



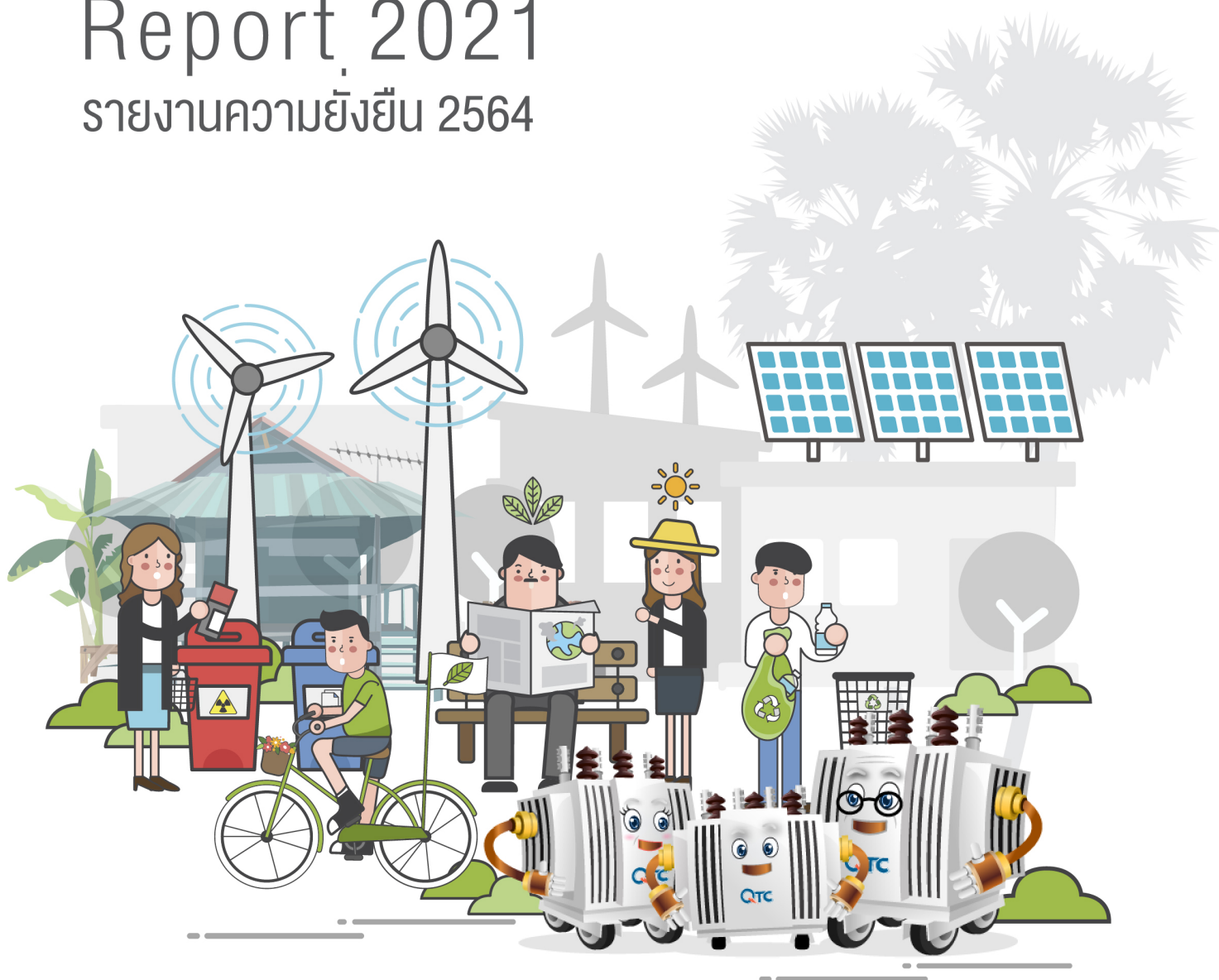
QTC ENERGY PCL.

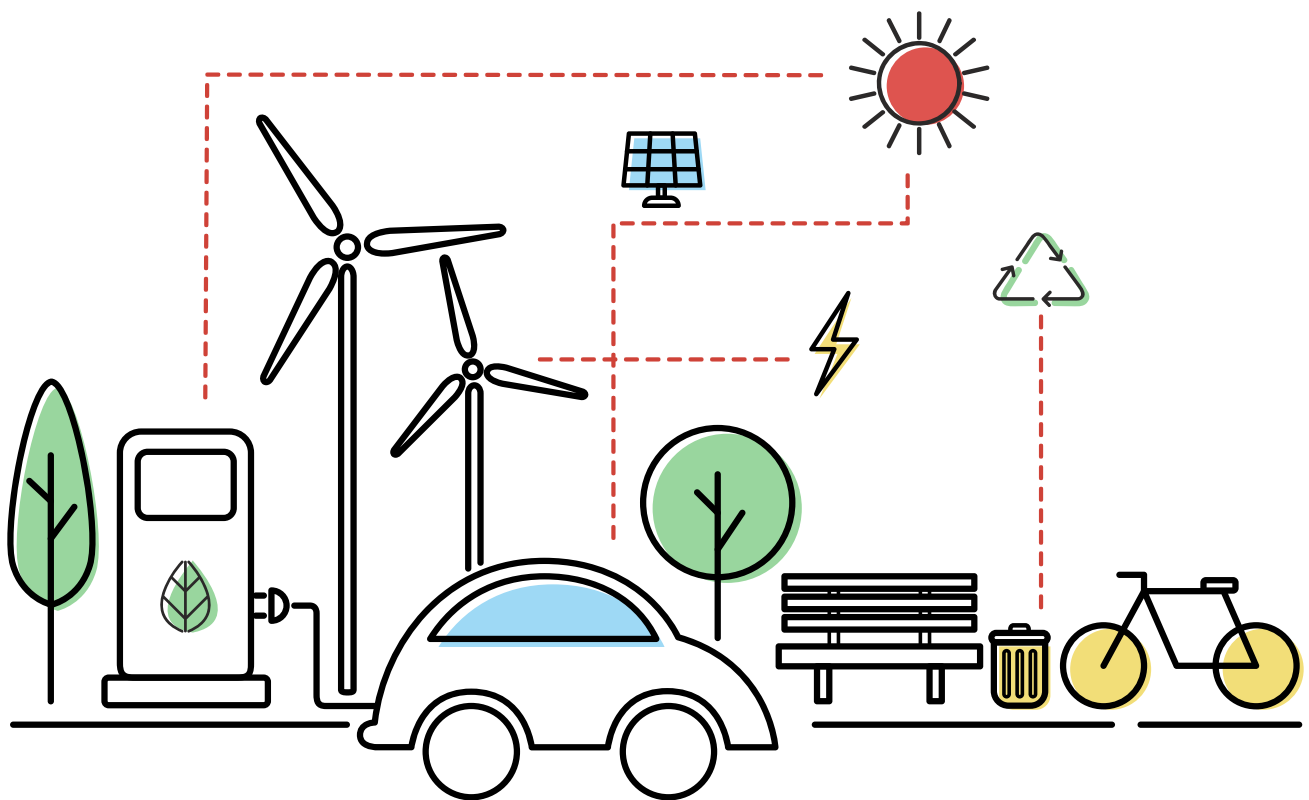
บริษัท คิวทีซี เอนเนอร์ยี จำกัด (มหาชน)

QTC Energy Public Company Limited

Sustainability Report 2021

รายงานความยั่งยืน 2564





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Message from the Chief Executive Officer

“ We have to learn, adapt and live with COVID-19 safely without disruptions to business. ”



To all stakeholders,

Severe outbreaks of the Delta strain of Covid-19 in 2021 and in the present day have caused some economic activities to be controlled by public health measures. Outbreaks have also caused the manufacturing sector in some industries to be paused, causing some SMEs to close the business while also causing the construction sector to slow down due to widespread infections that must be controlled. Private sector business operations in 2021 were difficult, causing the overall Thai economy's growth in 2021 to be low.

QTC is one of the companies directly and indirectly affected by COVID-19 outbreaks. Although we assessed risks and made plans in advance, the pandemic's global effects have forced the Company to accept the situation and we are unable to control that situation. Global raw material shortages have caused prices of main manufacturing raw materials such as copper and silicon to rise. Manufacturing costs have also risen. Exchange rate fluctuations have increased financial costs. Shipping and container shortages have caused exports of products to not be on schedule and delays in government sector investments have reduced the number of transformer bidding projects of the Provincial Electricity Authority and the Metropolitan Electricity Authority. Construction suspension in various projects has affected product deliveries.

However, QTC overcame barriers with unity from employees' compliance with risk prevention plans, the executive team's professionalism and trust from all stakeholders who have always remained confident in our products and services. We have to move forward to learn, adapt to and live with COVID-19 safely with sustainability. The business must not stop. In 2021, the organization's structure was modified to create flexibility in management and the Company moved assets from MAI to trade in the SET to increase opportunities for institutional and fund investors to hold shares and strengthen the Company. Furthermore, the Company registered the creation of a new company to operate in business as a representative to sell electric and energy equipment under the name of QTC Marketing Company Limited or QTCM. With a registered capital of five million baht, the Company is under the direction of QTC Global Power Company Limited or QTCGP.

Concerning performance at the end of 2021 in specific businesses, our income increased by more than 18 percent from overseas deliveries of transformers and sales of solar products while the profit ratio declined from 2020 by more than 40% or a net profit of approximately 9% from sales. Performance of Q Solar 1 Company Limited in 2021 showed less income and net profit from 2020 from lower prices per production unit in contracts made with the Provincial Electricity Authority. Regarding



economic conditions in 2022, the COVID-19 pandemic is expected to be under control with appropriate economic stimulation measures for every sector. We expect to be able to grow by more than 10% from 2021.

The organization's internal management in 2021 is cautious, concise and thorough in order to provide safety for employees and families from COVID-19. The Company provided alternative vaccines for employees and supports employees to be vaccinated with vaccines provided by the government including more intense COVID-19 prevention measures. Operations may affect customer rights to inspect products in test laboratories or raw material delivery processes of suppliers or rights, freedoms or welfare rights of employees. The Company created understandings with every affected group and received good cooperation from the parties involved. However, the Company continues to give importance to personnel development and promotion of practices with environmental, social and governance excellence including lectures and skill trainings via online media. The Company reduces face-to-face communications to reduce contact and infection risks.

Work safety management is a major risk for the Company. In 2021, the number of accidents was 37% lower than in 2020 as a result of compliance with safety measures and supporting measures aimed at reducing

accidents. The Company continues to maintain the goal of having zero accidents.

In the area of participation in community development in 2021, social projects had to be stopped due to COVID-19 outbreaks. However, the Company continues to recognize the importance of supporting communities through donations capable of creating continual benefit for the public, reducing close contacts by providing Sinopharm vaccines for stakeholders in communities based on consent and donations of transformers to benefit student learning, etc.

