing products with lower emission options will not cause technology-based climate related risks for ASELSAN. There is a</p>

		<p>growing potential for low carbon technologies, like smart digital solutions, smart mobility, solar cells, insulation etc. for different sectors. Producing such technologies will enable ASELSAN to differentiate. In ASELSAN, every technologically developed product or service also serves an environmental and energy based transitional improvement and innovation. The Midas project is an example of this category and it is explained in opportunity 2.</p> <p>The potential is always assessed by the Sustainability Committee who is responsible of bringing attention to these potential impacts with the collaboration of research and development, production and other related departments. At company level major global and national risks that meet ASELSAN's risk management criteria are included in annual risk assessment reports. The Strategy Department in coordination with the Sustainability Committee is responsible of setting targets to reduce the impact of identified risks and making performance reviews. The Committee decides which risks and opportunities shall be reported to the Board of Directors according to process and the scoring methodology defined in C 2.2 These reports are presented to senior executives for subsequent follow-up.</p>
Legal	Relevant, always included	<p>Legal risks indicate increasing pricing of GHG emissions which could result in increased product prices. These potential threats are always assessed by the Sustainability Committee who is responsible of bringing attention to these potential impacts with the collaboration of production and other related departments. At company level low carbon products become more attractive for customers. This is an opportunity for ASELSAN who has the ability to produce technologies for low carbon products. The Strategy Department in coordination with the Sustainability Committee is responsible of setting targets to reduce the impact of identified risks and making performance reviews. The Committee decides which risks and opportunities shall be reported to the Board of Directors according to process and the scoring methodology defined in C2.2 These reports are presented to senior executives for subsequent follow-up.</p>
Market	Relevant, always included	<p>Market risks indicate increasing production costs due to changing input prices like materials, water, energy, etc. ASELSAN elaborates digital solutions for major defense industry companies in Europe and US. As a sub-contractor ASELSAN realizes the assessments about the effects of the products on climate change in order to be able to compete with the sector peers.</p> <p>These potential threats or opportunities are always assessed by the Sustainability Committee who is responsible of bringing attention to these potential impacts with the collaboration of production, purchasing, marketing and other related departments. At company level low carbon products become more attractive for customers. This is an opportunity for ASELSAN who has the ability to produce</p>

		technologies for low carbon products. The Sustainability Committee decides which risks and opportunities shall be reported to the Board of Directors according to the scoring methodology defined in C 2.2 These reports are presented to senior executives for subsequent follow-up.
Reputation	Relevant, always included	Reputation risks indicate potential impacts associated with negative perceptions experienced by the public around ASELSAN's carbon performance. These potential threats are always assessed by the Sustainability Committee who is responsible of bringing attention to potential impacts with the collaboration of production and other related departments. The Sustainability Committee decides which risks and opportunities shall be reported to the Board of Directors according to process and the scoring methodology defined in C 2.2. These reports are presented to senior executives for subsequent follow-up.
Acute physical	Relevant, always included	Acute physical risks indicate extreme weather events which can lead to higher operational costs due to supply chain disruption. as described in Risk:4. These potential threats are always assessed by the Sustainability Committee who is responsible of bringing attention to potential impacts with the collaboration of production, utility and other related departments. The Sustainability Committee decides which risks and opportunities shall be reported to the Board of Directors according to process and the scoring methodology defined in C 2.2. These reports are presented to senior executives for subsequent follow-up.
Chronic physical	Relevant, always included	Chronic physical risks indicate changed precipitation and droughts patterns which can have negative impact on energy management in the facilities as described in Risk:3. These potential threats are always assessed by the Sustainability Committee who is responsible of bringing attention to potential impacts with the collaboration of production, utility and other related departments. The Sustainability Committee decides which risks and opportunities shall be reported to the Board of Directors according to process and the scoring methodology defined in C 2.2 These reports are presented to senior executives for subsequent follow-up.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation
Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Company-specific description

The Paris Agreement bears high future possibilities of additional regulations coming into force in the future. The last negotiations of Climate Summit concluded and focused on the "rule book" which will bring along the operation of the compliance matters. Turkey has submitted its Intended Nationally Determined Contribution (INDC) to UNFCCC as part of Paris Agreement and has committed to reduce its GHG emissions by 21% from the Business as Usual (BAU) scenario until 2030. This commitment is going to be revised by Turkish Government. The cap and trade principle which is the main solution of the EU's policy to combat climate change is adopted by EU-ETS. For the purpose to be ready to the future commitment, this system was taken in the agenda of Turkish Ministry of Environment & Urbanization . The phase 2 of PMR project studies with the World Bank sponsorship, started in 2019, and pilot workshops and practices focusing on different ETS designs were practiced. Pilot implementations will be realized between 2020-2021. In 2019, the MoEU in line with the PMR-TurkSim project objectives focused on the differences in outcomes and strategies across different ETS designs, with the participating companies. In these workshops \$25/tCO_{2e} was fixed as the optimum option of carbon price for Turkey.

In a med-term time horizon this new system will have uncertainties which may result to pose some potential risks on ASELSAN such as; obligation to reduce the GHG emissions. Additional cost could be associated with "carbon pricing" resulting with an increase in operational cost. ASELSAN is not in the scope of MRV, but The National MRV regulation is likely to be revised; having the potential to bring additional emission quotas forcing our industry to face carbon cap allocation.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,336,358

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The average carbon price in the EU-ETS was 25 Euros per tonne in 2019, up by 9 euros compared to 2018.

ASELSAN's 2019 total Scope 1 CO₂-e emissions were 14,148 tons. If we were in the context of MRV system, 8,418 tonnes of total Scope 1 emissions would be taken into account for ETS. As carbon pricing figure, we used €25 in calculations.

For med-term time horizon financial implication is $8418 \times 25 = 210,450$ € (1,336,358 TRY, based on 2019 currency: 1€=6.35 TL) regarding to international cap & trade current system results.

But the expense could diminish after the energy efficiency projects which will be implemented in this period.

Cost of response to risk

200,000

Description of response and explanation of cost calculation

In order to manage this risk ASELSAN's Board chair assigned some sustainability committee members to participate the PMR meetings executed by the Ministry. This communication will prepare our company to this approaching system.

Internally we started to assess our energy saving potential and possible optimization points in our operations. It is planned to set Energy Management System ISO 50001:2018 in our facilities in the short term. The risk magnitude of impact on our operations will be reduced by these activities. Therefore, this risk will be likely to have less impact on our OPEX even after the foreseen time horizon.

Comment

Cost of managing this risk is approximately 200,000 TRY, covering management activities' related expenses to frame up energy management system in our facilities.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation

Mandates on and regulation of existing products and services

Primary potential financial impact

Increased direct costs

Company-specific description

In ASELSAN one of the primary goals is to increase the activities as a subcontractor for major defense industry companies in Europe and the US by providing services in such a way that enables the company to contribute to the development of global defense industry. However, as the environmental regulation especially in Europe is more advanced than Turkey, soon ASELSAN may face product labeling requirements. Carbon footprint assessment of all the products that is planned to produce as sub-contractors of European and American companies may force the company to perform a more detailed and enhanced analysis of the systems, including assessing the environmental impacts of the products throughout the whole life cycle (i.e. a detailed LCA). ASELSAN may also need to comply with Eco-Labeling standards such as EPD in order to be able to export the products and systems to the US and Europe, which may force to make changes in product design to be able to compete with the sector peers.

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

3,795,691

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

It is expected that these types of requirements will not exceed 0.5% of our OPEX.
(ASELSAN Annual Report-2019 Financial Information section for OPEX details)

Cost of response to risk

400,000

Description of response and explanation of cost calculation

We closely follow the Environmental regulations in our target markets, and whenever we see that there is a need for such action, we will perform the related environmental

analysis before it becomes a regulatory obligation.

ASELSAN is very meticulous in such actions and in the past many standards and reporting schemes such as ISO 27001, CDP, CMMI (Capability Maturity Model Integration) have been applied even before it was asked for by our clients. LCA thinking which is a new evolving requirement of ISO 14001: 2015 that our company was certified in the reporting year, is inherently in the concern of ASELSAN.

Comment

The cost may consist of acquiring consultancy and verification services regarding "Environmental Product Declaration". This cost of management was calculated for a same product family.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Chronic physical
Rising mean temperatures

Primary potential financial impact

Increased direct costs

Company-specific description

Featured in IPCC assessment reports our country is in a vulnerable location which could be impacted by extreme weather events. Our facilities may potentially be impacted by some big and sudden events due to extreme changes such as: Heat waves, floods, hail storms. This extreme precipitation could be cause to flood as seen as in recent years. There have been an increasing trend in Turkey's observed temperature and similarly in extreme weather events number since 1997. SCT 2015 reported that heavy rain/floods (26%), wind storm (25%), hail (12%), heat wave (11%), and lightning (4%) were recorded as the most observed disaster respectively in 2015. Although rare, 2 dust storm and 4 tornado also occurred in 2015. (Ref: Climate Change Projections for Turkey: Three Models and Two Scenarios- Turkish State Meteorological Service.) According to obtained results based on through three GCMs and two scenarios (RCP 4.5 and RCP8.5), the average annual temperature rising for 2016-2040 in Turkey is expected to vary between 1°C - 2°C. ASELSAN is located in Central Anatolia where she may face some significant impacts due to these conditions. Changes in temperature extremes will result in an increase in cooling demand in the summer period and heating demand in the winter period. The business continuity is ensured by the deployment of specific protection systems. This change may cause an increase in the energy expenses of the company.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

11,387,074

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

As the energy expenses constitute approximately 1% of our OPEX, this risk may increase our energy expenses. 50% rise will result in energy expenses to constitute over 1.5% of our OPEX.

ASELSAN Annual Report- 2019 Financial Information section for OPEX details

Cost of response to risk

0

Description of response and explanation of cost calculation

In order to manage this risk, we priorities managing the assets in a way to prevent excessive energy consumption by enhancing building and infrastructure insulation to be able to optimize the energy consumption and reduce both cooling and heating demand to an optimum level. With these precautionary projects, ASELSAN tries to be better prepared to temperature extremes.

The business interruption loss insurance is in place. Those risks are managed through our insurance process.

Comment

No monetary investments were made regarding managing this risk during the reporting period.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Upstream

Risk type & Primary climate-related risk driver

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Featured in IPCC assessment reports our country is in a vulnerable location which could be impacted by extreme weather events. Our facilities may potentially be impacted by some big and sudden events due to extreme changes such as: Heat waves, floods, hail storms. This extreme precipitation could be cause to flood as seen as in recent years. There have been an increasing trend in Turkey's observed temperature and similarly in extreme weather events number since 1997. SCT 2015 reported that heavy rain/floods (26%), wind storm (25%), hail (12%), heat wave (11%), and lightning (4%) were recorded as the most observed disaster respectively in 2015. Although rare, 2 dust storm and 4 tornado also occurred in 2015. (Ref: Climate Change Projections for Turkey: Three Models and Two Scenarios- Turkish State Meteorological Service). In this climate modelling study, it was tried to reveal the possibilities of future climate change for Turkey with the regional climate model. Had GEM2-ES Global Circulation Model outputs which is produced with RCP4.5 and RCP8.5 concentration scenarios have been used in the study, which are used CMIP 5 project and situated in the IPCC 5th Assessment Report.

ASELSAN is located in Central Anatolia. Regional temperature changes may cause sudden and important changes which may pose risks on the assets of our facilities, and also daily shut-off due to supplier activity disruption may occur. For the purpose to handle the problem, periodic emergency drills are performed, emergency action plans are prepared and implemented. The business interruption loss insurance is in place.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

56,576,309

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The financial impact figure is calculated based on sales or delivery figure of the impacted day.

The financial implication of a daily shut-off due to supplier activity disruption would not exceed 56,576,309 TRY

Calculation:(Revenues)13,012,551,133/ 230 (working days in 2019) = 56,576,309 (TRY)

Cost of response to risk

2,600,000

Description of response and explanation of cost calculation

The business interruption insurance is in place.

The cost is related with insurance premium value, covering only physical risk driver.

Those risks are managed through our insurance process.

Comment

Supplier and value chain engagement process is the management method of this risk driver. On a local level, we work on implementing more short- term solutions such as diversifying the supply chain. Activities to expand the ASELSAN Supplier Portal, which was put into use to ensure effective information exchange, have been accelerated. Apart from this, supplier communication and development with our "Powerful Together"platform developed specifically for our suppliers, infrastructure works for moving our works to a single interface have been completed and will be put into practice in the first quarter of 2020. The accurate risk detection and assessment of our global suppliers located in vulnerable regions will be specified. And also, the criteria to evaluate the significant indirect emissions with their justification will be set-up.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

The development of the hybrid man-oeuvre locomotive development project, is considered to be an opportunity due to the development of the railway infrastructure and the privatization of the rail vehicle transportation services in the upcoming period. The hybrid man-oeuvre locomotive uses battery and diesel generator power supplies. The use of a battery enables the use of a diesel generator operating in a smaller and more efficient area as it provides advantages in terms of vehicle usage scenarios. The battery can be charged externally without using the diesel generator, as well as thanks to the regenerative energy that emerges during the braking of the vehicle. In this way, the braking energy to be wasted can be recovered. All this results in lower fuel consumption and thus lower CO2 emissions. In addition, operating and maintenance costs are reduced thanks to the short running time of the diesel generator and the use of a low amount of brakes.