In closing, on behalf of the Board of Directors, executives and all employees, I would like to thank all stakeholders, customers, trade partners, community members and stakeholders for having always supported and encouraged the Company. We promise to follow the Company's given vision, missions and sustainable development framework and to dedicate ourselves to develop processes, tools, machines and human capital to be able to stand amidst economic and social changes with security and sustainability.

(Mr. Poonphiphat Tantanasin)

Chief Executive Officer

Award for Success



Best innovative Company Awards at Set Awards 2021



Carbon Footprint Certificate

Certificate No: TGO CFO FY21-06-039

From The Thailand Greenhouse Gas Management
Organization (Public Organization)



Sustainability Disclosure Recognition From Thaipat Institute

About QTC

Business Information (Disclosure 102-2)	:	QTC Energy Public Co., Ltd.
Abbreviated Securities Name	:	QTC
Registration Date	:	28 July 2011 (Securities Registration)
Registered Capital (Disclosure 102-7)	:	341,092,557 Baht
Paid-up Capital	:	341,092,557 Baht
Industry Group	:	Resources
Main Office (Disclosure 102-3)	:	2/2 Soi Krungthep Kritha 8, Intersection 5, Krungthep Kritha Rd., Huamark, Bangkapi, Bangkok, 10240, Tel. 02-379-3089-92, Fax. 02-379-3097
Manufacturing Factory (Disclosure 102-4)	:	149, Moo. 2, Pluakdaeng-Huayprab, Mabyangporn, Pluak Daeng, Rayong, 21140, Tel. 03-889-1411-14, Fax 03-889-1420, http://www.qtc-energy.com
Highest Ranking Executive	:	Mr. Poonphiphat Tantanasin (Chief Executive Officer)
Business Type (Disclosure 102-2)		

Manufacturing and Distribution of Transformers and Related Products

QTC Energy PCL operates in the business of manufacturing and distributing transformers according to purchase orders with capacity at 30-30,000 kVA in 1 phase and 3 phases and a voltage of no more than 36 KV. The Company has a manufacturing capacity of 4,000 transformers per year. Transformers manufactured and distributed by the Company can be divided into the five following types:



1. Oil Type Transformer

1.1 Hermetically Sealed Oil Type Distribution Transformer)

With a maximum capacity of 3,000 kVA, this type of transformer uses transformer oil as insulation for preventing short-circuits in the transformer and venting heat from wire coils in the transformer outside. The transformer's body is hermetically sealed to prevent air from coming into contact with oil in the transformer, giving this type of transformer excellent humidity protection properties, thereby preventing transformer oil from being easily degraded while also maintaining transformer oil insulation properties along with extending transformer maintenance time and expenses. This type of transformer is usually installed in the open.



1.2 Open Type with Conservator with a maximum capacity of 5,000 kVA

This type of transformer is the original type of transformer used for a long time. This type of transformer uses transformer oil as insulation and coolant like hermetically sealed oil type transformers. However, open type transformers have a conservator installed to support transformer expansion during use with ducts to allow air to pass in and out. At the end of the duct is a bulb containing silica gel for absorbing humidity from the air before entering the transformer. This type of transformer requires regular transformer oil testing every 6 – 12 months.



1.3 Power Transformer

Power transformers are used to reduce voltage of electricity sent from generation sources via transmission lines before electricity is sent into distribution lines to users. Power transformers manufactured and distributed by the Company have capacity from 5,000 – 30,000 kilovolt amperes (kVA) and a maximum voltage of 72 KV.



1.4 Super low loss Transformer

Super low loss transformers use amorphous raw materials to make transformer cores in place of silicon. Changes in raw materials have benefits including no load loss at only one-third the amount from silicon cores, enabling super low loss transformer users to save on electricity costs. If super low loss transformers replace many silicon core transformers, large amounts of electricity can be conserved at the national level with indirect effects on reducing global warming by reducing greenhouse gas emissions from electricity generation by power plants.

Furthermore, the Company manufactures special made-to-order transformers according to functions and properties needed by customers such as earthing transformers, unit substations and pad mounted transformers, etc.



Earthing Transformer



Unit Substation



Pad Mounted

2. Dry Type Transformer

2.1 Cast resin transformer



Dry type cast resin transformers are suitable for installation in buildings because dry type cast resin transformers do not use oil insulation. Cast high voltage wire coils are in epoxy resin insulation resistant to humidity, dust and the environment. Dry type cast resin transformers are used in projects such as tall buildings, residential buildings, condominiums, hospitals or shopping malls with limited space and need for transformers capable of being installed in a building. Furthermore, the Company invested in service goods and personnel readiness for customers in order to distribute cast resin transformers tested by international standards and create confidence among customers.

2.2 Dry type transformer class F & H



Class F & H dry type transformers or isolating transformers are for converting low-voltage electricity such as from 380V to 220V to distribute electricity to imported machines. Due to low voltage, wire coils of this dry type transformer have no need to be cast with resin and a special type of insulation capable of enduring high temperatures is used. Insulation for this dry type transformer is usually Class F transformer with an insulation temperature of 155 Celsius degrees. Therefore, this type of transformers is usually called "Dry Type Transformer Insulation Class F". However, insulation capable of resisting higher temperatures is sometimes necessary such as Class H insulation with a temperature value of 180 Celsius degrees, etc. This type of transformers can be installed indoors.

Other Products

Smart Monitoring Box

This smart monitoring system is a smart system designed to monitor transformer functions with sensors that track key variables such as electricity in wire coils, measure wire coil and oil temperature and detect imbalances with potential negative effects on transformers. This smart monitoring system is installed with smart monitoring boxes and can be installed to every QTC transformer model. The system sends real-time function data through the cloud using 3G and 4G communication systems which enable users to check information at any time in 24 hours. This new innovation was created by the Company's research and development team.





Busduct

Busducts are used in place of wires to distribute loads and are popularly used in high-rise buildings and large industrial factories. The product is distributed under the DE BUSDUCT brand. QTC was appointed as the sole distributor in Thailand by Dynamic Electrical SDN. BHD., Malaysia. DE BUSDUCT passed conductivity testing for both copper and aluminum conduits. Furthermore, DE BUSDUCT offers Mylar and hybrid insulation choices to suit various uses among contractors.

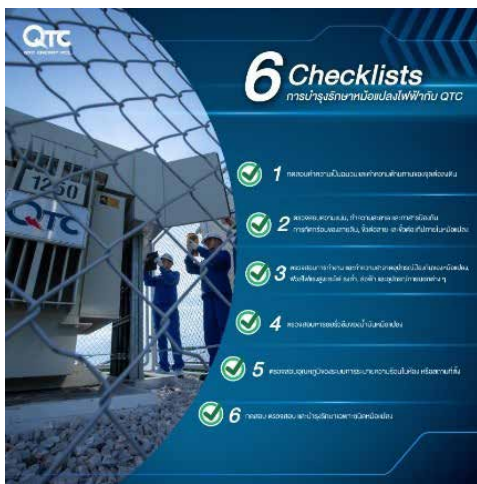
Solar Inverter

Solar inverters are a product for converting direct current electricity into alternating current electricity from solar panels for solar roofs, solar farms and floating solar panels. QTC was appointed as a distributor by Huawei Technologies (Thailand Co., Ltd.) to distribute under the Huawei brand. In addition, QTC was appointed to be a distributor by Hitachi Hi-Rel Power Electronics Pvt. Ltd. to distribute under the Hitachi brand.



PV Panel

PV panels convert solar energy into electricity for solar roofs, solar farms and floating solar panels. QTC was appointed as a distributor by LONGI Solar Technology Co., Ltd. to distribute under the LONGI brand. In addition, QTC was appointed as a distributor by Trina Solar Co., Ltd. under the Trina brand.



Services

The Company's services are 24-hour transformer-related services provided by teams of engineers and technicians with excellent knowledge, expertise and experience to support and facilitate customers who purchased QTC transformers and ordinary customers. In the case of QTC transformers, the Company provides emergency contact information on the side of every electrical transformer for customers. The following services related to transformers are provided by the Company for customers:

- Transformer installation services.
- Scheduled inspection and maintenance services.
- Transformer repair and maintenance services.
- Transformer oil filling and filtering services.
- Transformer lease services.
- Standard transformer testing services.
- Transformer and electricity system consultation services.
- Steel cutting and coil binding commissioning services
- Transformer tank manufacturing contracts.



Consultancy



Installation



Testing



Repair and Maintenance



Scheduled Maintenance



Transformer Rental



Our expert service technician teams are ready to perform 24-hour service.



ISO/IEC17025 Standard Testing Laboratory



Coiling & Steel Cutting & Body Manufacturing



Renewable Energy Generation Business

QTC Global Power Co., Ltd. (QTCGP) is engaged in the business of investing in renewable energy production businesses such as solar energy and water energy to create security and disperse business risks.

- Q Solar 1 Co., Ltd. generates electricity from solar cells with a capacity of 8.25 MW. The Company is located at 102, Moo 5, Bo Thong, Kabinburi, Prachinburi (Disclosure 102-4). The Company is able to generate 35,000 – 40,000 kWh of electricity per day for distribution to the Provincial Electricity Authority.



Product Distribution Representative Business

QTC Marketing Co., Ltd. (QTCM) operates in the business of being a distribution representative for electric and energy equipment with offices located at 2/2, Soi 2/2 Soi Krungthep Kritha 8, Intersection 5, Krungthep Kritha Road, Hua Mak, Bang Kapi, Bangkok, 10240, Tel. 02-379-3089-92, Fax: 02-379-3097



QTC's Customers (Disclosure 102-6) :

QTC's transformers and smart monitoring systems are distributed to government agencies such as the Metropolitan Electricity Authority, the Provincial Electricity Authority, the Electricity Generating Authority of Thailand and ordinary government agencies, private designer groups, construction contractors, industrial factories and condominiums, etc., in the country and overseas worldwide. The Company distributes goods under the **QTC** brand and manufactures OEM under customer brands.

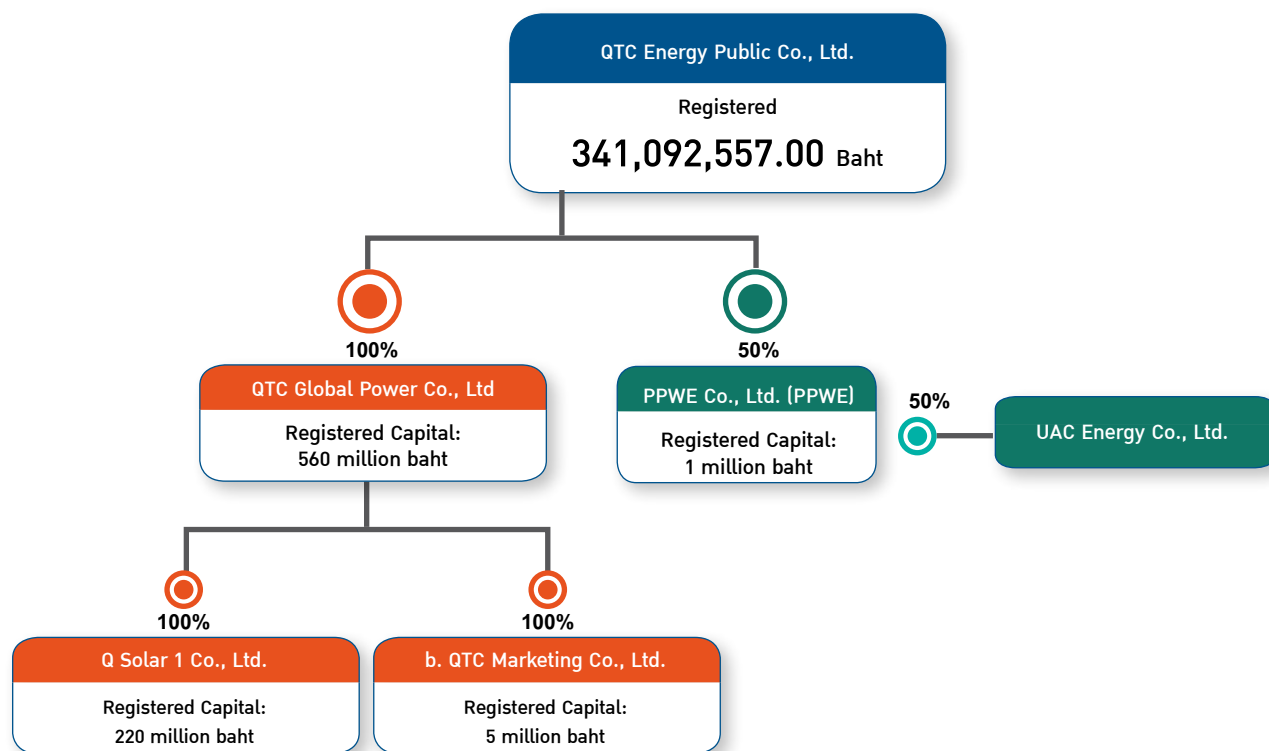


- QTC is a distributor of BUSDUCT under the DE brand.
- QTC is a distributor of solar inverters under the Huawei brand and the Hitachi brand.
- QTC is a distributor of PV panels under the LONGI brand and the Trina brand



Shareholding Structure (Disclosure 102-5)

Summary of Shareholding Structure as of 24 December 2021



The Company has one subsidiary and one joint venture consisting of:

1. QTC Global Power Co., Ltd. (QTCGP) is engaged in the electricity and other energy generation business. The Company was founded on 28 September 2016 with registered capital of 560 million baht. QTC holds 100% of shares.
 - a. Q Solar 1 Co., Ltd. (Q Solar 1) is engaged in the business of generating electricity from solar energy. The Company was founded on 28 December 2009 with registered capital of 220 million baht. QTC Global Power Co., Ltd. holds 100 percent of shares on 20 September 2017 (the company was formerly known as L Solar 1 Co., Ltd. Name change was registered on 31 August 2018).
 - b. QTC Marketing Co., Ltd. (QTCM) is engaged in the business of being a distribution representative of electric and energy equipment. The company was founded on 10 November 2021 with registered capital of 5 million baht. QTC Global Power holds 100 percent of shares.
2. PPWE Co., Ltd. is a joint venture engaged in the energy business. The company was founded on 12 January 2016 with registered capital of one million baht. QTC holds 50.00% of shares, and UAC Energy Co., Ltd. holds 50.00% of shares.

The Board of Directors (Disclosure 102-18)



1. Mr. Krirkkrai Jirapaet
Chairman, Board of Director



2. Mr. Natthaphon Lilawatthananon
Director



3. Mr. Norachit Sinhaseni
Director



4. Dr. Kamol Takabut
Director



5. Mrs. Wasara Chotithammarat
Director



6. Mr. Suroj Lamsam
Director



7. Mr. Preedee Ngamsantikul
Director



8. Mr. Phairoj Boonpan
Director



9. Dr. Apichart Sramoon
Director



10. Mr. Pornthep Panyarachun
Director

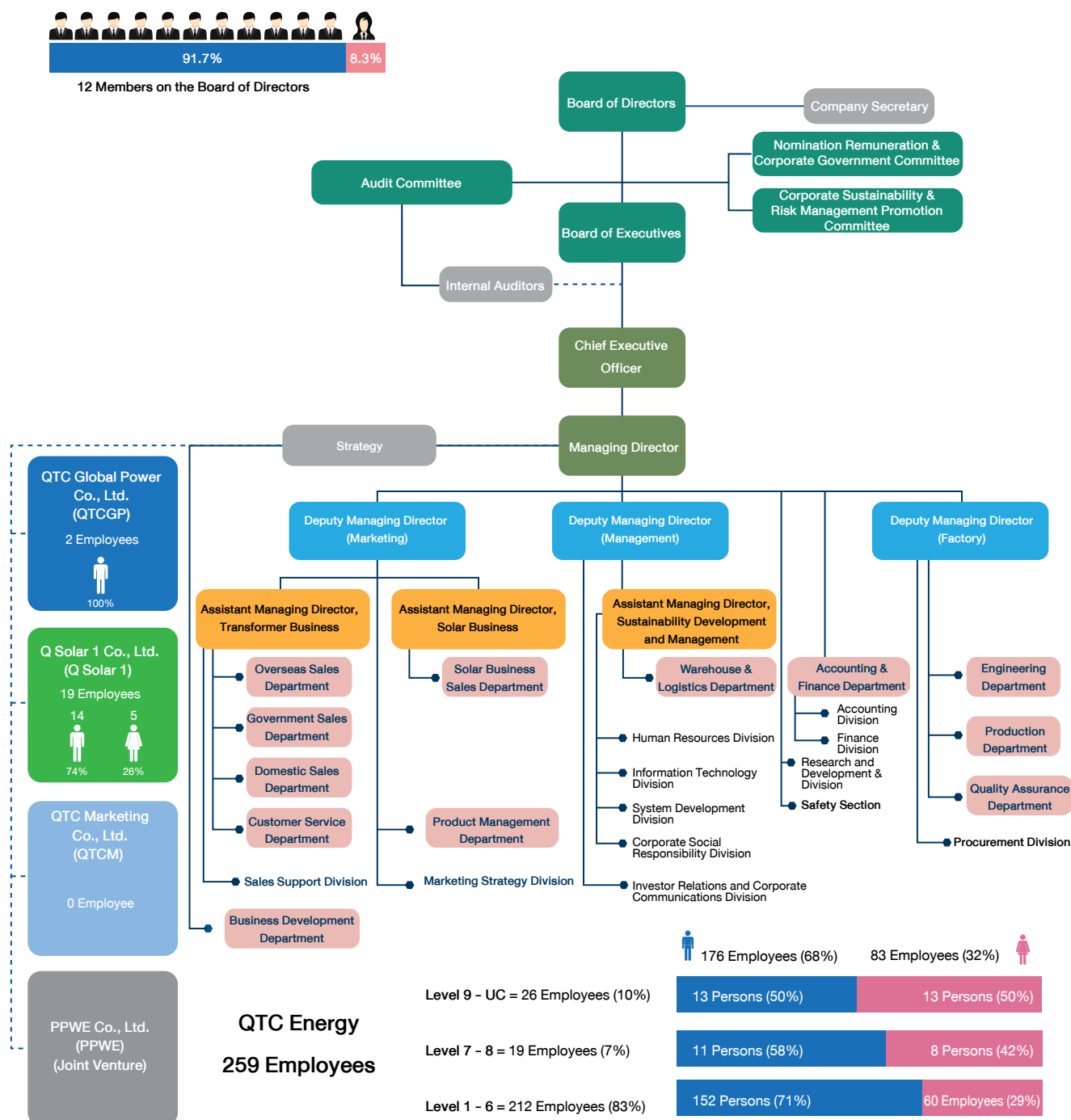


11. Mr. Poonphiphat Tantanasin
Director



12. Mr. Ruangchai Kritsnakriengkrai
Director

Governance Structure [Disclosure 102-18]



Roles, Duties and Responsibilities (Brief)

- The Board of Directors is responsible for performing duties under the Board of Director's charter for the highest benefit of the Company and all stakeholders.
- The Board of Audit is composed of independent directors who assess the Internal Audit Team's performance and considers changing the Internal Audit Team. In addition, the Board of Audit has other roles and duties under the Board of Audit charter.
- The Nomination, Remuneration & Corporate Government Committee appoint and transfer high-ranking executives in addition to assessing high-ranking executives' performance. In addition, the Nomination, Remuneration and Corporate Government Committee has other roles and duties under the Nomination, Remuneration and Corporate Government Committee charter.
- The Corporate Sustainability Promotion and Risk Management Committee governs performance in line with sustainable development policies by covering issues in the sustainability management framework and expanding results to subsidiaries. The Corporate Sustainability Promotion and Risk Management Committee assesses the organization's economic, social, environmental and ethical risks along with preparing guidelines for preventing that risk. The Corporate Sustainability Promotion and Risk Management Committee reports to the Board of Audit and the Board of Directors.
- The Chief Executive Officer determines visions, policies, goals and distribution of authority and duties to drive the organization according to resolutions of the Board of Directors.
- The Managing Director determines business strategies and management to be consistent with visions for the ultimate benefit of stakeholders.

Moving Forward with Determination and Vision

Quality of DETAILS

DETAILS are the most important key of our operations and they are in every part of QTC from personnel, thinking methods, working methods, technologies, factories, products, including society and environment.

Vision

"To be a manufacturer, distributor, and service provider of integrated technology with world-class standard in power industry with good governance, social and environmental responsibilities."

Mission

1. Being the leader of manufacturing, distributing, and providing services of high-quality integrated technology solutions for businesses in power industry
2. Developing products, process, and services to create added value in the value chain
3. Developing human capital to create good and smart people
4. Operating businesses based on good governance principle and paying attention to community, social and environmental responsibilities
5. Building sustainable business growth in long-term to gain confidence and trust from all stakeholders

Work Philosophy

QTC is firmly committed to operating its business based on 3 principles as follows:

1. Ethical, moral, and transparent management
2. Provision of products and services meeting international quality and standards
3. Emphasizing on corporate social and environmental responsibility and human freedom rights

However, the Company reviews its vision and mission annually. In 2022 was revised and approved by the Board of Directors on December 16, 2021 so that the vision and mission is consistent with current economic situations.

QTC Values for Sustainability



QTC & Sustainability

The QTC Sustainability Framework integrates the Quality of Details corporate value to drive work to be consistent with the organization's contexts according to the Q+R=S sustainability equation (Quality + Responsibility = Sustainability). This was carried out by the Corporate Sustainability Promotion Committee, which consists of executives at the department level and up from various branches of work with roles and duties to monitor performance according to policies and promote operations.