Since the diesel generator is operated in the most efficient working area for a short time, the amount of harmful noise emitted from the vehicle, its duration and emission are kept to a minimum.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

47,625,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The estimated sales price of a vehicle that will enter serial production is around 1,500,000 Euro. The systems given by ASELSAN for the vehicle are close to 50% of the total price. The current negotiations are carried out on the sale of 10 vehicles. The data is fixed by estimation. The potential financial impact for the short term time horizon is

around

$750,000 \text{ €} * 10 * 6.35 = 47,625,000 \text{ TL}$ (Currency 2019 1€=6.35TL)

For the long-term time horizon: It is evaluated that approximately 80 of these products can be sold domestically. It is expected that ASELSAN will earn over 60,000,000 Euros.

Cost to realize opportunity

38,100,000

Strategy to realize opportunity and explanation of cost calculation

The total cost of the project is approximately 6,000,000 Euros

($6000000 * 6.35 = 38,100,000 \text{ TL}$ in 2019)

In order to turn this project into an opportunity, more than 2 years of self-employed R&D project has been carried out in ASELSAN. During the project period, ASELSAN-UGES processes needed were implemented (project management, system, hardware and software development, subcontractor management processes, etc.)

Comment

In order to create promotion and sales opportunities, we participated in the international INNOTRANS fair held in Germany in 2018. The project and prototype product received intense interest from domestic and international customers and stakeholders.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

ASELSAN MIDAS Intrusion Detection System offers the utmost capability of sensing by measurement at thousands of different points simultaneously with a fiber optic communications cable. Using the pre-existing fiber optic cable, the system locates, classifies and tracks activities/threats against valuable assets. It is ideally suited for monitoring pipelines for third-party intrusion detection, and this is the initial target for the technology. However, in addition to pipelines, recent developments allow technology to be used in leak detection and security of borders, critical facilities, railway lines and infrastructure lines (gas, water etc.) in cities. MIDAS provides early warning of an event before damage occurs while intelligently filtering non-threatening activities. Using Artificial Intelligence (AI), tailor-made algorithms analyze environmental factors and

apply the parameters that give the best performance with minimum nuisance alarms. MIDAS (AI) is patented first time in the market place and being used in the pipeline and border security application for years. This project's timeline was between 2016-2019. It started to bring substantive opportunity to ASELSAN in terms of revenue.

Time horizon

Long-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,250,235,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The financial contribution to ASELSAN as Total Revenue for the period 2017-2027 is ; 220.500.000 \$

(1,250,235,000 TRY, based on 2019 currency, 1\$=5.67 TL), for the same time horizon the financial contribution to the government and pipeline enterprise is 420.840.000 \$, covering prevention of illegal tapping and pipeline damages.

Revenue (2017-2019): 8,750,000 \$

Total number of MIDAS Units Sold = 50; Approx. Unit Price = 175,000 \$

Revenue 3 Year period forecast (2020-2022) = 36,750,000 \$

Forecast number of units to be sold per year; 50+60+100=210; Approx. Unit Price = 175,000 \$

Revenue 2023-2027 period forecast = 175,000,000 \$

Cost to realize opportunity

28,225,260

Strategy to realize opportunity and explanation of cost calculation

MIDAS secures critical infrastructures such as petroleum and gas pipelines, and detects illegal tapping and intrusions caused by the thieves and terrorist groups. Furthermore, farmers' routine activities can also cause accidents on the pipelines and might generate unexpected damage on infrastructure and the environment as well. When a damage happens on a pipeline, entire operation halts, damaged pipelines are repaired, and the damaged pipeline segment can cause a reduction in the life-time of the entire pipeline

segment. Additionally, MIDAS can be used in detecting of unauthorized digging and construction works in urban areas. Those unauthorized activities can cause serious damages on the gas and water pipelines of the cities. Using MIDAS, those activities can be detected, enabling operators to quickly intervene in to the intrusions. Consequently, serious damages, operation halts, gas or water leakages and related explosions of gas pipelines can be prevented before the incident. Most of the time, oil leakages occur after tapping and thieves steel large gallons of crude oil with trucks. Considering all these cascading impacts, any single intrusion causes a huge significant financial loss for both governments and enterprises. As financial contribution to ASELSAN, the Project Cost is 4.978.000 \$. Environmental impact needs to be calculated for each incident on the pipeline.

Comment

MIDAS prevents possible direct environmental hazards such as; Fires, Crude oil leakage causing destroyed farm fields, damaged habitats and forestry, carbon & poisoning gasses emission, other (public resistance etc.)

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

As climate change is one of the biggest challenges the humanity has faced, consumers are becoming more and more environmentally aware. At company level low carbon products become more attractive for customers. This is an opportunity for ASELSAN who has the ability to produce technologies for low carbon products.

Activities have been carried out to develop innovative and original technologies which will provide an efficient and uninterrupted supply of electricity from Turkey's extensive renewable energy resources, specifically aimed at solar and wind energy. Critical components have been developed with the maximum national means in order to provide a competitive advantage in micro grid base hybrid renewable energy system solutions. In the field of wind energy, the design, development and production processes of full scale wind energy power converter systems and power grid connection algorithms, which are required by wind turbine manufacturers, have been completed. The first 300 kW power converter systems, which was ordered by the Northel EMK Company, has been successfully commissioned in the field.

In the field of solar energy, very high efficiency c-Si photovoltaic cell and module development studies have been continuing with the IBC (Interdigitated Back Contact) technology. Within the scope of the joint studies carried out with GÜNAM at METU (Middle East Technical University), production infrastructure has been completed and prototype IBC solar cells have been manufactured. Preliminary work for Renewable Energy Micro Grid System R&D project has been completed. Detailed studies and designs were performed in 2019.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Financial implications of these projects are evaluated. They have the potential to increase our revenue in the med-term. The financial figures are sensitive data. Specific confidentiality constraints prohibiting the disclosure.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

ASELSAN's Technology Road Map and Investment Plan is created in line with ASELSAN's Strategic Plan having detailed plans on each technology area (including climate friendly technologies) that will be researched and developed in the next 5 years along with the required investments." The progress of this plan is monitored every year and used as a measure in corporate performance.

In 2018, ASELSAN actively followed a policy that would ensure maximum efficiency and profitability while seizing new opportunities offered by the latest technologies. Research and Development activities for new climate friendly product groups are currently being analysed and planned for implementation such as electric vehicles to be used for public transport as well as portable hybrid electricity generation system using renewable energy sources. We are already on the process of extending our product line to include

renewable energy sources' implementation.

Therefore, the time frame of this opportunity is well performed as we can already project an increase in our revenue. And in 2019, the company improved the competitiveness by upgrading current technologies and by introducing innovative, environmentally-friendly and energy efficient systems and products. Producing new and more climate friendly products is a good opportunity for the company to gain new markets.

Comment

The Research and Development activities we hold as part of this opportunity has third parties involved to this subject. Within the scope of the joint studies carried out with GÜNAM at METU (Middle East Technical University), production infrastructure has been completed and prototype IBC solar cells have been manufactured. Specific confidentiality constraints prohibiting the disclosure (cost to realize opportunity) .

Identifier

Opp4

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Company-specific description

ASELSAN's Technology Road Map and Investment Plan is created in line with ASELSAN's Strategic Plan having detailed plans on each technology area (including climate friendly technologies) that will be researched and developed in the next 5 years along with the required investments." The progress of this plan is monitored every year and used as a measure in corporate performance. ASELSAN has the ability to produce technologies for low carbon products/ services. In 2019, the company was improved the competitiveness by upgrading current technologies and by introducing innovative, environmentally-friendly and energy efficient systems and products.

ASELSAN, as the leading Turkish company in toll collection systems, has carried out intensive work in this field in 2018 as well. On the Istanbul-Izmir Highway, Yavuz Sultan Selim Bridge and Northern Ring road, along the newly opened road sections, new toll collection stations have been added to the existing tolling systems. The toll collection system for the new ambitious Northern Marmara Highway is provided by ASELSAN. With the establishment of 16 new MLFF systems on the newly built roads of cities in 2019, the cumulative average vehicle speed on the roads where the wage was collected increased by 9%. In this way, there is no increase in CO2 emission in these new roads due to fee collection.

Vehicles of interest are identified and tracked throughout different system locations. MLFF system that allows highway users to pass through tolling point at high speed even when changing lanes without having to slow down to pay for toll. Congestion at MLFF is decreased at about %21 according to toll plazas. MLFF system reduce congestion rate at the Toll Plazas by increasing vehicles' throughput at more than 1500 vehicles per hour. The research shows that the average delay of vehicle is 13 seconds per vehicle per km (comparing to the MLFF). In general, higher penetration rates give better results in term of emission reductions. On the highway road, modelled benefits at the macro level are 1.5% reduction in CO2 emissions for a %20 penetration rate, 4.5% reduction in CO2 emissions for a %60 penetration rate, 6.5% reduction in CO2 emissions for a %90 penetration rate. Thus, MLFF improve public transportation and help to reduce air pollution, NOx and CO2 and road noise via a decline in traffic.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Financial implications of these projects are evaluated. They have the potential to increase our revenue in the med-term. The financial figures are sensitive data. Specific confidentiality constraints prohibiting the disclosure.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Research and Development activities for this system is analysed and planned for the implementation Therefore, the time frame of this opportunity is well performed as we can already project an increase in our revenue. The activities for this important tolling project have continued in 2019 as well. The actions to be taken in order to manage this opportunity will consequently cause an increase in our OPEX in the first place. ASELSAN Annual Report-2019 Financial Information section for OPEX details)

Comment

The Research and Development activities we hold as part of this opportunity has third parties involved to this subject. In addition to securing tolls for the constructed highways, ASELSAN toll collection systems also play an important role in the revenue reconciliation and auditing of private concessions by state institutions. For this task, special solutions were developed in order to provide security, integrity, trace-ability and control-ability of the data recorded in the system.

Identifier

Opp5

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Markets

Primary climate-related opportunity driver

Use of public-sector incentives

Primary potential financial impact

Increased diversification of financial assets

Company-specific description

By following up on all kind of technological developments pertaining to land, air, naval and aerospace platform product/system technologies, the Company not only applies technology but also designs, develops and produces product/system technologies in order to share or sell with/to national and international collaborations.

Projects are striving at maximum level in order to benefit from the technological opportunities existing in the country aiming to increase the national contribution share. For this purpose, cooperation is made with universities and various R&D organizations and importance is given to the use of local suppliers and subcontractors.

As for the projects carried out within the Group, the Research and Development incentive in compliance with the provisions of the Law on Corporate Tax numbered 5520 and Research and Development center application pursuant to the Law regarding the support of Research and Development activities numbered 5746 are being implemented together. As for non-public R&D projects, the approval of TEYDEB (Technology and Innovation Support Programs Directorate) and ARDEB (Research Support Programs Presidency) are received and supported by the institutions. Turkey's 10th Development Plan includes multi programs on different incentives including R&D projects such as Enhancing Energy Efficiency etc. ASELSAN has a chance to benefit from governmental incentives in the scope of this program.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

43,194,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The incentive obtained consists of the incentives that are accrued in accordance with TÜBİTAK's R&D recognition letter prepared with respect to the Group's ongoing projects Current government total grants and incentives 2019 Annual Report 2019; 43,194,000 TL.

This figure represents the total grants covering also climate related ones.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

The Group obtains capital support from "Support and Price Stabilization Fund" of Central Bank of Turkey via Under secretariat of Foreign Trade's consent. The Scientific and Technological Research Council of Turkey ("TÜBİTAK") and Technology Development Foundation of Turkey ("TTGV") act as intermediary in accordance with Communiqué No:98/10 published by the Money-Loans and Coordination Board. In accordance with Law on Technology Development Zones numbered 4691, Group utilizes withholding income tax incentive, social security premium incentive and stamp tax exceptions. Such incentives are utilized through not paying withholding income tax incentive, social security premium incentive and stamp tax exceptions calculated based on research and development and software personnel payroll. According to Article 8 of the relevant law, all research and development expenses can be deducted until the determination of commercial earnings until 31 December 2023.

Comment

We don't have any cost regarding the management of this opportunity, we strictly monitor the incentive programs and apply to the ones that are related to our scope of business.

Identifier

Opp6

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Other, please specify

Special need for public health

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

ASELSAN's Technology Road Map and Investment Plan is created in line with ASELSAN's Strategic Plan having detailed plans on each technology area (including climate friendly and health technologies) that will be researched and developed in the next 5 years along with the required investments." The progress of this plan is monitored every year and used as a measure in corporate performance. ASELSAN is agile to produce and to align new technologies related with public health and low carbon products/services. ASELSAN aims to use its technological knowledge in the field of health systems. In this respect, studies on medical devices which are critical to the diagnosis and treatment are carried out. Activities in the field of medical devices are grouped under three main headings: medical imaging, life support and diagnostic systems.