Specification of the sustainability management framework is an important mechanism for driving internal management at the policy level and the management level in order to lead to practice and project operations in line with the specified framework. The Company will foster beliefs and build understanding for every employee in line with the sustainability equation that doing good work with quality and responsibility will build satisfaction for all stakeholders, build strength and sustainability for employees and the organization. The Company has the following sustainability framework and equation:

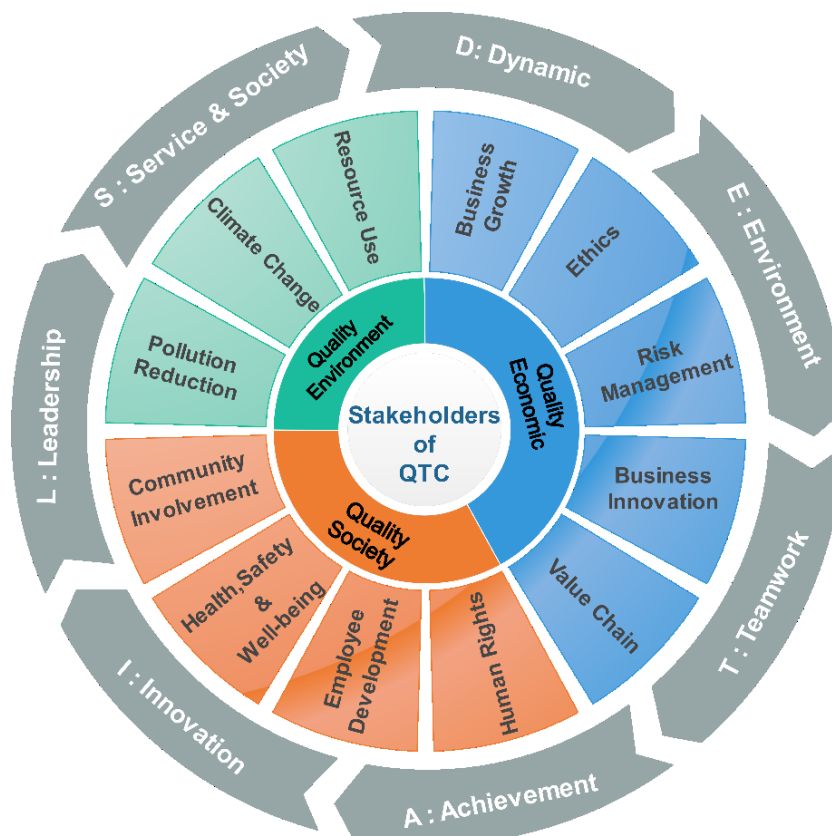
QTC Sustainability Framework

Quality + Responsibility = Sustainability

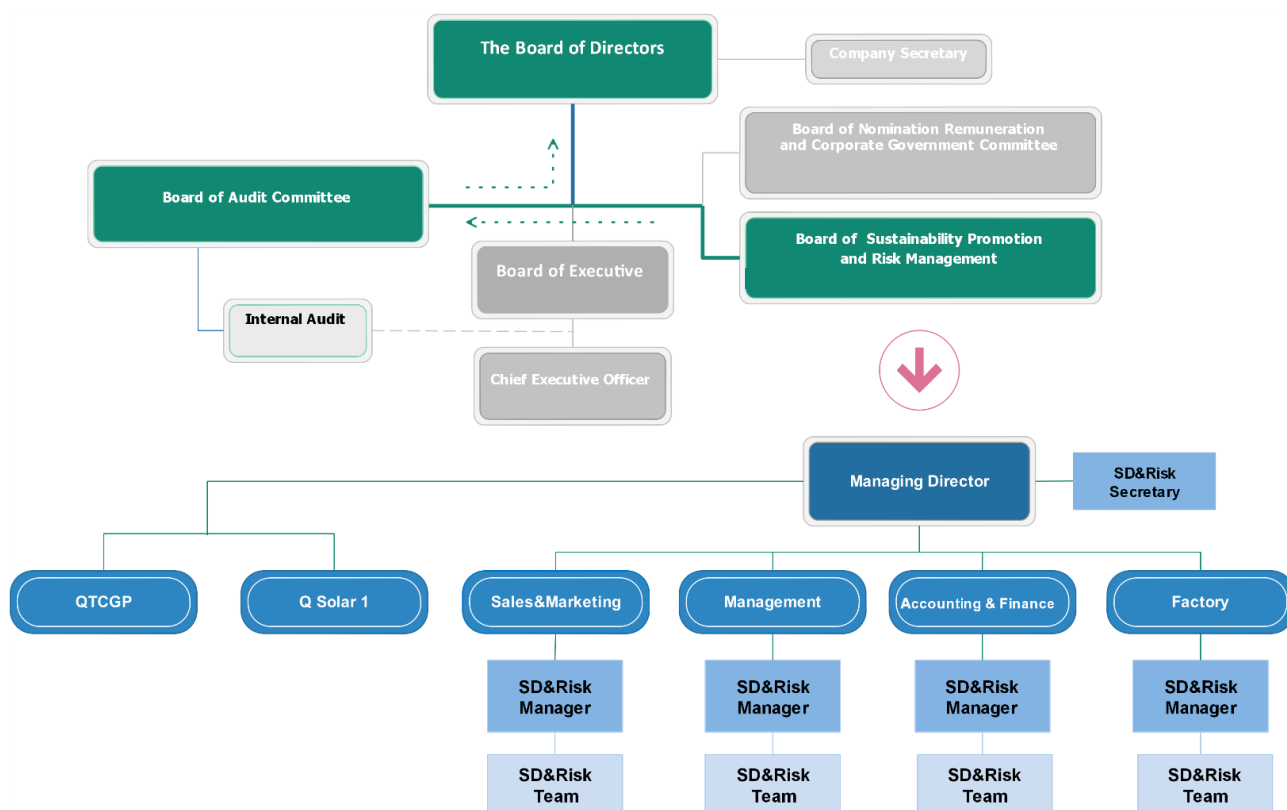


Quality and Responsible

People, Processes, Machines, Goods and Services



Operating Structure of the Sustainability Promotion Committee



Roles and Duties in Brief

Board of Directors : Specify sustainable development policies and goals.
: Oversee work.

Corporate Sustainability Promotion and : Specify strategies.

Risk Management Committee : Manage according to goals under the sustainable development framework.
: Review and identify stakeholders.
: Consider sustainable development issues, prepare development guidelines to be consistent with issues and take care of stakeholders properly.
: Review sustainability policies, goals, issues and present corrective guidelines to be modern and suitable for situations.
: Specify work plans and assign sustainable development work in practice.

Sustainability Promotion Work Group : Specify work plans.

: Work according to plans and report results.

All Subsidiaries : Manage according to the sustainable development framework; monitor and report performance.

Report performance according to the sustainable development framework to the Board of Directors on a quarterly basis.

Sustainable Development Policies

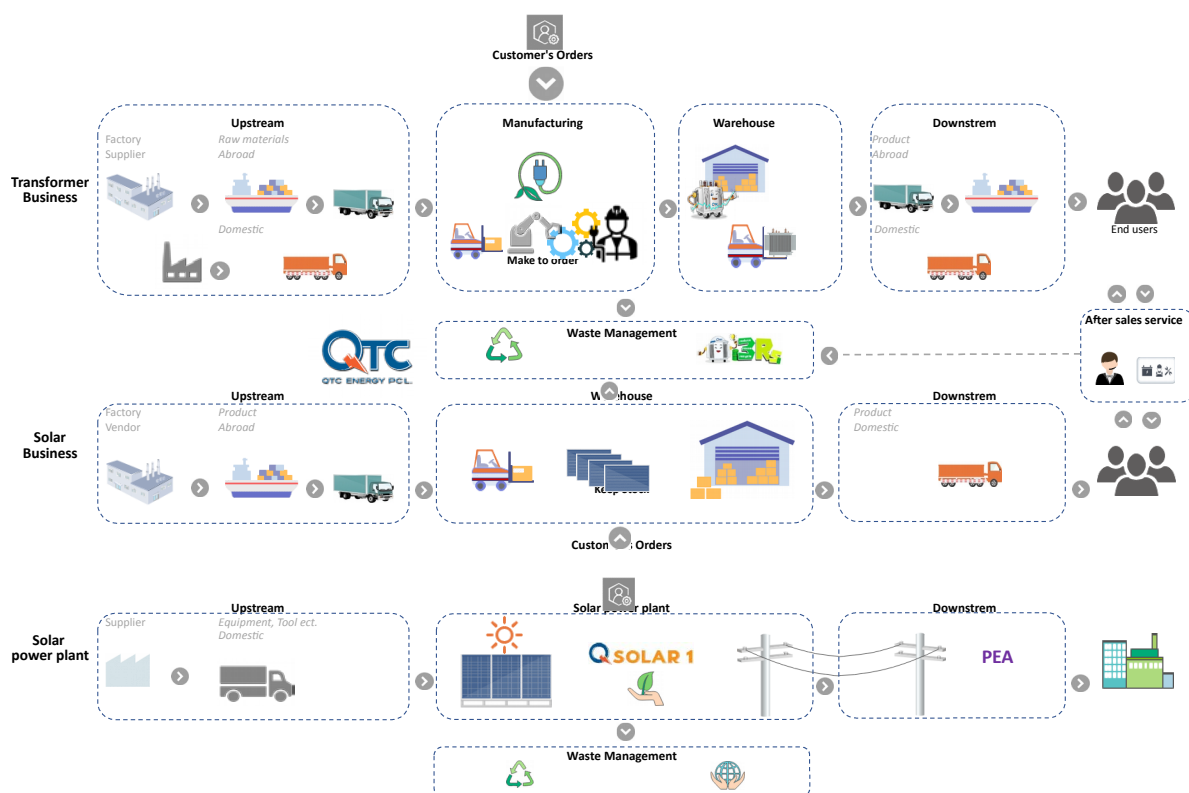
“Quality of Details” forms an important foundation that will lead the Company and other companies within the group toward sustainable growth. This means management focused on creating balanced quality in three areas, namely, economic, social and environmental quality under international practices consistent with sustainable development goals (SDGs) related to the business. The practice guidelines for implementation are as follows:

1. Conduct business honestly and fairly in compliance with the law and trade specifications while promoting clarity and transparency in corporate management to concur with international principles. In addition, support anti-corruption and prevent unlawful gain-seeking while exercising authority to create the greatest fair benefits for stakeholders.
2. Promote practices under human rights principles by carrying out business activities according to the United Nations Guiding Principles on Business and Human Rights (UNGPs) and relevant sustainable development goals (SDGs) while respecting local traditions in the area where the Company or another company within the group is located.
3. Endeavor to improve and develop work procedures and services with the value chain based on Total Quality Management principles (TQM) to promote quality attitudes for personnel within the organization and added value for customers in addition to promoting long-term growth.
4. Place importance on climate change by promoting efficient use of resources, controlling and reducing greenhouse gas emissions along with reducing and controlling air, water and soil pollution from operations of the Company, affiliates and trade partners, which may cause social and environmental impacts.
5. Pay attention to and place emphasis on the occupational and environmental health and safety of employees, trade partners and contacts to prevent loss of life and property, including work-related injury or sickness.
6. Manage personnel fairly and give importance to labor skill development in addition to promoting work happiness for effective steering of the organization.
7. Promote and create innovation with responsibility to society and the environment to increase effectiveness and efficiency with added value for the organization and stakeholders.
8. Commit to comprehensive risk management in line with international standards in order to boost likelihood of success and minimize chances of failure or loss.
9. Create sustainable benefits for communities and society. Also support and engage in activities for public gain while promoting employees to have a good conscience for the public and performing good deeds for society.