In the field of diagnostic systems, it is aimed to develop diagnostic kit and diagnostic devices (Point of care, decentralized testing) that allow rapid detection of certain diseases caused by viruses and bacteria in primary care institutions, and patient self-testing that allows personal use. In this context, the Bio defense Research Program Unit, which started its activities in ASELSAN Research Center in 2016, continued its activities in 2019 with an increasing speed. R&D studies have been initiated to develop an optical based diagnostic system for biological agent detection. With the research and development activities to be carried out in the coming years, it is aimed to develop a "Virus Diagnosis Kit" for different types of viruses. ASELSAN conducts these activities in the Research Center located in Istanbul Techno park in order to benefit from the Istanbul-Kocaeli Eco-system.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Financial implications of this project are in the evaluation phase. They have the potential to increase our revenue in the med-term.

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

The cost to realize this opportunity has been investigated. Public health has a priority for our company.

Comment

ASELSAN continued to add new products to its product range in 2019 and receives new orders within this framework. The amount of orders received in 2019 was 3 Billion USD and the total of balance orders was 9.7 Billion USD. Classification related to climate cannot be realized due to product diversity and difficulties in differentiation. After serial production the % revenue of these products will be identified as sales figures.

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative, but we plan to add quantitative in the next two years

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
<p>RCP 4.5 IEA Sustainable development scenario Nationally determined contributions (NDCs)</p>	<p>We closely follow the recent updates on climate change mitigation efforts made both nationally and globally. We support the Paris Agreement and its aim to limit global warming below 2 °C and potentially keep it below 1.5 °C. ASELSAN used physical (Fifth Assessment Report AR5, RCP4.5 representing the IPCC’s 2 Degrees Celsius scenario) and transitional (NDCs, IEA SDS) scenarios as qualitative analysis. The TCFD recommendations were our guidance.</p> <p>We decided to review publicly available climate scenarios, because the revision and the outcomes of Ministerial Studies on Turkey’s NDC are not accomplished.</p> <p>Turkey’s National Contribution (INDC) plan is to reduce its emissions by 21% from 2030 BAU level by supporting the shift towards low carbon economy. During the qualitative analysis, the key considerations of assumptions were: Carbon price, assumptions about CO2 price via trading scheme, energy demand and mix, price of key commodities/ products & LCA thinking, efficiency, technology, national carbon emission target, subsidies for fossil fuels, temperature increase relative to CO2 increase</p> <p>Analytical choices such as timing, scope of application were the main subjects. Business Impacts/Effects have been studied for different areas such as earnings, costs, revenues, assets, investments, timing etc.</p> <p>ASELSAN evaluated her scope 1&2 absolute emissions reduction target aligned with the requirements of SBTi and RCP4.5 and the top management decided to set ambitious target (SBT or CDP route target) for the main facilities, in 2020 or 2021.</p> <p>ASELSAN aims to be one of the main producers of renewable energy technology in the World. This study shows us that a quantitative analysis based on business specific low carbon scenario will shape our climate resilient strategy. This study will help the accurate detection of absolute emission reduction target for 2050. Our Renewable Energy Systems Program Management Department, which is responsible of R&D of renewable energy technologies, has started its studies on deploying renewable energy usage throughout our company and our products. It is planned to set ISO 50001:2018 Energy Management System in our facilities in the short term.</p>

C3.1d

(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.

Have climate-related risks and opportunities	Description of influence

	influenced your strategy in this area?	
Products and services	Yes	<p>ASELSAN aims to be a responsible producer for a globally responsible consumption. Our strategy covers also to be one of the main producers of renewable energy technologies in the World. Substitution of existing products with lower emission options does not cause technology base climate related risks. There is an increased demand for new low carbon technologies, materials, products and services such as smart digital solutions, smart mobility, solar cells, insulation etc. for different sectors. The most important aspect of climate change that influences our strategy is the opportunity to develop a green business. As transportation related GHG emissions account for nearly 14% of Turkey's total emissions, it is aimed to supply necessary electric vehicle systems designed for public transportation of major municipalities in Turkey. The Electric Vehicle Systems Program Management Department started a project with TEMSA in March 2015 with the aim of producing the first domestic electric bus. In 2019, as well as development, production and testing activities for electric vehicle system components developed for use in civil and military platforms; In line with the expectations of the automotive industry, our mass production capabilities have been developed and effective cost management processes have been operated to meet expectations. In addition to the development activities carried out with TEMSA and ANADOLU ISUZU, the sale of electric vehicle systems to BMC has started. Electric Bus deliveries first in 2020 planned to be completed ASELSAN focuses on developing hybrid system where both solar and wind power sources can be used interchangeably. While conducting such activities, ASELSAN aims to develop that the hybrid system could be portable and can be used both on-grid and off grid. The new system will reduce the use of diesel back-up generators and result in energy consumption reduction and therefore GHG emissions. In 2019, approximately 40 units of hybrid energy source installation have been completed on site. Each system produces an average of 7000 kWh clean energy per year, resulting with 2000 LT fuel saving. As a total 80000 L fuel consumption reduction per year will be realized. Therefore, these projects are the most important business decisions executed during the mid-term period and have high impacts on the business strategy of 2020 and beyond.</p>

Supply chain and/or value chain	Evaluation in progress	<p>Activities to expand the ASELSAN Supplier Portal, which was put into use to ensure effective information exchange, have been accelerated. Apart from this, supplier communication and development with our Powerful Together Platform, developed specifically for our suppliers, infrastructure works for moving our works to a single interface have been completed and will be put into practice in the first quarter of 2020.</p> <p>In 2019 the following decisions were carried out for addressing climate-related risks and opportunities. As a smooth transition to the new ISO 14064: 2018 Standard, and also in order to understand and manage the financial and temporal burdens of the supply and value chain management, the board decided that it is necessary to step into the process more quickly. Adhering to the agenda; First, key personnel have been trained by Turkish Standard Institution. Then, workshops were executed at the 4th quarter of 2019. The New Procurement Management Process was initiated with internal and external communication and data gathering activities. This process will be effective at the first quarter of 2021. At the end of these activities; The accurate risk detection and assessment of our global suppliers located in vulnerable regions will be specified. And also, the criteria to evaluate the significant indirect emissions with their justification will be set-up. The boundary setting and assumptions related to supply and value chain emissions will be accurate, leading us to set a clear-cut new base year. With these efforts, a transition to LCA activities will be provided while strong and stable data source will be ready for Science Based Target setting.</p>
Investment in R&D	Yes	<p>The most important aspect of climate change that influences our strategy is the opportunity to develop a green business. More and more public or private institutions and companies in Turkey depend on ASELSAN for their high-tech system requirements. Studies are carried out to develop innovative and unique technologies that will provide efficient and uninterrupted electricity production from solar and wind energy, one of the rich renewable energy sources of our country. Critical components are developed with maximum national possibilities to provide competitive advantage in renewable energy system solutions.</p> <ul style="list-style-type: none"> • In the field of wind energy; full scale wind power plant's power converter systems and grid connection algorithms required by wind turbine manufacturers, especially domestic

		<p>companies; design, development and production processes have been completed. Domestic Engineering studies were carried out in 2019 to improve the capability and performance of the mid-scale power (<500kW) full scale power converter system offered to wind turbine manufacturers.</p> <ul style="list-style-type: none"> • In the field of photovoltaic solar energy, studies carried out jointly with METU GÜNAM continued and an improvement in cell energy conversion efficiency was recorded in 2019. • Production of hybrid energy system solutions providing reliable, economical and clean energy from solar and wind continued for applications in military and civilian areas. • In order to develop a hybrid renewable energy micro grid system, ASELSAN self-funded R&D project was initiated in this field. <p>ASELSAN aims to spend approximately 7% of the annual turnover to its Research and Development activities financed with its own resources. Over 4000 employees work in the 6 R&D Centers within ASELSAN.</p> <p>ASELSAN has over 150 internally financed R&D projects that comprise both ongoing projects and those launched in new fields. In 2019 the total R&D expenditure was 2.975 million TRY, a 38 % increase was detected compared to previous year. The investment in R&D will continue due to these emerging opportunities. The Group activates the development costs of the projects it has created and approved by the management. As of 31 December 2019, there is a net development cost of TRY 1,192,759. In the long-term the area has the highest positive impact on the company business and strategy.</p>
Operations	Yes	<p>The operational risks are assessed by the company by taking into account energy saving, potential and possible optimization points in the production and other activities. There are some pilot studies that the energy department has put into Practice in 2019. It is planned to set Energy Management System ISO 50001:2018 in our facilities in the short term.</p> <p>Although we are not yet influenced by the regulatory changes in Turkey, it is also another aspect of climate change, as we prefer precautionary to be prepared to the changes in regulation. Carbon pricing systems (as disclosed in C 2.3 a Risk 1) is on the rise and could result by an increase in operational costs for our company for the long-term period, but currently ASELSAN is not in the context of MRV system.</p>

		<p>As part of the most important component of our strategy regarding climate change, due to efficiency of our carbon reduction projects , in the reporting period we have revised our target's percentage reduction from base year, from 4.7 % to 78.71%.</p> <p>Other physical risks are assessed for our facilities and services. The insurance system is in place to ensure the business continuity. This area could have a low impact on the companies' business strategy and planning.</p> <p>Another important component is that our Renewable Energy Systems Program Management Department, which is responsible of R&D of renewable energy technologies, has started its studies on deploying renewable energy usage throughout our facilities and products.</p> <p>In 2019, ASELSAN actively followed a policy that would ensure maximum efficiency and profitability while seizing new opportunities offered by the latest technologies.</p>
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C3.1e

(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Capital allocation	<p>Climate change poses an opportunity for ASELSAN to develop more low-emissions goods and services. This would likely impact the projected revenue in the future that ASELSAN aims to be one of the main producers of renewable energy technologies in Turkey. Due to emerging opportunities to develop low-emission goods and services the investment in R&D will continue. In the reporting year, the total expenditure on R&D activities was 2975 mio TRY, the previous year was 2163 mio TRY.</p> <p>In 2019, ASELSAN actively followed a policy that would ensure maximum efficiency and profitability while seizing new opportunities offered by the latest technologies. We have the opportunity to increase our revenue by answering the expectations of the automotive industry, our mass production capabilities have been developed and effective cost management processes have been operated to meet expectations. In addition to the development activities carried out with TEMSA and ANADOLU ISUZU, the sale of electric vehicle systems to BMC has started. Electric Bus deliveries first in 2020 planned to be completed. ASELSAN has over 100 internally financed R&D projects that comprise both ongoing projects and those launched in new fields. Acceptance and</p>

	<p>delivery of the products developed for the National Train and ANKARAY vehicles were carried out in 2019. An energy management system has been developed for hybrid maneuver locomotive developed with TCDD TAŞIMACILIK and TÜLOMSAŞ to store braking energy, to achieve emission-free operation in a closed environment, to reduce the noise level and to provide fuel savings.</p> <p>Next year, we will improve our competitiveness by upgrading our current technologies and by introducing innovative, environment-friendly and energy efficient systems and products. The revenue will positively and highly be impacted by the financial planning which includes long-term capital allocation, investment, R&D.</p> <p>Climate related operating costs are factored into our financial planning process which includes long-term capital allocation, investment, R&D and other standard costs. In the long-term the operating costs could be impacted to be overall low to medium through the financial planning which includes manufacture, human and social capital.</p> <p>Climate-related risks and opportunities are factored into our capital expenditure planning process.</p> <p>In case of any capital expenditure or allocation we consider implementing efficient technologies compatible to reduce the magnitude of climate related potential risks. It is also an opportunity to reduce the costs. While making an investment decision both for a new production facility, a capacity increase (Gölbaşı expansion project) we consider installing the most efficient technologies in order to reduce the risk of high operating costs. In the long-term the capital expenditure/capital allocation could be impacted to be overall low to medium through the financial planning.</p>
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C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Intensity target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2016

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Intensity metric

Metric tons CO₂e per unit revenue

Base year

2016

Intensity figure in base year (metric tons CO₂e per unit of activity)

0.0000136242

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

100

Target year

2022

Targeted reduction from base year (%)

78.71

Intensity figure in target year (metric tons CO₂e per unit of activity) [auto-calculated]

0.0000029006

% change anticipated in absolute Scope 1+2 emissions

28.22

% change anticipated in absolute Scope 3 emissions

258.24

Intensity figure in reporting year (metric tons CO₂e per unit of activity)

0.000003991

% of target achieved [auto-calculated]

89.8317074039

Target status in reporting year

Revised

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Please explain (including target coverage)

100% of emissions in scope are covered in this target. As a consequence of the effectiveness of our ambitious carbon reduction projects, we revised this target's % reduction from base year; from 4.7% to 78.71%.

There will be an increase in the absolute emissions in the following years as a consequence of our growth and expansion projects. The increase in the absolute emissions will be at minor level compared to our growth in all business dimensions.

Our intensity figure at base year was 0.0000136242721473774

Our intensity figure 2017 is 0.0000107911449051455

Our intensity figure 2018 is 0.00000637280616616315

Our intensity figure 2019 is 0.00000399107377208420

Our intensity figure 2020 will be 0.00000295600121848089

Our intensity figure at target year will be 0.00000290114973131339

In the following years there will be a continuous increase at % achieved till target year.

Our revenue and GHG emissions reduction target is monitored and revised regularly.

However, we can only share our projected revenue growth in 1-year forecast periods.

We consider our revenue projections over 5 years as commercially sensitive data.

Specific confidentiality constraints prohibiting the disclosure.

The reason of increase in % change anticipated in absolute scope 3 emissions is the extension of the boundary within the scope of compliance with the new version of ISO 14064:2018.

The criteria to evaluate the significant indirect emissions with their justification will be set-up by the transition to the new version of ISO 14064:2018. The boundary setting and assumptions related to supply and value chain emissions will be accurate, leading us to set a clear-cut new base year. With these efforts, a transition to LCA activities will be provided while strong and stable data source will be ready for Science Based Target setting.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Other climate-related target(s)

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number

Oth 1

Year target was set

2019

Target coverage

Product level

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Target denominator (intensity targets only)

Base year

2019

Figure or percentage in base year

1

Target year

2030

Figure or percentage in target year

80

Figure or percentage in reporting year

1

% of target achieved [auto-calculated]

0

Target status in reporting year

Underway

Is this target part of an emissions target?

This is a product level target having a use phase influence as avoiding third party's emissions.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

The product produced is a rail vehicle in the hybrid maneuver locomotive category. The vehicle features a modern TCMS (train control and management system), advanced traction control algorithms, IGBT and SiC-based energy-efficient power and control materials, and liquid-cooled Li-ion battery technology. With these features, the product has a modern design that is more efficient in terms of energy consumption, quieter in terms of noise and greener in terms of emissions.

Vehicle is developed with the support of Tülomsaş and other subcontractors for its needs.

It is evaluated that approximately 80 of these products can be sold domestically by 2030.

Target reference number

Oth 2

Year target was set

2019

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Target denominator (intensity targets only)

Base year

2019

Figure or percentage in base year

0.68

Target year

2030

Figure or percentage in target year

0.83

Figure or percentage in reporting year

0.68

% of target achieved [auto-calculated]

0

Target status in reporting year

Underway

Is this target part of an emissions target?

It is a different target being a part of a project called zero-waste project

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

This target covers the wastes segregated from ASELSAN's campuses.

As part of the zero-waste project, 68% of the waste collected in 2019 was recycled and 32% was sent to landfill. This value is targeted to increase by 15% in 2030, reaching a total of 83% recycling rate.

Target reference number

Oth 3

Year target was set

2019

Target coverage

Site/facility

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Target denominator (intensity targets only)

Base year

2019

Figure or percentage in base year

0

Target year

2025

Figure or percentage in target year

2

Figure or percentage in reporting year

0

% of target achieved [auto-calculated]

0

Target status in reporting year

Underway

Is this target part of an emissions target?

It is not a part of an emission target. There will be an indirect decreasing impact on facilities' emissions .

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

The decision to build two Gold Certified Leed buildings for Istanbul Teknokent and for Macunköy Plaza is about to come out.

If approved, it is planned to start in 2021 and complete in 2025. Macunköy Plaza Building project has a priority.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	7	500
To be implemented*	1	1,800
Implementation commenced*	2	1,210
Implemented*	11	3,359.12
Not to be implemented	0	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in buildings
Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

104.79

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

109,130

Investment required (unit currency – as specified in C0.4)

140,405

Payback period

<1 year

Estimated lifetime of the initiative

6-10 years

Comment

M-EEP 1: For the purpose to be efficient in energy consumption Macunköy Campus Led Lighting Transformation was accomplished. Reporting year's GHG calculations was verified by the third party.

The lighting in the buildings is mostly done with lighting fixtures containing 18 W and 36 W fluorescent across the Macunköy Campus.

Actual Status: In 2019, 18 W fluorescent were replaced with 8 W led tubes, 36 W fluorescent were replaced with 16 W led tubes and 4 x 18 W fixtures with 30 W led panel fixtures in the following buildings.

No. 55 H.K. Ground floor in production hall: 4048 8 W led tube replacement (March 2019)

UGES building number 58: 486 pieces 36 W led tube replacement (May 2019)

Building number 24: 1472 8-W led tube replacement (May 2019)

HBT production building number 15: 2632 8 W led tube replacement (September 2019)

Building number 24: 100 pieces of 30 W led panel replacement (November 2019)

232.192 kWh / Year

Initiative category & Initiative type

Energy efficiency in buildings

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

129.22

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

134,570

Investment required (unit currency – as specified in C0.4)

140,405

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

M-EEP 2: For the purpose to be efficient in energy consumption, Macunköy Campus Led Lighting Transformation was accomplished. The goal was to replace standard fluorescent s with energy efficient led tubes and led panel fixtures
Reporting year's GHG calculation was verified by the third party.

Initiative category & Initiative type

Energy efficiency in production processes
Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

25.35

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

27,355

Investment required (unit currency – as specified in C0.4)

25,000

Payback period

<1 year

Estimated lifetime of the initiative

6-10 years

Comment

M-EEP4/a: Macunköy Campus No. 16 HBT Production building adiabatic humidification system installation
Goal: To save energy with the change in the humidification method
Reporting year's GHG calculation was verified by the third party.

Actual Status: The new method will be installed and the current method will be changed adiabatic-ally. With this method, energy consumption will decrease to 1 kWh on a system basis. Besides energy consumption, maintenance, operation and labor costs of the system will decrease by 80% compared to the other. In this way, this system can be used in approximately 8 months of the year. With the system, trials and tests were carried out in 2019 and used for 3 months. By increasing the number of system installations, it is aimed to save approximately 300000 kWh of electricity in 8 months of 2020. In the maintenance of isotherm systems, a total of 30 electrode exchanges, 6 in each device, need to be changed in 2 sets per year.

Initiative category & Initiative type

Energy efficiency in production processes
Cooling technology

Estimated annual CO2e savings (metric tonnes CO2e)

0.68

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

730

Investment required (unit currency – as specified in C0.4)

5,000

Payback period

4-10 years

Estimated lifetime of the initiative

11-15 years

Comment

M-EEP4/b Status: Macunköy campus BYD Data center cooling system is made with sensitive air conditioners.

The air conditioners send cool air from the raised floor to the areas where the cabinets provide cooling. In the meantime, excess area in the room is also cooled.

Actual Status: With the improvement made in the system, the heat corridor will be created and the air cooled by the sensitive air conditioner will only reach the region that needs cooling. In this way, sensitive air conditioners will be operated more efficiently as the heat losses are prevented. It is anticipated that the cooling will work 10% more efficiently and consume less energy with the work given. The compressor load of the current 5 kW capacity device was 1500 kWh in 2019, and a total of 9720 kWh of energy

savings is envisaged in 2020, with the other renewed 3 devices.
Reporting year's GHG calculation was verified by the third party.

Initiative category & Initiative type

Energy efficiency in buildings
Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

49.43

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

51,481

Investment required (unit currency – as specified in C0.4)

100,144

Payback period

1-3 years

Estimated lifetime of the initiative

11-15 years

Comment

A-EEP 1: For the purpose to be efficient in energy consumption in Akyurt Campus standard fluorescent s were replaced with energy efficient led tubes and led panel fixtures

Actual Status: In the locations determined in 2018 & 2019, (4 x 18 W) fluorescent lighting fixtures- 643 in total, were dismantled in a planned manner and 27 W/30 W LED Panels- 568 in total, were installed instead. (30 W was taken in the calculation.)

Reporting year's GHG calculation was verified by the third party.

Initiative category & Initiative type

Energy efficiency in production processes
Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)

216.84

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

225,826

Investment required (unit currency – as specified in C0.4)

315,399

Payback period

1-3 years

Estimated lifetime of the initiative

11-15 years

Comment

A-EEP2: For the purpose to be efficient in energy consumption Akyurt Campus C Block, Compressor Replacement with an efficient one was accomplished.

Actual Situation: It has been replaced with another energy efficient compressor. The new compressor has a 55 kW electric motor and with the frequency inverter it can cut itself to low frequencies depending on the load condition.

Reporting year's GHG calculation was verified by the third party.

Initiative category & Initiative type

Energy efficiency in production processes

Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)

248.38

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

258,673

Investment required (unit currency – as specified in C0.4)

315,400

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

A- EEP 3 Akyurt Campus B Block Clean Room Compressor Replacement

Goal: Replacing the old compressor with an efficient one

Actual Situation: The new compressor has a 37 kW electric motor and can reduce itself to low frequencies depending on the load condition with the frequency inverter.

Reporting year's GHG calculation was verified by the third party

Initiative category & Initiative type

Energy efficiency in production processes

Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)

21.88

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

22,788

Investment required (unit currency – as specified in C0.4)

101,999

Payback period

1-3 years

Estimated lifetime of the initiative

11-15 years

Comment

A-EEP 4 Akyurt Campus B Block Clean Room Compressor Dryer Replacement

Objective: Decreasing the electricity consumption by reducing the consumption of compressed air during the dryer regeneration.

Reporting year's GHG calculation was verified by the third party.

Initiative category & Initiative type

Energy efficiency in buildings

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

4.63

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

12,000

Investment required (unit currency – as specified in C0.4)

25,815

Payback period

<1 year

Estimated lifetime of the initiative

6-10 years

Comment

G-EEP 1 Gölbaşı Campus Led lighting transformation was accomplished.

Goal: Replacing standard fluorescent s with energy efficient led tubes

Actual Status: 36 W standard fluorescent s were replaced with 16 W led tubes and 18 W standard fluorescent s were replaced with 8 W led tubes. 800 pieces of 36 W and 900 pieces of 18 W fluorescent s were changed in November and December 2019. Thus, the energy consumption required for illumination is reduced. The replacements will continue in 2020. Reporting year's GHG calculation was verified by the third party.

Initiative category & Initiative type

Energy efficiency in buildings

Insulation

Estimated annual CO2e savings (metric tonnes CO2e)

2.84

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

3,000

Investment required (unit currency – as specified in C0.4)

20,000

Payback period

4-10 years

Estimated lifetime of the initiative

11-15 years

Comment

G-EEP2 Gölbaşı Campus Facade Insulation Application
Actual Status: Insulation improvement work was carried out with the application of 10 cm wide polyurethane foam along 730 m at the junction of the facade and the ground
Reporting year's GHG calculation was verified by the third party.

Initiative category & Initiative type

Energy efficiency in production processes
Automation

Estimated annual CO2e savings (metric tonnes CO2e)

2,555.08

Scope(s)

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

2,480,000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

>30 years

Comment

G-EEP4 Using the BMS infrastructure to reduce energy density
As a result of the studies initiated at the second half of 2019, the automation system was started to be used. Deficiencies regarding automation infrastructure were eliminated and BMS functions started to be used. In this context, closed circuit heating and cooling systems were operated within a certain time schedule by forming groups over the software. Pumps, fan coils, some air handling units and chillers that were operated all day long were programmed to not operate outside office hours, thus energy saving accomplished. Full performance will be achieved in 2020.
Reporting year's GHG calculation was verified by the third party

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Financial optimization calculations	In ASELSAN, we constantly try to develop projects that increase energy efficiency. When we have a project idea, the related directorate makes a detailed feasibility analysis that shows how much investment is required for a certain project and how much savings (both in terms of energy and financial savings) can be achieved with that particular project. If the payback period of the project is below 5 years and if the project lifetime is over 10 years, a report is prepared and the project is submitted for budget approval. Then this project is included in the budget plans for the upcoming year. Previous years' GHG emission target revision was materialized by Integrated Management Systems Department for the strategic planning covering the period 2018-2022. It is explained with details, in section 4.1 b
Dedicated budget for low-carbon product R&D	<p>ASELSAN aims to be a responsible producer for a globally responsible consumption. Substitution of existing products with lower emission options is aligned with the Research and Development activities. There is an increased demand for new low carbon technologies, materials, products and services such as smart digital solutions, smart mobility, solar cells, insulation etc. for different sectors. ASELSAN aims to be one of the main producers of renewable energy technologies and low carbon products in Turkey in the mid- term. The Electric Vehicle Systems Program Management Department started a Research and Development project with TEMSA in March 2015 with the aim of producing the first domestic electric buses. As transportation related GHG emissions account for nearly 14% of Turkey's total emissions, it is aimed to supply necessary electric vehicle systems designed for public transportation for major municipalities of Turkey. In addition to the development activities carried out with TEMSA and ANADOLU ISUZU, the sale of electric vehicle systems to BMC has started. Electric Bus deliveries first in 2020 planned to be completed. In line with the expectations of the automotive industry, our mass production capabilities have been developed and effective cost management processes have been operated to meet expectations.</p> <p>ASELSAN being a leading defense industry establishment developing advanced technology system solutions on land, air, naval and aerospace platforms, has given importance to Research and Development activities and technological gains and targets since it was founded. Besides, it aims to spend approximately 7% of the annual turnover to its Research and Development activities financed with its own resources. More than 4000 employees work in the six R&D centers within the company. ASELSAN's total R&D expense was 2975 TRY million in 2019.</p>

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

Renewable Energy Systems

Activities have been carried out to develop innovative and original technologies which will provide an efficient and uninterrupted supply of electricity from Turkey's extensive renewable energy resources, specifically aimed at solar and wind energy. Critical components have been developed with the maximum national means in order to provide a competitive advantage in micro grid base hybrid renewable energy system solutions. In the field of wind energy, the design, development and production processes of full-scale wind energy power converter systems and power grid connection algorithms, which are required by wind turbine manufacturers, have been completed. The first 300 kW power converter systems, which was ordered by the Northel EMK Company, has been successfully commissioned in the field. In the field of photovoltaic solar energy, studies carried out jointly with METU GÜNAM continued and an improvement in cell energy conversion efficiency was recorded in 2019. The efficiency values of c-Si cells produced in the existing production lines are mostly around 17-20%. The efficiency of IBC solar cells exceeds 20%. Since IBC solar cells do not have any optical losses due to the metal on the front surface, the light coming to the surface is absorbed with much less loss. As the amount of light absorbed increases, the number of charge carriers to be formed in the cell increases and consequently the amount of current light obtained from that cell increases. For this reason, higher efficiency values are obtained with solar cells connected to the rear. In addition to the reduction of optical losses, IBC solar cells during the modulation process have much less space than standard cells. For this reason, higher module efficiencies are achieved when using IBC solar cells. Hybrid energy system solutions have been developed for military and civilian applications, providing reliable, economical and clean energy from the sun and wind. The design and production of the GURU Kompakt, a hybrid system integrated within a container, was completed and systems are in use in the field. In the reporting year, the hybrid energy system GURU Compact solution integrated to the container was delivered to the Turkish Armed Forces.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

2006 IPCC Guideline for National GHG Inventory

% revenue from low carbon product(s) in the reporting year

Comment

Preliminary work for Renewable Energy Micro Grid System R&D project has been completed in 2019.