The activities under the sustainable development policies contain indices for monitoring and evaluating the effectiveness of the Company's activities and activities of other companies in the group socially, economically and environmentally. They provide essential information for continuously and sustainably setting the corporation's development direction. Furthermore, the Company is confident that the aforementioned policies will be effectively, extensively monitored and implemented by employees and executives on every level within the Company and other companies in the group.

Stakeholders

Value Chain of Business



Identification of Stakeholders and Impacts

The Corporate Sustainability Promotion Committee reviews impacts in the process throughout the entire value chain annually to identify stakeholders and significant issues through processes aimed at identifying work hazards, assessing environmental impacts from work processes and product life cycles, and brainstorming with participation from employees and every stakeholder group.

In addition to the internal evaluation of the organization, the Company has also created a forum for discussion in which communities can meet QTC once annually to hear out recommendations. Furthermore, the Company gives consideration to proposals from stakeholders through other channels such as general meetings of shareholders, expressions of opinion on webpages, etc., in order to use information in order to identify sustainability issues and specify stakeholders with the organization using criteria for considering all stakeholders in the QTC value chain (Disclosure 102-9, 102-21). In 2021, the stakeholder groups involved remained the same.

Identification of Stakeholders and Impacts in the Value Chain








Sale & Marketing	Raw Material & Product & Procurement	Management & Manufacturing	Delivery	Product Usage	Maintenance Service	Waste Management
Stakeholder						
<ul style="list-style-type: none"> • Employees • Customers <ul style="list-style-type: none"> - Government - Domestic - Foreign • Dealer • Competitors 	<ul style="list-style-type: none"> • Employees • Supplier • Vendor • Carrier • Competitors • Manufacturer 	<ul style="list-style-type: none"> • Employees • Board of Directors • Customer • Dealer • Shareholders • Banks • Communities, Society • Government agency • Investors 	<ul style="list-style-type: none"> • Employees • Transport Contractors • Broker Shipping • Shareholders • Banks • Communities, Society • Government agency 	<ul style="list-style-type: none"> • Customers • Product users • Communities, Society 	<ul style="list-style-type: none"> • Employees • Product users • Communities, Society 	<ul style="list-style-type: none"> • Communities, Society • Waste disposal • Product users • Mass Media • Government agency
Impact Issues						
<ul style="list-style-type: none"> • Fair Trade • Corruption • Customer confidentiality • Responsibility for products and services 	<ul style="list-style-type: none"> • Human Rights • Corruption • Fair operating practices • Supplier development • Pollution 	<ul style="list-style-type: none"> • Human Rights • Labor Practices • Health and Saafety • Good Corporate Governance • Resource Use • Pollution • Climate Change • Waste Management • Transparency • Corruption • Compliance • Risk Management • Community Involvement 	<ul style="list-style-type: none"> • Human Rights • Health and Saafety • Labor Practices • Pollution • Climate Change • Corruption • Fair Trade • Compliance 	<ul style="list-style-type: none"> • Safety in Procut • Energy Usage • Responsibility for Products and Services 	<ul style="list-style-type: none"> • Human Rights • Health and Saafety • Labor Practices • Responsibility for Products and Services • Compliance • Pollution 	<ul style="list-style-type: none"> • Health and Saafety • Pollution • Disposal Methods • Compliance






Stakeholder Connection



The results from identifying stakeholders in the business value chain and analysis of potential impact on stakeholders will lead to stakeholder expectations via many channels such as direct inquiries, meetings, data collection and legal requirements, etc., resulting in methods for responding to stakeholder expectations with coverage of every group.

Work with Stakeholders

Stakeholders (Disclosure 102 – 42)		Expectation Survey Methods (Disclosure 102-43)	Expectations (Disclosure 102-44)	The Organization's Response (Disclosure 102-43)
Employees 	Regular Employees	<ul style="list-style-type: none"> Monthly meeting of executives and employees. Suggestion activities, KAIZEN, QCC. 	<ul style="list-style-type: none"> Appropriate salary raises. Appropriate welfare. Work safety. Pleasant work environment. 	<ul style="list-style-type: none"> Safety management pursuant to ISO45001 standards. Environmental management pursuant to ISO14001.
	Temporary Employees	<ul style="list-style-type: none"> Listening to employee opinions and complaints. Monthly Welfare Committee meetings. Monthly Safety Committee meetings. Annual employee happiness surveys. Annual corporate affection and attachment surveys. Quarterly corporate risk assessments. Annual safety risk assessments Annual environmental impact assessments. 	<ul style="list-style-type: none"> Equality and opportunities for advancements. Plans for skill and knowledge training. Good living conditions. 	<ul style="list-style-type: none"> Provident Fund. Strictly adhere to rights policies and employment policies. Health promoting workplace project. Organizational health for sustainable happiness project. Modify wage payment and performance assessment systems. Modify career path development system. Knowledge Management
Board of Directors 	Company Directors	<ul style="list-style-type: none"> Board of Directors' meetings. Board of Audit meetings. Nomination Committee meetings. 	<ul style="list-style-type: none"> Correct compliance to laws and ethical principles. Transparency and accountability. Business success. 	<ul style="list-style-type: none"> Good business governance in compliance with policies and strict enforcement. Report performance.
Shareholders/ Investors 	Shareholders Investors Analysts	<ul style="list-style-type: none"> Annual meetings of shareholders. Quarterly performance announcements. Financial analysts' meetings. Registered companies meet investors. Invitations for investors to visit factories. 	<ul style="list-style-type: none"> Good wages. Good governance over activities. Stable business and continuous growth. Correct, complete, up-to-date and transparent company information. Good risk management system. Good audit and control system. 	<ul style="list-style-type: none"> Transparent, fair and accountable business governance. Appropriate dividend payment. Transparent disclosure of information. Strategic business plan preparation. Thorough risk management.

Stakeholders (Disclosure 102 – 42)		Expectation Survey Methods (Disclosure 102-43)	Expectations (Disclosure 102-44)	The Organization's Response (Disclosure 102-43)
Customers 	Government Customers Private Customers Foreign Customers Domestic Retailers Foreign Retailers	<ul style="list-style-type: none"> Meet-ups with customers/retailers. Product exhibitions. Customer/retailer satisfaction surveys. Technical knowledge provision to customers/retailers. Opportunities for customers/retailers to observe production processes. Joint activities with customers/retailers. 	<ul style="list-style-type: none"> Receive accurate technical product and service information. Appropriate product and service prices. Transparent price competition. Receive quality products and services. Fair compliance of agreements. Option to choose energy-conserving products. Warranty for products and services. Customer confidentiality preservation. 	<ul style="list-style-type: none"> Good corporate governance that is transparent and verifiable. Anti-corruption policies and promotion of quality management pursuant to ISO9001. Total Quality Management to improve product and service processes. CRM system. Ethics in maintaining customer confidentiality. Product certification pursuant to laboratory standard ISO17025. Development of energy-conserving products by R&D team. Visits to observe production processes. Visits to observe electricity generation to build confidence. Modify and maintain electricity generation equipment for maximum efficiency.
	Solar Business Customers	<ul style="list-style-type: none"> Meet-up and communicate with customers. Product exhibitions. Customer satisfaction surveys. Technical knowledge provision to customers. Visits of the production process. 	<ul style="list-style-type: none"> Receive accurate technical product and service information quickly and accurately according to needs. Appropriate and competitive product and service prices. Products have quality consistent with needs. Punctual delivery. Effective pre-post sale services. Ability to solve problems for customers. Fair compliance with agreements. Warranty for products and services consistent with agreements. Customer confidentiality 	<ul style="list-style-type: none"> Prepare product catalogs, operation manuals and other documents with accurate technical information. Plan effective work process management/control to minimize costs. Plan vendor management/control to be consistent with agreements. Create the Technical Support Team. Prepare media related to the product without exaggerating in advertisements. Manage deliveries, customer service and warranties under ISO9001 standards. Comply with the Personal Data Protection Act.
Trade Competitors 	Competitors	<ul style="list-style-type: none"> Meetings and conversations. News and information. Group member meetings. Marketing activities. 	<ul style="list-style-type: none"> Fair and transparent trade competition. Exchanges of information about products, raw material sources and tools and machinery used in production. 	<ul style="list-style-type: none"> Compliance to ethics principles to operate business fairly and transparently.

Stakeholders (Disclosure 102 – 42)		Expectation Survey Methods (Disclosure 102-43)	Expectations (Disclosure 102-44)	The Organization's Response (Disclosure 102-43)
Trade Partners 	Deliverers Contractors Raw Material Suppliers	<ul style="list-style-type: none"> Annual deliverer and contractor evaluations. Production process and raw material quality inspections and discussions for improvement. 	<ul style="list-style-type: none"> Receive accurate information quickly and according to time conditions. Fair compliance with agreements and payment terms. Fair and transparent price competition. Knowledge provision and raw material production process improvement. 	<ul style="list-style-type: none"> Specify clear procurement policies without preferential treatment. Development of trade partners through recommendations, knowledge provision, understanding about developing raw materials to be better than standard specifications. Have anti-corruption policies and promote practice. Prepare the Code of Conduct for QTC's Supplier.
	Vendor	<ul style="list-style-type: none"> Inquire about goals of brand owners/product manufacturers. Attend meetings. Participate in activities organized by the brand owner/product manufacturer. Participate in trainings and testing according to the product owner's criteria. 	<ul style="list-style-type: none"> Achieve goals of the brand owner/product manufacturer. Create brand awareness in Thailand. Build good relationships between the brand owner/product manufacturer and sales representatives. 	<ul style="list-style-type: none"> Specify sales goals to be consistent with the brand owner. Create a solar business sales team separate from the transformer business. Create a specific technical team to support the solar business. Jointly organize sales promotion activities. Train sales employee on product knowledge. Share sales data to the product owner.
Waste Disposers 	Waste Disposers Waste Processors	<ul style="list-style-type: none"> Exchanges of knowledge about legal specifications and correct practices. 	<ul style="list-style-type: none"> Strict compliance to agreements. Correct actions pursuant to the law. 	<ul style="list-style-type: none"> Monitor and inspect actions of disposers. Evaluate waste disposers' performance.
Creditors 	Financial Institutes Deliverers of Goods, Raw Materials and Other Services	<ul style="list-style-type: none"> Meetings and discussions. Quarterly performance announcements. Shareholder meetings. 	<ul style="list-style-type: none"> Ability to comply with contract terms and agreements. Transparency in operations. 	<ul style="list-style-type: none"> Strict compliance with terms and agreements in contracts. Business visits and tours.
Trade Accounts Receivable 	Trade Accounts Receivable from Sale of Goods, Services, Electricity and Other	<ul style="list-style-type: none"> Meetings and discussions. 	<ul style="list-style-type: none"> Compromise and leniency. 	<ul style="list-style-type: none"> Negotiations. Trade account management policies. Legal action.
Mass Media 	Newspaper Television Radio Magazine Online Media	<ul style="list-style-type: none"> Meetings with mass media at different occasions. 	<ul style="list-style-type: none"> Accurate and fast news and information on business progress. 	<ul style="list-style-type: none"> Meet and visit with mass media at least once a year. Invite mass media to visit the business.