These climate resilient goods and services will allow third party to avoid emissions.

ASELSAN continued to add new products to its product range in 2019 and receives new orders within this framework. The amount of orders received in 2019 was 3 Billion USD and the total of balance orders was 9.7 Billion USD. Classification related to climate cannot be realized due to product diversity and difficulties in differentiation. After serial production the % revenue of these products will be identified as sales figures.

Level of aggregation

Group of products

Description of product/Group of products

ENERGY MANAGEMENT and SMART GRID SYSTEMS

System solutions consisting of critical hardware, algorithms and software for the National Smart Grid Network Management have been developed in order to transmit electricity efficiently, flexibly and effectively from the generation of electricity to its consumption throughout the country. In this context, the following have been carried out through national means in order to reduce external dependency and to provide energy distribution and transmission securely.

In the reporting year, the development of the Advanced Terminal Unit (ASELSAN ARTU) device, which is used at the end points of smart grids, has reached the final stage, and the critical algorithms and software needed in electricity transmission and distribution have been completed.

The first commercial sale of ASELSAN ARTU, which is aimed to be widely used in electricity, natural gas, oil and water networks, was realized.

Activities to expand the DEPAR Low Voltage Monitoring and Control System developed for the conversion of the electricity distribution network into a smart grid were carried out.

SCADA SYSTEMS

ASELSAN; flexible, reliable, customization according to the needs and different fields accelerated the national SCADA development studies in 2019. In this context; Batman-Dörtüoöl with SSB Crude Oil Pipeline SCADA Supply and Facility project was signed and studies were carried out to develop oil SCADA software.

Detailed design studies were completed by conducting field surveys along the pipeline route within the scope of the project. Conventional RTU produced by ASELSAN will be used in the automation system, which will include 24 valve stations and 4 pump stations.

The works within the scope of the contract are planned to be completed in 2021 and the system is put into operation.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

2006 IPCC Guideline for National GHG Inventory

% revenue from low carbon product(s) in the reporting year

Comment

These climate resilient goods and services will allow third party to avoid emissions.

Detailed studies and designs were performed in 2019.

ASELSAN continued to add new products to its product range in 2019 and receives new orders within this framework. The amount of orders received in 2019 was 3 Billion USD and the total of balance orders was 9.7 Billion USD. Classification related to climate cannot be realized due to product diversity and difficulties in differentiation. After serial production the % revenue of these products will be identified as sales figures.

Level of aggregation

Group of products

Description of product/Group of products

Multilane Free Flow Electronic Toll Collection System (MLFF-ETC) which does not affect traffic on the highway during its operation, enables the collection of tolls from highways around large cities such as Istanbul, and also enables applications aimed at preventing traffic congestion resulting with high ghg emissions in urban roads, by introducing electronic road charging methods.

MLFF Vehicle recognition system, recognizes the license plate of a vehicles on the roadway. Vehicles of interest are identified and tracked throughout different system locations. MLFF system that allows highway users to pass through tolling point at high speed even when changing lanes without having to slow down to pay for toll.

Congestion at MLFF is decreased at about %21 according to toll plazas. MLFF system reduces congestion rate at the Toll Plazas by increasing vehicles' throughput at more than 1500 vehicles per hour. The research shows that the average delay on vehicle is 13 seconds per vehicle/ km (comparing to the MLFF). In general, higher penetration rates give better results in term of emission reductions. On the highway road, modeled benefits at the macro level are 1.5% reduction in CO2 emissions for a %20 penetration rate, 4.5% reduction in CO2 emissions for a %60 penetration rate, 6.5% reduction in CO2 emissions for a %90 penetration rate. Thus, MLFF improve public transportation and help to reduce air pollution, NOx and CO2 and road noise via a decline in traffic. Activities to install Toll Collection Systems on the newly opened road sections have been continued in 2019 as well. With the establishment of 16 new MLFF systems on the newly built roads of cities, the cumulative average vehicle speed on the roads where the wage was collected increased by 9%. In this way, there is no increase in CO2 emission in these new roads due to fee collection.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

2006 IPCC Guideline for National GHG Inventory

% revenue from low carbon product(s) in the reporting year

Comment

ASELSAN Toll Collection Systems are also used in Turkey's showcase Public Private Partnership (PPP) highway projects.

ASELSAN continued to add new products to its product range in 2019 and receives new orders within this framework. The amount of orders received in 2019 was 3 Billion USD and the total of balance orders was 9.7 Billion USD. Classification related to climate cannot be realized due to product diversity and difficulties in differentiation. After serial production the % revenue of these products will be identified as sales figures.

Level of aggregation

Group of products

Description of product/Group of products

ASELSAN has begun her activities to develop the energy management system which improves efficiency for railway transportation vehicles and reduces costs. In this system, it will become possible to reduce the electricity consumption of railway transportation vehicles and allow railway vehicles to be operated without a catenary system. With its modular structure, which can be used in both the vehicle and the station, the Energy Management System (EMS) allows railway vehicles, particularly trams, to be operated without a catenary system, allowing energy savings of up to 30% on public railway lines. In this context, the Energy Management System has been developed in order to store the braking energy in the Hybrid Shunting Locomotive, to achieve emission-free operation in the close areas, to reduce the noise level and to ensure fuel saving. In urban applications e.g. Metro, 200.000 km distances are covered annually. In the maneuvering locomotive, high distances are covered in parallel with the frequency of use. In this way, ASELSAN solutions for hybrid electric vehicles and hybrid rail vehicles also contribute to reducing emission values. It is aimed to save 40% fuel in the hybrid maneuvering locomotive being developed, an average of 20-30% reduction in CO emissions and an average 30-40% reduction in CO2 emissions.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

2006 IPCC Guideline for National GHG Inventory

% revenue from low carbon product(s) in the reporting year

Comment

Development, production and testing activities are carried out with the aim of providing Battery Management System, Traction System (Motor Inverter and Electric Motor), Vehicle Control and Management System, along with vehicle safety software and hardware (Advanced Driving Assistance Systems) - which are the basic critical components for electric vehicles - to vehicle manufacturers and organizations (OEMs and shipyards) in a cost effective manner.

ASELSAN continued to add new products to its product range in 2019 and receives new orders within this framework. The amount of orders received in 2019 was 3 Billion USD and the total of balance orders was 9.7 Billion USD. Classification related to climate cannot be realized due to product diversity and difficulties in differentiation. After serial production the % revenue of these products will be identified as sales figures.

Level of aggregation

Group of products

Description of product/Group of products

Development, production and testing activities are carried out with the aim of providing vehicle safety software and hardware (such as autonomous vehicle control and automatic braking) along with Battery Management System, Traction System (Engine Driver Unit and Electric Engine), Vehicle Control and Management System, advanced sensor (day / night vision camera, LIDAR, RADAR etc.) units - which are the basic critical components for land, sea and airborne electric vehicles - to vehicle manufacturers and organizations (such as factories and shipyards) in a cost effective manner.

The Electric Vehicle Systems Program Management Department started a project with TEMSA in March 2015 with the aim of producing the first domestic electric bus. In 2019, as well as development, production and testing activities for electric vehicle system components developed for use in civil and military platforms; In line with the expectations of the automotive industry, our mass production capabilities have been developed and effective cost management processes have been operated to meet expectations. In addition to the development activities carried out with TEMSA and ANADOLU ISUZU, the sale of electric vehicle systems to BMC has started. Electric Bus deliveries first in 2020 planned to be completed.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

2006 IPCC Guideline for National GHG Inventory

% revenue from low carbon product(s) in the reporting year

Comment

The design activities for electric public transportation vehicles, which are required by public institutions in Turkey, have been carried out at the level of joint feasibility studies with the authorities requiring them. Promotional activities have been carried out at municipalities, especially for electric buses that are needed by municipalities for public transportation. After serial production the % revenue of these products will be identified as sales figures.

ASELSAN continued to add new products to its product range in 2019 and receives new orders within this framework. The amount of orders received in 2019 was 3 Billion USD and the total of balance orders was 9.7 Billion USD. Classification related to climate cannot be realized due to product diversity and difficulties in differentiation. After serial production the % revenue of these products will be identified as sales figures.

Level of aggregation

Product

Description of product/Group of products

The use of Distributed Acoustic Sensing (DAS) technology is becoming widespread in order to monitor and secure the lines such as oil pipeline, border line, railway line, city infrastructure, critical facility environment. In this context, MİDAS product, whose development studies were initiated in 2014, started to be used in many projects and 50 systems were installed.

MİDAS was developed together with Bilkent University Nanotam Research Center as one of the successful examples of University-Industry Cooperation.

- Detection and diagnostic algorithms used in the system have been developed by applying Artificial Intelligence approach. The first contribution to the literature in this field was made by ASELSAN and patented.
- Field and business development studies are being carried out to expand MİDAS on railway line security, train tracking and signalization.
- Within the scope of the Smart Cities concept, a pilot project is carried out with İBB - İGDAŞ to protect the natural gas pipelines against unauthorized excavations.
- Bursagaz Dağıtım A.Ş. With the EMRA approved R & D project for leak detection in urban natural gas pipes.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

The EU Taxonomy for environmentally sustainable economic activities

% revenue from low carbon product(s) in the reporting year

Comment

Within the scope of export growth targets, MIDAS product has high potential, and efforts have been made to give OEM to an American company in a way to enable the product to take place in the world market.

ASELSAN continued to add new products to its product range in 2019 and receives new orders within this framework. The amount of orders received in 2019 was 3 Billion USD and the total of balance orders was 9.7 Billion USD. Classification related to climate cannot be realized due to product diversity and difficulties in differentiation. After serial production the % revenue of these products will be identified as sales figures.

Level of aggregation

Product

Description of product/Group of products

ASELSAN aims to use its technological knowledge in the field of health systems. In this respect, studies on medical devices which are critical to the diagnosis and treatment are carried out. Activities in the field of medical devices are grouped under three main headings: medical imaging, life support and diagnostic systems.

The ventilator device, is one of the most important elements of the treatment applied to inpatients due to respiratory failure in intensive care units. Following the epidemic of COVID-19, the need for a ventilator has emerged intensely all over the world. This has increased the worldwide demand for many components used in the devices to a level that cannot be met in a short time. The devices and their critical components have become unavailable from abroad, with the country imposing restrictions on ventilator devices and critical components such as the export ban or the requirement for export permit, prioritizing their own needs. In such an environment, ASELSAN, BAYKAR, ARÇELİK and BIOSYS companies have worked extensively by cooperating to bring the domestic ventilator device to our country. ASELSAN has contributed greatly to the improvement of the hardware and software design of the prototype level device of BIOSYS within a few weeks and reaching the level of manufacture. In addition, it has realized the locally designed and manufactured critical components that cannot be supplied from abroad.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Support for the ventilator device following the epidemic of COVID-19

% revenue from low carbon product(s) in the reporting year

Comment

The first batch of mass production of the resulting ventilator device has been completed in the first quarter of 2020 thanks to agility in hardware and software design of the prototype within a few weeks. It is planned that many devices will be produced in our country in the second half of 2020 without dependency abroad. In addition to saving lives in intensive care units, this product will avoid indirect external emissions that may occur during health-care activities. The calculations will be realized after the categorization process based on ISO 14064-2018 standard and also after ASELSAN's contribution. Currently, the rights of this product belong to USHAŞ and TÜSEB, which are affiliated with the Ministry of Health. The brand of the device continues with the brand of the start-up company. ASELSAN established a production line. We produce the product and provide all necessary support regarding the requirements. The % revenue will be identified after 2020. The first 100 devices are produced and delivered to Basaksehir City Hospital, which opened in April 2020, in the metropolitan city of Istanbul.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1, 2016

Base year end

December 31, 2016

Base year emissions (metric tons CO2e)

11,999.36

Comment

In 2015, the Gölbaşı Facility started its operations and the system boundary was revised accordingly.

Scope 2 (location-based)

Base year start

January 1, 2016

Base year end

December 31, 2016

Base year emissions (metric tons CO2e)

38,650.54

Comment

Only location-based result was used, there is no market-based figure.

Scope 2 (market-based)

Base year start

January 1, 2016

Base year end

December 31, 2016

Base year emissions (metric tons CO2e)

Comment

There is no market- based figure.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

IPCC Guidelines for National Greenhouse Gas Inventories, 2006

ISO 14064-1

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

14,148.26

Comment

The data cover scope1 ghg emissions of all facilities located in Ankara and İstanbul

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We have no operations where we are able to access electricity supplier emission factors or residual emissions factors and are unable to report a Scope 2, market-based figure

Comment

In ASELSAN, only the electricity purchased from National Interconnected System Grid is consumed.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO₂e?

Reporting year

Scope 2, location-based

37,785.79

Comment

This figure represents the purchased electricity from National Interconnected System. ASELSAN do not have any source of market- based scope 2 emissions.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Temporary Project Offices in various locations in Turkey

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

No emissions from this source

Explain why this source is excluded

We have a small number of temporary offices in various locations in Turkey. However, these offices only operate during particular project period and may not operate throughout the reporting period which makes it hard to monitor or control. Since these offices constitute a negligible operational volume, they are classified as de-minimis GHG emission sources, and are excluded from the boundary.

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Not relevant, explanation provided

Please explain

In 2019 as a smooth transition to the new ISO 14064: 2018 Standard, and also in order to understand and manage the financial and temporal burdens of the supply and value chain management we started to engage with our main suppliers to step into the new Standard's requirements. First, key personnel have been trained by Turkish Standard Institution. Then, workshops were executed at the 4th quarter of 2019. The New Procurement Management Process was initiated with internal and external communication and data gathering activities. System Boundary Setting was performed. For the next year the data gathering will commence. Green procurement approach is in the concern of our company. We will focus more on these issues in 2020 based on a combination of the energy intensity of the commodities supplied. With these efforts, transition to LCA activities will be provided

Capital goods

Evaluation status

Not relevant, explanation provided

Please explain

Green procurement process is in the concern of our company. The company does not have the information and inventory to account for these emissions associated with this source.
ASELSAN does not predict the full inclusion over a four years period.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Not relevant, explanation provided

Please explain

For the next reporting year we are planning to obtain data, reference to indirect emissions base on ISO 14064-2018 new version.

We will collect data from fuel suppliers.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

46.83

Emissions calculation methodology

DEFRA – Freightng Goods 2019 emission factors were used for calculations based on the GHG Protocol Corporate Value Chain (Scope 3) Standard.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Please explain

This data is provided from our main chemical material suppliers who transport chemicals inside our Macunköy Facility by using roadway. The great majority of this transportation's GHG gases comprise CO2 from exhaust emissions (fuel usage). We are planning to have a clear climate change related procurement policy to measure and reduce CO2 emissions generated from upstream transportation of chemicals. Next year this process will be fulfilled with the transition to new ISO 14064:2018 Standard.

The verification of this category was fulfilled by the 3rd party audit for 2019 activities

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

202.74

Emissions calculation methodology

The assessment and the data gathering process is in place. Waste generated in operations is calculated based on Defra 2019 methodology on Waste Disposal.

Wastewater generated from operations is calculated based on Defra 2019 methodology on Water Treatment.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Please explain

This data is the sum of hazardous & scrap wastes and waste water. The first group have an emission of 34.17 tons CO₂-e. This data is provided by ASELSAN and reported to the Ministry in the reporting year. Waste water having an emission of 168.57 tons CO₂-e is discharged into the municipal sewer system. The verification of all the categories is fulfilled by the 3rd party audit for 2019 activities.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

5,326.31

Emissions calculation methodology

The assessment and the data gathering process is in place. Air travel based emission is calculated based on DEFRA 2019 methodology for Business Travel-Air.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Please explain

The data is provided from ASELSAN's Travel Supplier. The verification of this category is fulfilled by the 3rd party audit for 2019 activities.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

963.28

Emissions calculation methodology

The assessment and the data gathering process is in place. Employee commuting based data is calculated based on Defra 2019 methodology for Business Travel- Land

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Please explain

This data covers the emissions from transportation of employees to and from work. The FTE number has increased in 2019. The verification of this category is fulfilled by the 3rd party audit for 2019 activities.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

We did not use upstream leased assets in 2019.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

In the reporting year we have focused on improving our data collection system with lowest possible uncertainty for the transition to the new version of ISO 14064:2018 in 2020. In order to manage and set the system boundary, supply and value chain data gathering activities were investigated. We started to engage with our main suppliers to step into the new Standard's requirements for this category.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Our products are not processed or re-processed any further after they have been sold. Consequently, the scope 3 category "Processing of sold Products" is not relevant for ASELSAN

Use of sold products

Evaluation status

Not relevant, explanation provided

Please explain

This emission source is out of the boundary due to data gathering problem in the usage phase of sold products

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

This emission source is out of the boundary due to the lack of data about the end of life treatment of sold products.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

There are not any leased downstream assets in ASELSAN. This emission source has been excluded from the boundary

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

ASELSAN has no franchises. This emission source has been excluded from the boundary.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

No investment related emissions realized within the reporting year. In case of any new investment we can focus on Supplier- Specific Method

Other (upstream)

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

9,122.05

Emissions calculation methodology

The assessment and the data gathering process is in place. In addition to food and beverage consumption, Glass and Paper consumption data is calculated based on methodology for DEFRA: Material Use – 2019. Water supply data is calculated based on methodology for DEFRA: Water Supply – 2019.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Please explain

The boundary of other upstream scope 3 emissions is enlarged by ASELSAN. We have assessed and revised the data quality of our food and beverage, glass and paper consumption. The data is procured from the suppliers.

The water supplied by ASKİ- mains supply network, is added to the boundary. The emissions in metric tonnes CO₂-e are as follows: 8934.28 (F&B), 0.29 (Glass), 70.50 (Paper), 116.98 (Water Supply)

The verification of all the categories is fulfilled by the 3 rd. party audits for 2019 activities.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

There are no additional other downstream emission sources for the reporting year.

C-CG6.6

(C-CG6.6) Does your organization assess the life cycle emissions of any of its products or services?

	Assessment of life cycle emissions	Comment
Row 1	No, but we plan to start doing so within the next two years	ASELSAN is aware that the Scope 3 inventory enables us to identify the GHG reduction opportunities across the entire corporate value chain, while product life cycle assessment enables a company to target individual products with the greatest potential for reductions. For the next 2 years we plan to start assessment of life cycle emissions for one product group. This subject will be studied for some selected product group after the transition to ISO 14064: 2018 Standard.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.000004

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

51,934.05

Metric denominator

unit total revenue

Metric denominator: Unit total

13,012,551,133

Scope 2 figure used

Location-based

% change from previous year

70.71

Direction of change

Decreased

Reason for change

The main reason of intensity figure reduction is the revenue growth compared to previous year.

Although our business growth rate was 73% in terms of revenue, the increase rate in our emissions was limited with 7% on the basis of absolute emissions (S1+S2). This result stems from our ambitious and consistent approach to emission reduction.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	9,967.3	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	6.69	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	27.26	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	4,145.86	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Turkey	14,148.26

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By facility

By activity

C7.3b

(C7.3b) Break down your total gross global Scope 1 emissions by business facility.

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Macunköy	4,780.18	39.96763	32.76631
Akyurt	5,752.35	40.08628	33.02409
Gölbaşı	3,516.2	39.71837	32.81612
Teknokent -ODTU	9.51	39.89353	32.77346
Şişli	22.06	41.05613	28.98536
Teknopark-Istanbul	59.45	40.8513	29.28764
Teknokent-Hacettepe	0.43	39.863	32.7378
Teknopark-Ivedik	8.08	39.9961	32.7521

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)
Natural Gas Consumption for heating, boilers and kitchen	8,103.04
Diesel consumption for generators and fire pumps	312.01
LPG consumption at kitchen	1.81
CNG consumption in the production process	1.77
Gasoline consumption for company cars	49.85
Diesel oil consumption for company cars	1,524.52
Diesel oil consumption for forklifts	8.24
Fugitive emissions from air conditioning system	1,492.71
Fugitive emissions from fire extinguishers	2,654.3

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based	Scope 2, market-based	Purchased and consumed electricity, heat,	Purchased and consumed low-carbon electricity, heat, steam or cooling
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	based (metric tons CO2e)	(metric tons CO2e)	steam or cooling (MWh)	accounted for in Scope 2 market-based approach (MWh)
Turkey	37,785.79		84,376.64	

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By facility

C7.6b

(C7.6b) Break down your total gross global Scope 2 emissions by business facility.

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Macunköy	15,423.6	
Akyurt	11,920.45	
Gölbaşı	9,541.1	
Teknokent-ODTU	501.56	
Şişli	0.61	
Teknopark-Istanbul	119.96	
Teknokent-Hacettepe	3.54	
Teknopark-Ivedik	274.97	

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Increased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
--	--	---------------------	------------------------------	----------------------------

Change in renewable energy consumption	0	No change		
Other emissions reduction activities	3,359.12	Decreased	6.47	The emissions activities implemented during 2019 have been resulted with a reduction of 3359.12 tons of CO2e. We calculated 6.47 through $(-3359.12/51934.05) * 100 = -6.47\%$
Divestment	0	No change		
Acquisitions	0	No change		
Mergers	0	No change		
Change in output	0	No change		
Change in methodology	0	No change		
Change in boundary	0	No change		
Change in physical operating conditions	287.03		0.59	The Scope 1 & 2 emissions of Teknokent Hacettepe and Teknopark İvedik locations were added to the calculations
Unidentified	0	No change		
Other	6,606	Increased	14	The replacement of fire extinguisher gases (HFC-236 fa) which have higher GWP value than NAF PIV took place in Akyurt facility. New additional extinguishers were procured. Other fugitive gases utilized in Macunköy, Akyurt and Gölbaşı facilities are procured for maintenance purposes or for use in the new cooling systems. The verification of total amount of procured gases is fulfilled by the 3rd party audits.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C-CG7.10

(C-CG7.10) How do your total Scope 3 emissions for the reporting year compare to those of the previous reporting year?

Increased

C-CG7.10a

(C-CG7.10a) For each Scope 3 category calculated in C6.5, specify how your emissions compare to the previous year and identify the reason for any change.

Upstream transportation and distribution

Direction of change

Increased

Primary reason for change

Change in methodology

Change in emissions in this category (metric tons CO₂e)

33.74

% change in emissions in this category

257

Please explain

Transported raw material data gathering process has been modified.
The filtration process of this chemical data was revised base on supplier specific conditions.

Waste generated in operations

Direction of change

Decreased

Primary reason for change

Other emissions reduction activities

Change in emissions in this category (metric tons CO₂e)

24.14

% change in emissions in this category

10.64

Please explain

Waste disposal amount has decreased due to zero- waste project activities. Due to awareness raising training to all workers and related staff, waste generation and water usage diminished. Waste segregation process was improved.

Business travel

Direction of change

Decreased

Primary reason for change

Other, please specify

Behavior change and change in working conditions

Change in emissions in this category (metric tons CO2e)

868.33

% change in emissions in this category

14.01

Please explain

For the purpose to emit less GHG, the delegates and technical groups have been encouraged by the management to meet by WebEx or zoom sessions.

Employee commuting

Direction of change

Increased

Primary reason for change

Change in physical operating conditions

Change in emissions in this category (metric tons CO2e)

222.39

% change in emissions in this category

30

Please explain

Full time employee number increased in 2019. New routes started to be used for employee commuting.

Other (upstream)

Direction of change

Increased

Primary reason for change

Other, please specify

Increase in F&B consumption due to full time employee increase.

Change in emissions in this category (metric tons CO2e)

1,297.81

% change in emissions in this category

16.58

Please explain

Full time employee number increased in 2019. Consequently food and beverage consumption has increased.

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	No

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	48,764.25	48,764.25
Consumption of purchased or acquired electricity		0	83,212.09	83,212.09
Total energy consumption		0	131,976.34	131,976.34

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Natural Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

41,810.65

Emission factor

0.00194

Unit

metric tons CO2e per m3

Emissions factor source

IPCC Chapter 2 Stationary Combustion (Table 2.3).

The verification of this emission factor was fulfilled by the 3 rd party audit for 2019 activities.

Comment

The natural gas is consumed for heating purpose in the facilities of ASELSAN.

The verification of the total fuel consumed by all facilities was fulfilled by the 3 rd party audit for 2019 activities.

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

6,741.25

Emission factor

0.0029

Unit

metric tons CO2e per liter

Emissions factor source

IPCC Chapter 2 Stationary Combustion (Table 2.3)

IPCC Chapter 3 Mobile Combustion (Table 3.2.1 and 3.2.2)

IPCC Chapter 3 Mobile Combustion off road (Table 3.3.1)

The verification of these emission factors was fulfilled by the 3 rd party audit for 2019 activities.