Stakeholders (Disclosure 102 – 42)		Expectation Survey Methods (Disclosure 102-43)	Expectations (Disclosure 102-44)	The Organization's Response (Disclosure 102-43)
Government Agencies 	<ul style="list-style-type: none"> • SEC • SET • Revenue • Provincial Industry • Provincial Labour • Provincial Resources • Provincial Transport • TAO • Chamber of Commerce • Federation of Industries • Ministry of Energy • Ministry of Labour • Ministry of Industry • BOI 	<ul style="list-style-type: none"> • Meetings and explanations of government agencies. • Business inspections and visits. • Conditions pursuant to the law. • News and information. 	<ul style="list-style-type: none"> • Ability to comply with related laws. • No social and environmental effects. • Development of the organization's ability to participate in modifying environmentally-friendly production processes to reduce impacts. • Cooperate with the government sector to provide information for use in development. • Support government sector projects with benefit for the greater good. 	<ul style="list-style-type: none"> • Comply with rules and regulations prescribed by the law in every area. • Complete and punctual tax payments of every type. • Develop processes to seek opportunities for improvement and reduce environmental impacts. • Transparent disclosure of information. • Report information according to legal specifications. • Annual reports.
Community and Society 	<ul style="list-style-type: none"> • Communities Around the Factory • Communities Around the Power Plant • General Society 	<ul style="list-style-type: none"> • Organizing activities with communities/society. • Participation on community and social development. • Annual public hearing activities where communities meet with QTC. • Annual public hearing activities where communities meet with the power plant. • News and information. 	<ul style="list-style-type: none"> • Friendliness to one another. • Support for community activities. • Support for products made by disabled persons in the community. • Support for activities in social businesses. • No negative safety and environmental impacts on communities and society. • Transparency in operations. • Compliance with human rights and anti-corruption principles. 	<ul style="list-style-type: none"> • Support public activities. • Create volunteer employees to participate in public activities. • Environmental management with ISO14001 standards. • Energy management with ISO 50001 standards. • Safety management with ISO45001 standards. • Human rights policies and support for practice. • Anti-corruption policies and support for practices. • Suitable procurement of products from disabled persons in the community for the Company's operations. • Indirect investment in social businesses. • Annual performance reports at association activities and other media.

Key Sustainability Issues

The Company specifies significant sustainable development issues by considering data on needs of customers in the government sector, domestic and foreign private sectors, government sector policies, stakeholder expectations including changes to laws and specifications in the country, local areas and foreign countries where customers are based, organization risk management, business plans and changes in the current situation. Principles for selecting significant issues are as follows:

Principles for Issue Selection



- 1. Issue Identification:** Considerations are made annually regarding the source information, beginning from the corporate sustainability framework, and information from stakeholders inside and outside the organization on issues given importance to by each group of stakeholders or expectations for impacts on the sustainability of the organization economically, socially, environmentally and good corporate governance in order to identify issues that are important to the organization and stakeholders using assessment procedures and weights according to the criteria specified by the Company on an annual basis.
 - Inside the Organization: Executive-level meetings of the Corporate Sustainability Promotion Committee and the Risk Management Committee regarding the organization's business trends and goals, operating-level meetings of the Welfare Committee and the Safety Committee, compilation of issues obtained from measuring employees' attachment to the organization, issues obtained from the happiness survey of employees within the organization and the comment box. Information was collected about the meeting, survey results and suggestions of employees in each agenda for analysis of sustainability expectations for employees and the organization to be designated as issues.
 - Outside the Organization: Review sustainable issues related to stakeholders' expectations from meetings of shareholders, meetings of the Board of Directors, meetings with customers, complaints, customer satisfaction survey results, community discussions, QTC meets the communities, development plan of the government and relevant government agencies. Information was collected on opinions, expectations and recommendations by interviews, questionnaires, official and unofficial discussions and analysis of information about expectations and trends to designate issues.

2. **Prioritization of Issues:** Once issues that are significant to the organization and stakeholders have been specified, issues are weighed by considering significant stakeholder issues with scores of 1-10 points and significant QTC issues with scores of 1-10 points. Scores were then considered to prioritize issues. Significant issues of stakeholders with scores of more than five points and significant issues of QTC with scores of more than five points were used to determine indicators, control and develop operations, monitor assessments and disclosed in reports to stakeholders.
3. **Review of Significant Issues:** QTC's review of significant issues was done by the Corporate Sustainability Development Branch and the Corporate Sustainability and Risk Management Committee. In 2021, the same 13 main significant issues and 32 minor issues as in 2020 remained and issues were presented to the Board of Directors for consideration of approval to confirm sustainability issues of significance to stakeholders and QTC from the beginning of the year. The Company has no plans to allow independent outside agencies to examine processes for assessing significant issues.

Materiality Matrix



Sustainable Development Issues [Disclosure 102-47]

Key Sustainability Issues	Content Reported	Scope of Impacts		QTC SD-Framework	Pages
		Internal	External		
Key Corporate Governance Issues					
Corporate Governance	 Good Corporate Governance  Anti-corruption	QTC	Shareholders, Investors, Trading Partners, Government Agencies	Ethics Anti-Corru	32-35 36-38
Risk Management	 Corporate Risk Management  Risk Management during the COVID-19 Crisis	QTC QTC	Shareholders Shareholders, Society	Risk Management	39-47
Quality Economic Issues					
Business Growth	 Economic Results  Investment in Other Businesses  Distribution of Value to Stakeholders	QTC	Shareholders, Investors, Competitors, Business Partners	Business Growth & Value Chain	49-53 53 54
Innovation Promotion	 Innovation Promotion Processes in the Organization  Innovation at the Process Level  Innovation at the Personal Level	QTC	Customers, Competitors, Trading Partners	Business Innovation	56 57 60
Responsibility to Goods & Services	 Work Standards  Product Standards  Electrical Testing Standards  Customer Care	QTC	Customers, Competitors	Business Growth & Value Chain	62 63-65 65 66-68
Trade Partner Development	 Trade Partner Development	QTC	Trading Partners, Customers	Value Chain	69-71
Quality Environment Issues					
Management of Waste and Leftover Materials from Production (Garbage)	 Management of Waste and Leftover Materials from Production (Garbage)	QTC	Communities, Waste Disposers, Government Agencies	Pollution Reduction	73-78
Environmentally-friendly Production Processes	 Pollution Control  Green Procurement	QTC	Communities, Customers, Trading Partners, Government Agencies	Pollution Reduction	79-83 4
Climate Change	 Corporate Carbon Footprint  Greenhouse Gas Emission Reduction  Environmentally-friendly Products	QTC	Communities, Customers, Trading Partners, Government Agencies	Climate Change	85-90 91-92 93-94
Sustainable Use of Resource Utilization	 Energy Use  Water Use  Use of Raw Materials for Manufacturing and Service Provision	QTC	Communities	Resource Use	96-100 101-103 104
Quality Society Issues					
Employee Safety and Health	 Safety  Employee Health	QTC	Communities, Trading Partners, Government Agencies	Health, Safety & Well-being	106-115 116-120
Employment and Human Rights	 Employment  Human Rights	QTC	Communities, Government Agencies	Human Rights	121-124 125-127
Human Capital Development and Employee Care	 Human Capital  Employee Care	QTC	Government Agencies	Employee Development & Well-being	128-133 134-138
Social Responsibilities	 Participation in Community Development  Social Investment  Social Activities	QTC	Communities	Community Involvement	139-143 143 143-146
About This Report					147
GRI Content Index					148-153

Main Strategies for Sustainable Development

With the organization's vision to be a "world-class" leader and the corporate culture emphasizing "quality of details", combined with sustainable development policies, the Company has set in place its main strategies for conducting business through risk management and impact assessment for stakeholders in all areas. Furthermore, indicators have been set for monitoring and evaluating economic, social and environmental work effectiveness leading to the objective of extensive implementation by executives and employees under QTC's sustainability equation of Quality + Responsibility = Sustainability". The Company's main strategies for sustainable development are as follows:

Economic Strategies

The strategy of boosting competitive capabilities is to become different from other manufacturers and focus on innovating products and services capable of meeting the needs of every customer group with an aim for customers to receive maximum value from using products and services.

The strategy of increasing income and generating maximum profit is to seek opportunities and channels of investing in new businesses and products to strengthen finances and reduce risks from selling only old products while focusing on development of production processes to reduce waste in order to create appropriate costs and generate maximum profit.

Success Indicator

- Growth of income from distribution of products from research and development results at more than two percent per year.



Success Indicator

- Growth of income from selling new energy products (with QTC as a distributor) by at least 200 percent per year.

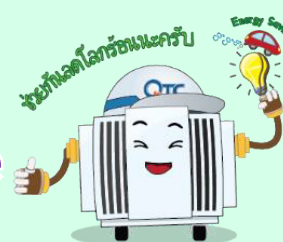
Environmental Policies

The strategy of creating a green culture is a corporate value aimed at promoting awareness and responsibility to the environment among employees in order to create environmentally-friendly products and improve work processes to reduce environmental impacts as much as possible.

Success Indicator

- Zero to Landfill.
- Category 1 and 2 greenhouse gas emissions per MVA is reduced from the base year by five percent.

Green Culture



Social Policies

The strategy of supporting good people and developing talented people

is the organization's main mission from our awareness that people are an important resource that can develop and add value for the organization and employees. By using various strategies such as by improving employee capacity without discrimination, the Company allows every person to self-improve for growth in the career path, take care of living conditions, create work-life balance and creating a happy organization, etc., in order to allow everyone to live together happily with confidence in the organization.