Comment

In the organization, diesel/ gas oil is consumed in 3 different activities that the calculation is the sum of these activities. Diesel/Gas oil for stationary activities.

Diesel/Gas oil for mobile activities. Diesel/Gas oil for Off Road activities.

The verification of the total fuel consumed by the organization was fulfilled by the 3 rd party audit for 2019 activities

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

8.05

Emission factor

0.00288

Unit

metric tons CO2e per metric ton

Emissions factor source

IPCC Chapter 2 Stationary Combustion (Table 2.3).

The verification of this emission factor was fulfilled by the 3 rd party audit for 2019 activities.

Comment

The verification of the total fuel consumed by the organization was fulfilled by the 3 rd party audit for 2019 activities

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

195.39

Emission factor

0.00227

Unit

metric tons CO2e per liter

Emissions factor source

IPCC Chapter 3 Mobile Combustion (Table 3.2.1 and 3.2.2)

The verification of this emission factor was fulfilled by the 3 rd party audit for 2019 activities.

Comment

The verification of the total fuel consumed by the organization was fulfilled by the 3 rd party audit for 2019 activities

Fuels (excluding feedstocks)

Compressed Natural Gas (CNG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

8.9

Emission factor

0.00194

Unit

metric tons CO2e per m3

Emissions factor source

IPCC Chapter 2 Stationary Combustion (Table 2.3).

The verification of this emission factor was fulfilled by the 3 rd party audit for 2019 activities.

Comment

CNG is consumed in Akyurt facility.

The verification of the total fuel consumed was fulfilled by the 3 rd party audit for 2019 activities.

C-CG8.5

(C-CG8.5) Does your organization measure the efficiency of any of its products or services?

	Measurement of product/service efficiency	Comment
Row 1	Yes	Many of our products contain smart components. All parameters related to efficiency measurement are measured, evaluated and recorded by sensors and smart units in the systems. These data can be analyzed later to measure efficiency.

C-CG8.5a

(C-CG8.5a) Provide details of the metrics used to measure the efficiency of your organization's products or services.

Category of product or service

Power tools

Product or service (optional)

Hybrid Energy System including battery, power panel and wind turbine

% of revenue from this product or service in the reporting year

0.02

Efficiency figure in the reporting year

0.7

Metric numerator

megawatt hour (MWh)

Metric denominator

Other, please specify

kilowatt hour (kWh)

Comment

The ratio of the energy produced by the Hybrid Energy System from its own renewable energy sources, to the total consumed energy is evaluated as efficiency. The efficiency figure is 70% in the reporting year.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Waste

Metric value

1,650

Metric numerator

Tonnes of waste

Metric denominator (intensity metric only)

% change from previous year

70

Direction of change

Increased

Please explain

In order to create a new process area in Akyurt facility, the area where the scrap wastes were stored has been cleaned and all the wastes coming out of this area as scrap metal have been sent to the licensed recycling company.

ASELSAN manages the waste generated from its operations by taking the waste management hierarchy into account, in a manner that minimizes their environmental

impacts. This management approach starts by reducing waste at the source and continues with waste reuse, recycling and disposal as a last resort. The verification of regularly reported wastes to MoEU is fulfilled by the 3rd party audit for 2019 activities. In order to prevent and minimize waste generation and ensure recycling, ASELSAN started to work voluntarily in May 2019 to implement the "Zero Waste Project" in all its campuses. The training was given to all workers and related staff who will take an active role in waste separation /collection. Within this implementation, approximately 137 tons of waste will be recycled and brought into the economy every year.

Description

Other, please specify
Waste water discharged into sewer system

Metric value

238,094.44

Metric numerator

Cubic meter of waste water

Metric denominator (intensity metric only)

% change from previous year

18

Direction of change

Decreased

Please explain

The previous years' metric value was 291,111 m3 waste water discharged into the sewer system.

The verification of this years' data is fulfilled by the 3rd party audit for 2019 activities. Despite the increase in FTE and other activities the waste water generated was reduced 18% .

As in all environmental activities, water management practices in ASELSAN are conducted fully in compliance with the legislation, and the wastewater discharge standards are determined in accordance with ASKI Wastewater Sewerage Network Discharge Regulation.

Description

Energy usage

Metric value

48,764.25

Metric numerator

MWh from non-renewable sources
Consumption of fuel

Metric denominator (intensity metric only)

% change from previous year

2.7

Direction of change

Decreased

Please explain

The previous years' metric value was 50105.11 MWh, as energy use.
Despite the increase in FTE and other activities the energy used was reduced 2.7%

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	One of the main fields of activity of our company is renewable energy systems. In this context, renewable energy projects with own resources and contracts are carried out and the necessary investments are made.

C-CG9.6a

(C-CG9.6a) Provide details of your organization's investments in low-carbon R&D for capital goods products and services over the last three years.

Technology area

Renewable energy

Stage of development in the reporting year

Small scale commercial deployment

Average % of total R&D investment over the last 3 years

21 - 40%

R&D investment figure in the reporting year (optional)

Comment

ASELSAN makes the necessary investments within the scope of the projects without delay. Annual maintenance and calibrations of investments are constantly monitored. Technological trends are closely followed and new investments are planned and implemented. For example; The project for the original development of generator and full-scale power converter units, which are critical components of the Wind Turbine, has been launched. In order to test these study outputs, an investment activity of over MW Electronics and Electric Machinery Laboratory is carried out. Within the scope of renewable energy and all other projects, many investments are needed to be used in design, development, test and verification activities. For example; Various computer aided software tools were provided to be used within the scope of design activities (Homer, PVSol Matlab etc.). Similarly, investments were made for measurement and testing purposes (Lidar, dynamo-meter, PV simulator etc. for wind measurement)

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

 2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 1 and 2.pdf

Page/ section reference

2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 1 and 2 (Page 1)

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

 2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 1 and 2.pdf

Page/ section reference

2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 1 and 2 (Page 1)

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Upstream transportation and distribution

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3.pdf

Page/section reference

2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3 (Page 1)

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Waste generated in operations

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3.pdf

Page/section reference

2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3 (Page 1)

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Business travel

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3.pdf

Page/section reference

2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3 (Page 1)

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Employee commuting

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3.pdf

Page/section reference

2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3 (Page 1)

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3 (upstream)

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3.pdf

Page/section reference

2019 ASELSAN Carbon Footprint Verification Opinion Statement Scope 3 (Page 1)

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

No, but we are actively considering verifying within the next two years

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

No, but we anticipate being regulated in the next three years

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

Carbon pricing options offer the most cost-effective way of mitigating climate change and can be helpful for countries in upholding their mitigation commitments or potentially exceeding them. The carbon price also stimulates clean technology and market innovation, with new, low-carbon drivers of economic growth. The two main policy options that are being used as carbon pricing mechanisms are carbon taxation and emissions trading systems (ETS).

While Turkey does not yet have carbon pricing systems in place, it has started to explore opportunities to implement a National Emissions Trading Scheme.

Within the scope of Partnership for Market Readiness Project (PMR), Turkey was prepared a draft report about carbon pricing policy with the economic and sector implications.

Implementation of phase 2 of the PMR builds on establishing the Climate Change Law and ETS Regulations with emission limits and allocation plans for pilot ETS. ASELSAN states her corporate views on these issues. Several number of stakeholder meetings and feedback rounds were conducted by the MoEU during the reporting period. In Turkey, emission data is reported to the Ministry annually by high energy intensive sectors according to the MRV regulation. ASELSAN is not in the scope of this regulation yet. However, since we have established our ISO 14064-1 system and have been calculating our emissions and processing verification by accredited third parties, we are ready to report our emissions. We anticipate that Ministry will include in 2021, the pilot sectors which are in the scope of MRV Regulation, first. We are ready to comply with the schemes when the market is once established in Turkey. National ETS or taxation system can influence our company after 2021, probably in 2022. As part of our involvement in this new upcoming system, we plan to upgrade our energy efficiency with Energy Management Systems, ISO 50001:2018 in 2021.

After 2020, the company renewable energy systems will be established starting from Macunköy Facility. For the 3 main facilities, the energy efficiency projects started to be implemented as from the second quarter of 2019.

For the purpose to drive opportunities in this new system, ASELSAN has already begun to position as a leader in technology base projects in order to meet the needs of all stakeholders in the global energy systems market with efficient, reliable, economic, high quality state-of-the-art products and services in the areas of electricity generation, transmission, distribution, consumption and management.

ASELSAN has established programs for the R&D, design, production, integration and after sales support in the following areas:

- Energy Management and Smart Grid Systems and
- Renewable Energy Systems.

Development of system, software and hardware components for national and international markets have been targeted in the field of smart grids, in order to provide solutions for the monitoring, optimization and management of generation, transmission, distribution and consumption of energy systems for energy sector.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

- Stakeholder expectations
- Change internal behavior
- Drive energy efficiency
- Drive low-carbon investment
- Identify and seize low-carbon opportunities

GHG Scope

- Scope 1
- Scope 2

Application

For the purpose to diminish the absolute company-wide total GHG emissions, we have a target to purchase voluntary certified carbon credits. For the first year our aim is to offset the Scope 2 emissions via this target. The actual price figure provided was used as the purpose of offsetting our emissions. It is used as shadow price in some calculations.

Actual price(s) used (Currency /metric ton)

5.67

Variance of price(s) used

Base on the Cap and Trade system studied by the Turkish Ministry of Environment & Urbanization during the second phase of PMR 's pilot workshops and practices, the price was fixed to \$25t CO₂-e as an optimum carbon price for Turkey.
The variance of price used is: 1\$-25 \$ (1\$=5.67 TL in 2019)

Type of internal carbon price

- Shadow price
- Offsets

Impact & implication

The financial impact of this voluntary activity is low, it will not impact our business.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

- Yes, our suppliers
- Yes, our customers
- Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

50

% total procurement spend (direct and indirect)

25

% of supplier-related Scope 3 emissions as reported in C6.5

25

Rationale for the coverage of your engagement

All our activities are carried out by focusing on the "sustainability" approach embedded in our strategy and business model. Our suppliers' performance has a significant impact on the management of economic, social and environmental issues of our company. The main contractor companies play an important role by ensuring business continuity. To build an effective supply chain; organizing qualified subcontractors /suppliers is highly critical in terms of sector productivity and sustainability. Our first achievement was awareness raising on GHG emissions tracking of our main suppliers. The topics of GHG emissions measurement and climate change strategies are added into environmental management questionnaire and our suppliers are monitored and scored according to their replies. The rationale for the coverage of this survey is Assessment of main suppliers having an impact on total procurement spent. We believe that this ratio will be extended in the next years. For our 2019 inventory, during the transition period for the new ISO 14064 :2018 standard, as a reassessment, we have requested data from our main subcontractors and 50% of them submitted their electricity and fossil fuel consumption data that corresponds to their production for ASELSAN. For the purpose to reach a high submission rate we are always in contact with them. ASELSAN has

developed a pioneering and innovative platform in order to strengthen the bond with its suppliers, increase the effectiveness of nationalization efforts, further reduce foreign dependency and carry out cooperation under an integrated roof. This platform called Powerful Together was put into live use in April 2020.

Impact of engagement, including measures of success

ASELSAN works with a large number of domestic and foreign suppliers and subcontractors, it is of utmost importance to ensure material quality and supply continuity.

Having a strong subsidiary infrastructure is among the elements that will support the company's business continuity, steady growth and global competitiveness. Besides, development of local subsidiary industry which is especially competent, reliable and value-added in the direction of national and local product development vision is important. In order to reduce the risk arising from the failure of suppliers and subcontractors to achieve the required technical competence, expertise, quality and climate related performance, the performance of suppliers is continuously measured and analyzed, and also to improve this performance, the Company supports, developments and implementations by training and programs. As for our suppliers, in order to provide efficient information transfer, ASELSAN Supplier Portal have been used in 2019, and by this way, monitoring and reporting of the data process/content between ASELSAN and its suppliers has been provided within Enterprise Resource Planning (ERP) system. On the other hand, information is also shared by ASELSAN website, joint organizations/workshops and face to face meetings. Our measure of success is to increase the response rate from suppliers and increase the rate of suppliers' status from admissible to acceptable. We do not work with high risk level suppliers. As an assessment result, we have seen that our suppliers' energy consumption is a Scope 3 GHG emission source that needs to be investigated further. Therefore, not only do we plan to communicate with an increasing number of suppliers to collect data for the next reporting period, but also we aim to identify a key supplier group and seize opportunities to provide training for them for the purpose to better manage their energy performance and consequently reduce their GHG emissions, including target setting, during the transition to the new version of ISO: 14064:2018 standard.