The strategy of creating a culture of safety is a major risk for the organization. The strategy focuses on building awareness of personal work safety among employees, promoting appropriate environments, improving tools and machines for safety because even a single accident occurring to employees may cause significant loss to family members. Build trust among stakeholders.

The strategy of building confidence among stakeholders

is used to build good relationships between the organization and people in communities and society by disclosing information with transparency and accountability, building participation in community development, promoting occupations for disadvantaged individuals according to the organization's capabilities and hearing opinions of stakeholders in order to use opinions to make modifications and development. The Company continually adheres to and practices this guideline because the Company is well aware that community and social power can have positive and negative effects on the organization's sustainability in the long term.

Success Indicator

- Resignation rate < 20%
- Employee attachment to the organization > 75%.
- Employee happiness > 80%

Success Indicator

- Zero Accident

**Safety
Culture**

Start Safe Work Safe Finish Safe



Success Indicator

- No complaints from society and communities.
- Success in at least one community development project for public benefit per year.





Key Organization Leadership Issues

Corporate Governance

Corporate governance is important to companies listed in the Stock Exchange of Thailand. Because the Company raised funds from the public as capital for business operations, the Company has shareholders as co-owners. However, shareholders who own the business do not manage the business in person and appointed directors to manage the business. Therefore, the Company needs to govern the business systematically to ensure that the business operates for the long term benefit of shareholders with consideration given to stakeholders from every group, which will bring about the Company's sustainable growth.

QTC recognizes the importance of good governance with coverage of the economic, social and environmental aspects in order to build confidence and value for the organization, shareholders and stakeholders according to the organization's objectives with long term sustainability and compliance with the law, rules, and principles with accuracy, transparency and accountability. QTC has the Board of Directors to represent shareholders in governance while the Nomination, Remuneration and Corporate Government Committee and the Board of Audit composed of independent directors reviews governance processes. Furthermore, the Company has strong internal audit processes covering the entire organization and work units that monitor changes in laws and regulations related to the business along with assessing compliance with the law in order to modify practice guidelines to be consistent and reduce risks from ethical violations or non-compliance with the law, which may have effects on stakeholders and QTC's business operations (Disclosure 102-23).

Objective: To ensure that the Company complies with all necessary laws, rules, regulations and practice guidelines in order to meet shareholder and stakeholder expectations.

Management: Review and modify the good governance policy, business ethics, the anti-corruption policy including other related policies and practice guidelines to be up-to-date on an annual basis along with providing training for executives and employees when any changes occur. Monitor, check, follow-up on work and report performance under the Board of Director's governance in order for corporate governance effectiveness to be comparable to leading organizations at the national and global levels.

Goal 1: To become a model organization in the area of management with good governance.

Result: 

Goal 2: No corruption or illegal actions in QTC and all subsidiaries.

Result: The goal was achieved. In 2020, the Company received no complaints or reports of illegal or corrupt actions by the Company's employees, executives and directors.





Mr. Norachit Sinhaseni
Director



Mr. Kamol Takabut
Director



Mr. Poonphiphat Tantanasin
Director

Nomination, Remuneration and Corporate Governance Committee

Performance in 2021

The Nomination, Remuneration and Corporate Governance Committee, with two independent directors and one executive director, and an internal work group have reviewed and modified practice guidelines for consistency such as in the area of conflict of interest policies, government employee hiring policies and anti-corruption policies, etc. In addition, modifications and corrections were presented to the Board of Directors, which received approval to modify and announce corrections from Board of Directors Meeting No. 9/64 on 16 December 2021. The good governance policy and business ethics was officially disseminated on the Company's website. In 2021, the Nomination, Remuneration and Corporate Governance Committee met three times to recruit, select and nominate suitable individuals for director and high ranking executives along with considering remuneration for directors according to specified criteria.

Corporate Governance Policy: <https://investor.qtc-energy.com/th/corporate-governance/corporate-governance-policy>

Business Ethics: <https://investor.qtc-energy.com/storage/download/corporate-governance/20211220-qtc-codeofconduct-th.pdf>

- **The Company disseminated the No Gift Policy** during the New Year festival of 2022 via the Company's website and communicated the policy to QTC's domestic and overseas suppliers by email and the Thai CAC Facebook page.
- **The Company reviewed understanding of the QTC Code of Conduct** for Suppliers in the annual assessment of 2021.
- The Company supported directors and high ranking executives to have skills, knowledge and abilities to benefit effective corporate governance.



First Name – Last Name	Course	Institute
1. Mr. Ruangchai Kritsnakriengkrai Company Director Managing Director	1. Corruption Risk and Control Workshop (CRC) 2. Boardroom for Business Breakthrough (DRP1)	IOD

Compliance with the Law

Assessment of compliance with the law is a significant risk issue for the Company because changes to the law are currently frequent. To prevent mistakes in business operations, the Company prepared work procedures concerning assessment of compliance with the law to cover business activities, designate the teams responsible and prepare a registry of control laws in the Document Control Center system. In 2021, the following specifications and laws related to business operations are as follows:

- Specifications and laws directly related to business operations and compliance: 308 specifications and laws.
- Specifications and laws used for reference: 147 specifications and laws.
- Specifications, directives and laws from the COVID-19 crisis: 41 specifications, directives and laws.
- Specifications and laws directly related to business operations without compliance: 5 specifications. These five specifications are planned to be modified to be consistent for compliance when laws, including the Personal Data Protection Act of B.E. 2562 (A.D. 2019), are in effect. The Company is currently planning work systems to be consistent with legal requirements and ready for use before the effective date on 31 May 2022.

Performance Assessment

The Board of Directors requires performance of the Board of Directors and the ability to perform duties of the Chief Executive Officer to be assessed annually. In 2021, assessments had the following results:

1. The Chief Executive Officer's performance assessment was conducted with reference to the self-assessment forms for boards of directors of the Corporate Governance Center, Stock Exchange of Thailand, of December 2011: Eleven sections were modified. Eleven directors performed independent assessments of the Chief Executive Officer's performance in 2021. Scores were averaged from a full score of 4 points.

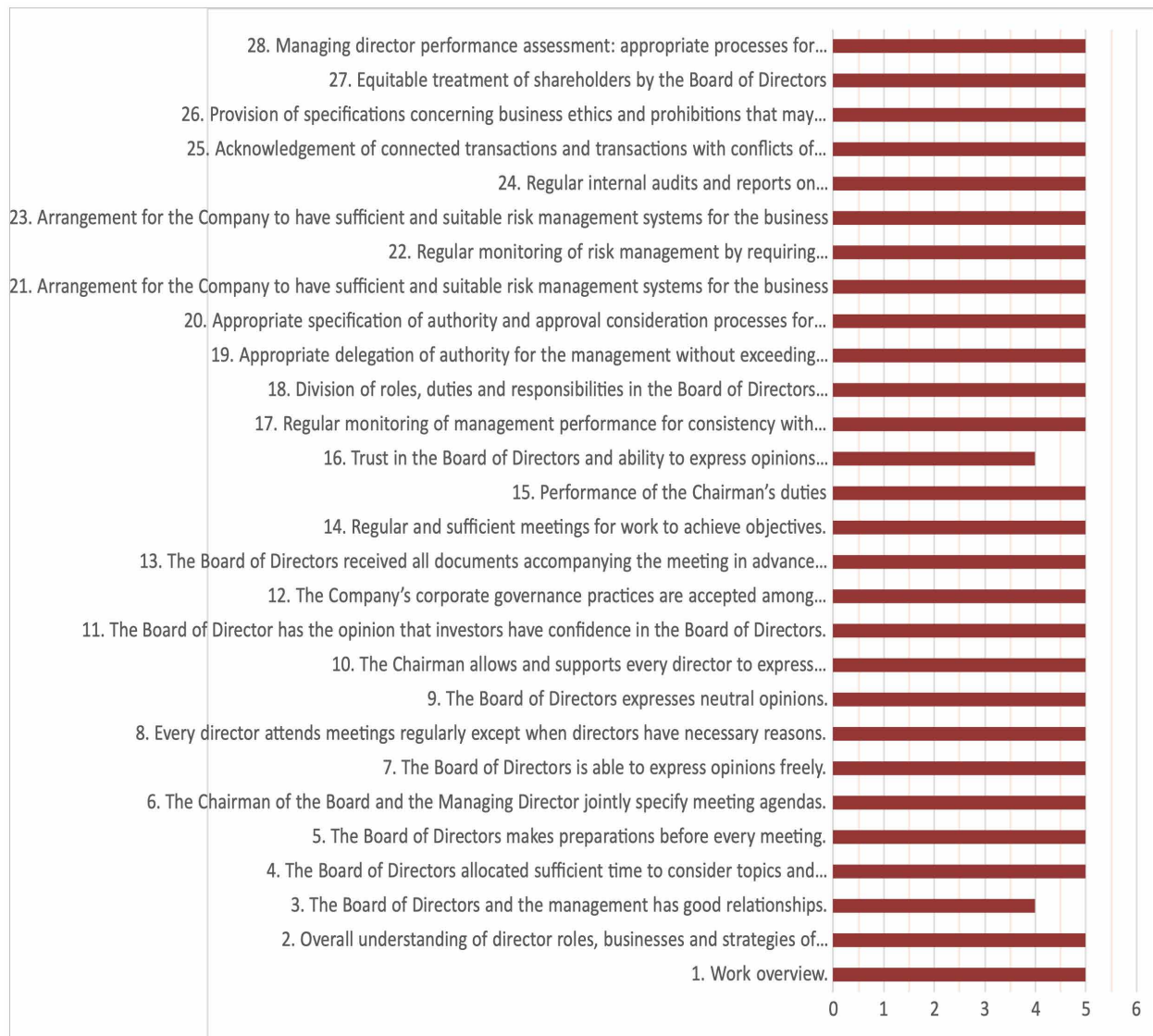
Graph of Results from Assessment of the Chief Executive Officer's Performance in 2021.

Full Score: 4 points. Mean Score: 3.64 points. The score is at an excellent level.