Comment

For the purpose to ameliorate climate change related issues, ASELSAN was planned to focus on the leader players of her value chain: People, Customers and Suppliers. Employees training on climate issues, customers' needs understanding and Suppliers Capacity Building development were ASELSAN's method of engagement from now on. A contractual document intended to align all suppliers' policies and internal processes with all the principles that ASELSAN commits to respect is in place. Potential suppliers' environmental maturity assessment revision is in place. ASELSAN created an ecosystem with its subcontractors that "enables growth for others while self-growing". In line with the activities carried out by the Committee established in 2018 to further activate this ecosystem. ASELSAN held the 1st Power Union Summit in February 2019 with the goal of increasing interaction by sharing road maps and targets. At the Summit, products to be developed with subcontractors were published and shared in the form of

brochures. The companies that aspire to develop these products apply to ASELSAN and explain their competencies and infrastructure. Product feasibility, necessities and sales objectives for these products are finalized through mutual evaluations.

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Education/information sharing

Details of engagement

Share information about your products and relevant certification schemes (i.e. Energy STAR)

% of customers by number

35

% of customer - related Scope 3 emissions as reported in C6.5

25

Please explain the rationale for selecting this group of customers and scope of engagement

ASELSAN aims to grow, embrace globalization, create value for its customers, conduct R&D studies, remain competitive and efficient, and improve its human capital and financial structure. In this respect, we have built a Strategic Plan covering a five-year period. Accordingly, we have developed a compliance monitoring program within the Strategic Management System. We also carry out examinations, analyses and reporting to support our strategic decisions. World's leading defense industry companies, who provide the major portion of the defense needs of their country, lack of customer diversification caused by selling to mainly a single customer. The main client of the Company is the Public Institutions and Organizations, especially the Turkish Armed Forces. This situation is accompanied by the fact that the activities of the Company are generally directed towards the public demands of our country. It is aimed to reduce this risk by working on increasing the sales abroad and carrying the existing know-how to the civilian sectors. Such as: Civilian satellites, surface and underwater technologies, railway signalling and modernization, health systems, naval electro-optical systems, unmanned vehicle systems, advanced material for the energy systems covering electricity generation; transmission, distribution, consumption and management areas. ASELSAN realized 62% of its total sales to the Turkish Armed Forces, 26% of its sales to private organizations or other corporate customers, and with 12% of its exports. We engage and raise our customers' awareness by information sharing on our products with the activities to offer system solutions, covering R&D, design, production, integration and after-sales support by focusing on Energy Management and Smart Grid Systems and Renewable Energy Systems (solar, wind and hybrid systems).

Impact of engagement, including measures of success

High quality standards and high technological solutions are offered for services or delivered products with regard to customer needs and expectations so as to meet customer satisfaction. Requirements of these quality standards are met and inspections, tests are applied through every process from projects' start till the delivery phases. Our all processes are administered by directives, quality plans, standards, audits and test instructions. Our processes have been certified by internationally accepted standards such as AS 9100, ISO 9001, ISO 14001, ISO 14064, ISO 45001, AQAP and CMMI so that our products and services are secured to protect quality standards. These certificates are renewed every year with the audits performed. Changes and improvements of international standards are being followed and our processes are developed accordingly. Customer satisfaction, which is the primary objective, is evaluated and reported for the access of related executives. In addition, results and trends are evaluated by the upper management in an annual basis and required recovery activities are planned. In the reporting year; the company measured its customer satisfaction, and operated to ensure full customer satisfaction. Customers are notified of any delays in handling their requests. The company complied with the quality standards with respect to its products and services

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

ASELSAN's vision is to be a reliable, competitively preferred, environment-friendly and human conscious technology firm which preserves its sustainable growth in the global market via the values created for stakeholders, as well as serving its establishment purposes.

In order to achieve the sustainable growth:

- The quality and technological perspectives of the cooperation formed with the universities have been increased.
- ASELSAN employees are provided with the opportunity to study in the work environment with the initiation of ASELSAN Academy Postgraduate Training Program. The program serves the purpose of internalizing necessary technologies and developing existing technologies.
- The efforts to form an Eco-system with the sub-industry companies and SME's have continued.
- Company is continuing its operations in civil electronic areas which requires high technology.
- Inorganic expansion will be also evaluated as well as organic expansion

Implemented with the mission of increasing ASELSAN personnel's knowledge of the Company's field of activity, contributing to the applied academic development of the other stakeholders (universities, R&D center, institutions, subcontractors, etc.) that operate in our country, the ASELSAN Academy has become a new and innovative model of tremendous importance for Turkey which commands very high expectations.

Several universities were brought together through the ASELSAN Academy under the coordination of Council of Higher Education (YÖK), which became operational in 2018- 2019 Fall Semester, forming a cooperation model in a single program. The ASELSAN Academy Model allows the applicant (the ASELSAN employee), who applies for the graduate program

and fulfills the necessary conditions, to take courses and conduct R&D activities about the projects they involve as part of their engineering roles within the company.

In 2019, ASELSAN continued to grow its R&D activities in the framework of national goals, in areas such as energy, transportation, medical systems, and next generation cellular communication. ASELSAN aims to become a leading solution provider in these fields and continues innovative R&D projects in GaN Based Power Switching Elements, the fault detection solutions for traction systems, Contactless Power Transfer Technologies as a future solution for charging electric vehicles (EVs), under the university-industry collaboration programs. In these studies, the goal is to develop efficient, compact and lightweight systems that aim to distinguish themselves.

DEPAR Power Quality Analyzer and Measurement Devices, which were developed under the project implemented together with Boğaziçi Elektrik Dağıtım A.Ş. were installed, tested and commissioned. Development work continued on the National SCADA and National Energy Management systems, including the critical information security algorithms and software required for energy transmission and distribution. The design of the ARTU - Advanced Remote Terminal Unit has largely been completed and preparations for the first experiments in live systems have got underway by continuing algorithm and software development studies.

Necessary preliminary studies were carried out for the qualification tests and certification process - in 2019. ARTU, is targeted to be widely used in electricity, natural gas, oil and water transmission and distribution systems. The systems developed will aid in securing the energy supply for efficient and uninterrupted electric energy generated from Turkey's rich solar and wind energy resources.

The critical components are developed with maximum national resources to be competitive in the local market. In the field of wind energy, the design, development and production processes of full scale wind energy power converter systems and power grid connection algorithms, which are required by wind turbine manufacturers, have been completed. The first 300 kW power converter systems, which was ordered by the Northel EMK Company, has been successfully commissioned in the field.

In the field of solar energy, very high efficiency c-Si photo voltaic cell and module development studies have been continuing with the IBC (Interdigitated Back Contact) technology. Within the scope of the joint studies carried out with GÜNAM at METU (Middle East Technical University), production infrastructure has been completed and prototype IBC solar cells have been manufactured.

- Hybrid energy system solutions have been developed for military and civilian applications, providing reliable, economical and clean energy from the sun and wind. The design and production of the GURU Kompakt, a hybrid system integrated within a container, was completed and systems are in use in the field.
- Preliminary work for Renewable Energy Micro Grid System R&D project has been completed. Detailed studies and designs were performed in 2019.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Direct engagement with policy makers
- Trade associations

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Mandatory carbon reporting	Support	We follow the implementation of the regulation on monitoring and reporting of GHG emissions that was published in 2012 and revised in 2014 very closely. Although ASELSAN is not yet included in the scope of this regulation, we still participate in meetings and our Sustainability Committee is ready to send our comments about the Communiqués that are related to this regulation.	We support the legislation and the communiques related to this legislation with no exceptions.
Energy efficiency	Support	We have sent our comments for the energy efficiency law no 5627 by the Ministry of Energy and Natural Resources during its preparation stage. We fully support this law.	We fully support the energy efficiency law and the related by-laws
Cap and trade	Support	The cap and trade principle which is the cornerstone of the EU's policy to combat climate change is adopted by EU-ETS. For the purpose to be ready to the future commitment this system was taken in the agenda of Turkish Ministry of Environment & Urbanization. Within the scope of Partnership for Market Readiness Project (PMR), Turkey was prepared a draft report about carbon pricing policy with the economic and sector implications. Implementation of phase 2 of the PMR builds on establishing the Climate Change Law and ETS Regulations with emission limits and allocation plans for pilot ETS. ASELSAN states her corporate views on these issues. Several number of stakeholder meetings and feedback rounds were conducted by the MoEU during the reporting period. The pilot implementations will be realized between 2020-2021. In order to manage this risk ASELSAN's Board chair assigned some sustainability committee members to participate the PMR meetings executed by the Ministry. This communication will prepare our company	We closely follow up the PMR activities of MoEU

		to this upcoming system	
Other, please specify Zero Waste Project Support	Support	<p>In order to prevent and minimize waste generation and ensure recycling, ASELSAN started to work voluntarily in May 2019 to implement the "Zero Waste Project" in all its campuses. The training was given to all workers and related staff who will take an active role in waste separation / collection. Within this implementation approximately 137 tons of waste will be recycled and brought into the economy every year.</p> <p>In this sense, it was the first defense industry company started this project in Turkey. 2 months after the start of the works, the Zero Waste Regulation was issued by the Ministry of Environment and Urbanization of the Republic of Turkey and it was made compulsory for companies of the same scale to switch to the Zero Waste system by 2022. However, ASELSAN has quickly completed its work that it has already begun and became the first company to fully implement the Zero Waste Project in all its campuses on September 21, 2019.</p>	<p>We support the legislation and the communiques related to this legislation with no exceptions. ASELSAN's on-site studies on this area are examples of legal practices.</p>

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

No

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Adopting a strategy in harmony with its vision and mission, ASELSAN aims to grow, embrace globalization, create value for its suppliers and customers, conduct R&D studies, remain competitive and efficient, and improve its human capital and financial structure. In this respect, we have built a Strategic Plan covering a five-year period. Accordingly, we have developed a compliance monitoring program within the Strategic Management System. We also carry out examinations, analyses and reporting to support our strategic decisions.

According to our new corporate communication strategy, all communication activities have to be approved by our CEO/ Board Chairman who is the highest level of executive in ASELSAN, our CEO/ Board Chairman is fully aware of our general corporate strategies and our overall climate change strategy. Moreover, our Sustainability Committee together with our Strategic Planning and Corporate Performance Directorate are responsible of setting and tracking actions to ensure our direct and indirect activities are consistent with our overall climate change strategy. ASELSAN maintains its communication with its suppliers, which it considers among the most important rings of its value chain, through the Supplier Portal. ASELSAN has developed a pioneering and innovative platform to strengthen the bond with its suppliers, increase the effectiveness of nationalization efforts, further reduce foreign dependency and carry out sustainable cooperation under an integrated roof. This platform called " Powerful Together" was put into use in April 2020. Activities such as receiving offers, managing the quality process, product procurement process, training, inspection processes, supplier report and announcements are carried out with this platform infrastructure. Thus, suppliers are integrated into the supply chain through the platform. Business continuity continues uninterruptedly by solving the portal's problems related to the portal quickly and systematically.

There is a constant flow of information as communication and meetings, between the groups and the CEO.

ASELSAN is placed in the A- list according to 2018 results, among the firms that most successfully manage climate change risks through production process and has the highest gas emission performance on the outcome of the research conducted by evaluating big firms including firms listed on Borsa İstanbul.

In ASELSAN, where decreasing carbon emission is one of the strategic goals, carbon emission has been monitored since 2009. Also, ASELSAN is the first and only company that is ranked with the highest initial score among Defence Industry firms in Turkey by participating in CDP survey.

ASELSAN has decreased carbon emission significantly through its efforts, and continues its operations by increasing momentum in the fields of increasing energy efficiency in production, giving priority to production technologies that decrease carbon emission, switching to use of energy that does not cause carbon emission.

It is planned to set Energy Management System ISO 50001:2018 in our facilities in the short term.

Having certifications for ISO 14001 Environmental and ISO 45001 Work Health and Safety Integrated Management System; we will proceed to take part in pioneer applications through actualization of national and international initiatives.

In November 2014, Borsa Istanbul (BIST) has launched Sustainability Index that display the performance of January-March 2014 time period for BIST-30 firms in the fields of financial, environmental, social issues and corporate governance. With respect to that, as of this date, ASELSAN started publishing sustainability reports. As a result of the evaluation of our Company on the ASELSAN Sustainability Report, published in Turkish and English for the first time before the Index assessments, ASELSAN was among the 15 firms that were approved to be included in BIST Sustainability Index. In 2019 ASELSAN was the first company to initiate the zero-waste project in Turkey. The evaluation of corporate governance rating performed by SAHA Corporate Governance and Credit Rating Services were concluded during the last

quarter of 2019. According to the review, the score of 12.12.2018, 9,20 was updated as 9,29 out of 10 on 12.12.2019.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports

Status

Complete

Attach the document

 2019_ASELSAN Annual_Report.pdf

Page/Section reference

2019_ASELSAN Annual_Report

Content elements

Governance
Strategy
Risks & opportunities

Comment

ASELSAN Annual Report, 2019
pages: Governance; 20-21, Strategy 38, Enterprise Risk Categories: 85-86

Publication

In voluntary sustainability report

Status

Complete

Attach the document

 2019 ASELSAN Sustainability Report.pdf

Page/Section reference

2019 ASELSAN Sustainability Report and pages.
Corporate Governance 17, 25,42
Internal Audit 43-45
Risk Management 49
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Emissions and Energy 109
Water Management 113
Waste Management 114
Environmental Compliance 117
Green Solutions in Operations 118

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Corporate Management Vice President	Board/Executive board

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission
I am submitting my response		Public

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