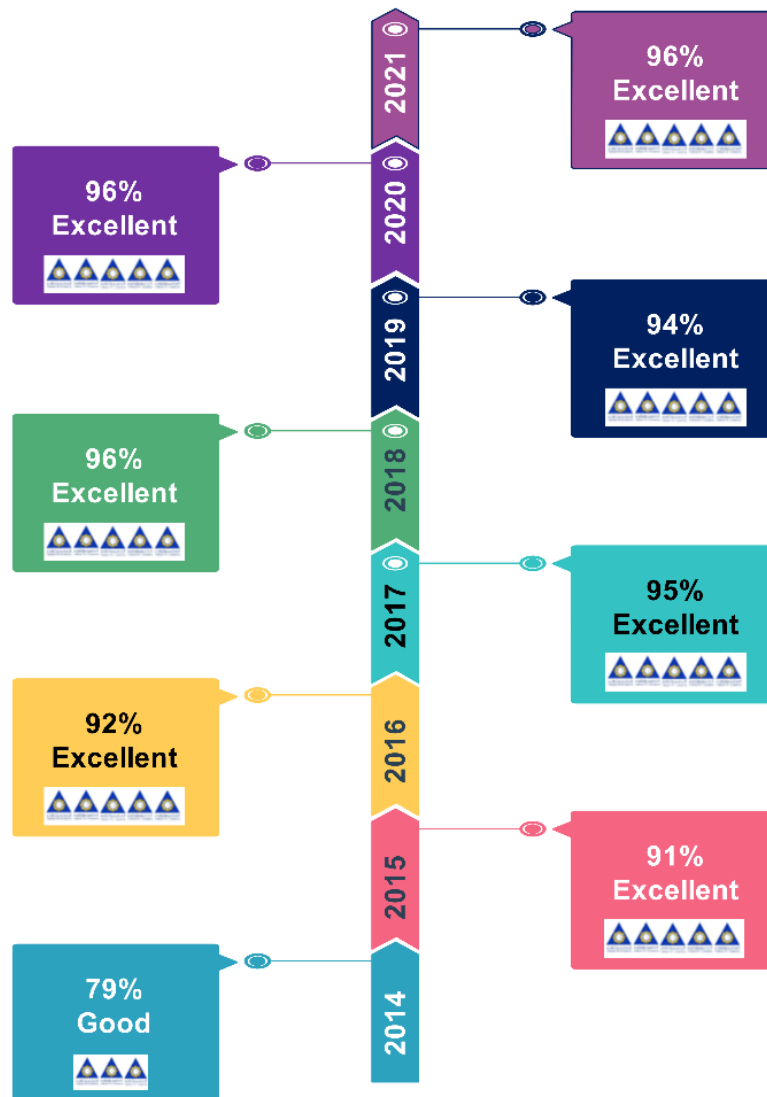


2. The Board of Directors was assessed with reference to the self-assessment forms for boards of directors of the Corporate Governance Center, Stock Exchange of Thailand, of 2015, to appropriately modify 28 questions. All 12 directors completed self-assessments of performance in 2020 and scores from each question were averaged from a full score of five points.

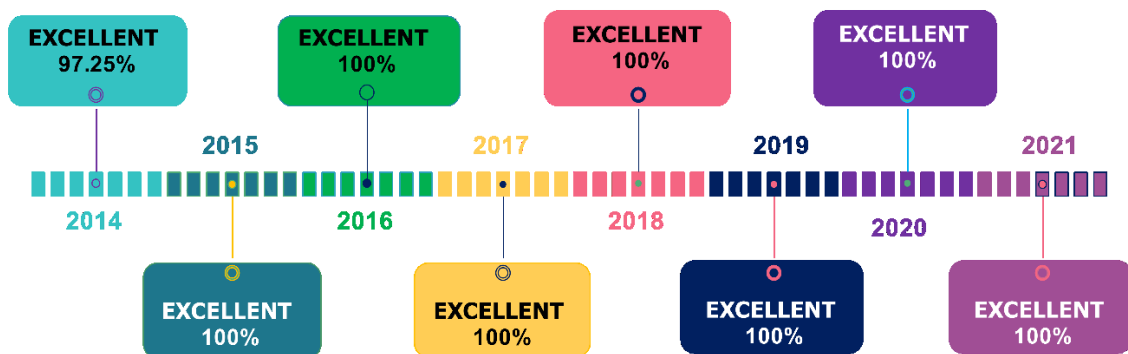
Graph of Self-assessment Results of the Board of Directors of 2021
Full Score: 4 Points. Average Score: 3.70 Points. Scores are at an excellent level.



Good Governance Evaluation Results by IOD (Score: 100 Points)



Annual Shareholder Meeting Quality Assessment Results (Score: 100 Points)





Mr. Nattharphon Lilawattahanun
Director



Mr. Kamol Takabut
Director



Mrs. Wasara Chotithammarat
Director

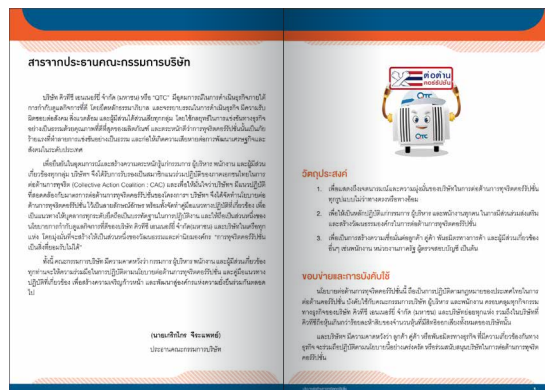
Board of Audit

Performance in 2021

- The Company audited performance in the areas of corporate governance and anti-corruption in the quarterly internal audit with coverage of every work process. The audit was performed by an outside independent auditor, BK IA & IC Co., Ltd. Audit results were reported directly to the Board of Audit, which consists of three independent directors who have a term of three years. In 2021, six meetings were held to follow-up, check and assess results. The audit by outside auditors found no significant corporate governance and anti-corruption issues.
- The Company renewed membership in the Thai Private Sector Collective Action against Corruption (CAC) for the first time. The Company passed consideration by the CAC Board of Directors and membership will last from 21 March 2022 to 31 March 2025. The Company is currently waiting for a formal ceremony to receive a certificate of membership.

Symbol	Company	Status	Declaration Since	Declaration Expire	Sector	Certified Date	Expire Date
QTC	QTC Energy Public Company Limited	 Certified	24 Nov 2018		Energy & Utilities	31 Mar 2022	31 Mar 2025

- The Company audited cases with potential conflicts of interest in 2021. Audit results showed no director, executive or employee with conflicts of interest.
- In 2021, no government employees were hired to be the Company's employee or consultant in compliance with the anti-corruption policy.



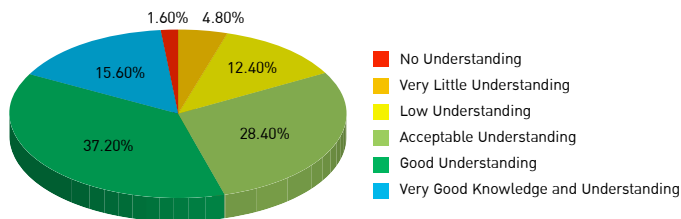
Anti-corruption Policy: :

https://qtc-energy.com/wp-content/uploads/2021/01/Anti-Corruption_Policy_Th_2564.pdf

Training and Education [Disclosure 205-2]

- In 2021, the model for training and reviewing policies and guidelines related to resistance against corruption was changed from an onsite model to an online model by using videos of knowledge prepared by the Company. In addition, the Company prepared test forms and specified indicators at the personal level with 250 attendees who were trained and tested for understanding with coverage of every subsidiary or 89.29 percent of all employees including every subsidiary. Test results were as follows:

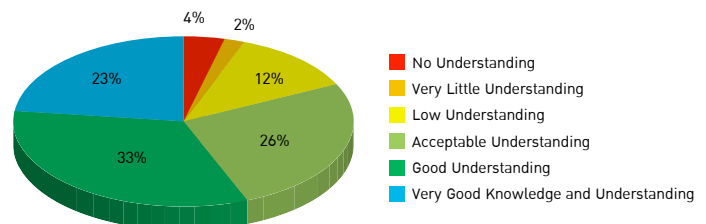
Results from Testing Understanding



Employees with low or no understanding were retrained by HRD and retested to reinforce understanding for proper behavior and compliance with the policy.

- Training and explanations for new employees related to anti-corruption policies and guidelines are a training need for all QTC employees, who must be trained and tested. Employees who fail to meet assessment criteria are retrained and tested until scores meet specified criteria. In 2021, performance was as follows:

Items	No. of Employees	Percent
No. of Trained Employees		
New Employees: Male	45	100
New Employees: Females	12	100



- An anti-corruption booth was organized to educate employees about Thailand's corruption situation at the Company's 5S Safety & Happy Workplace 2021. The aforementioned activity was canceled due to the COVID-19 situation.

Campaigning Against Corruption

Due to the COVID-19 pandemic and measures canceling gatherings and enacting social distancing in 2021, the Company participated in the International Anti-corruption Day (Thailand) event of 2021 under the concept of zero tolerance for corruption by demonstrating the New Normal through a Facebook Live online viewing organized by the NACC with cooperation from the Thai Chamber of Commerce and the Thai Chamber of Commerce Council and all associated sectors on 9 December 2021.



Methods for Communicating Stakeholders

The Company specified the following channels for communicating good governance policies and related practice guidelines:

Stakeholders	Communication Channels								www.qtc-energy.com
	Portable Handbooks	Training	Explanatory Meetings	Annual Meetings	Stages of Association	e-mail	Mail	Shareholder Meetings	
Inside the Organization	✓	✓	✓	✓	-	✓	-	-	✓
Outside the Organization	✓	-	-	✓	✓	✓	✓	✓	✓

Channels for Reporting Clues or Complaints

Channels for Reporting Clues or Complaints

Board of Audit

QTC Energy Public Company Limited
2/2 Soi Krungthep Kritha 8,
Intersection 5
Krungthep Kritha Road,
Hua Mak, Bang Kapi
Bangkok, 10240

audit@qtc-energy.com

<https://qtc-energy.com/th/complaint-suggestion/>
"Reporting Clues or Complaints"

In 2021, the Company, represented by the Board of Audit, did not receive complaints or tips of wrongdoing in any case from stakeholders inside and outside the organization.



Risk Management

Risk management is one of the most important and necessary issues for successful business operations because economic changes, technological advances, social and environmental changes including crises may occur at any time. Controlling risks to prevent impacts on business is increasingly difficult because risks are external factors, causing the Company to have to adapt and reduce expected future risks in order to make operations and performance consistent with goals. Assessments to reduce risk create opportunity for sustainable business growth.

QTC recognizes that working to achieve business goals, uphold obligations according to the organization's vision to become a world class company and create confidence for stakeholders has challenges under economic, social and environmental evolutions, which may directly or indirectly create good opportunities or negative impacts on business operations. Therefore, QTC places importance on corporate risk management in every area covering economic, social and environmental dimensions under the governance of the Board of Audit and the Board of Directors.

Objective: To make risk management part of the corporate culture.	
Management: Specify the organization's risk management policy and create the Corporate Risk Management Committee to assess risks with potential impact on business operations along with specifying measures to manage opportunities and control risks under the risk management process according to international COSO-ERM standards by instructing employees at every level to participate in identifying risks to create awareness and apply risk management in practice.	
Goal 1: Employees at every level have knowledge, understanding and awareness of the importance of risk management.	
Result: 100% of executive employees have risk assessment skills. 30% of operating level employees have risk assessment skills. In 2021, no training and education was provided to expand the number of individuals with skills at the operating level.	
Goal: Significant risks have appropriate and successful plans according to objectives.	
Result: Significant safety risks were not successful according to goals.	

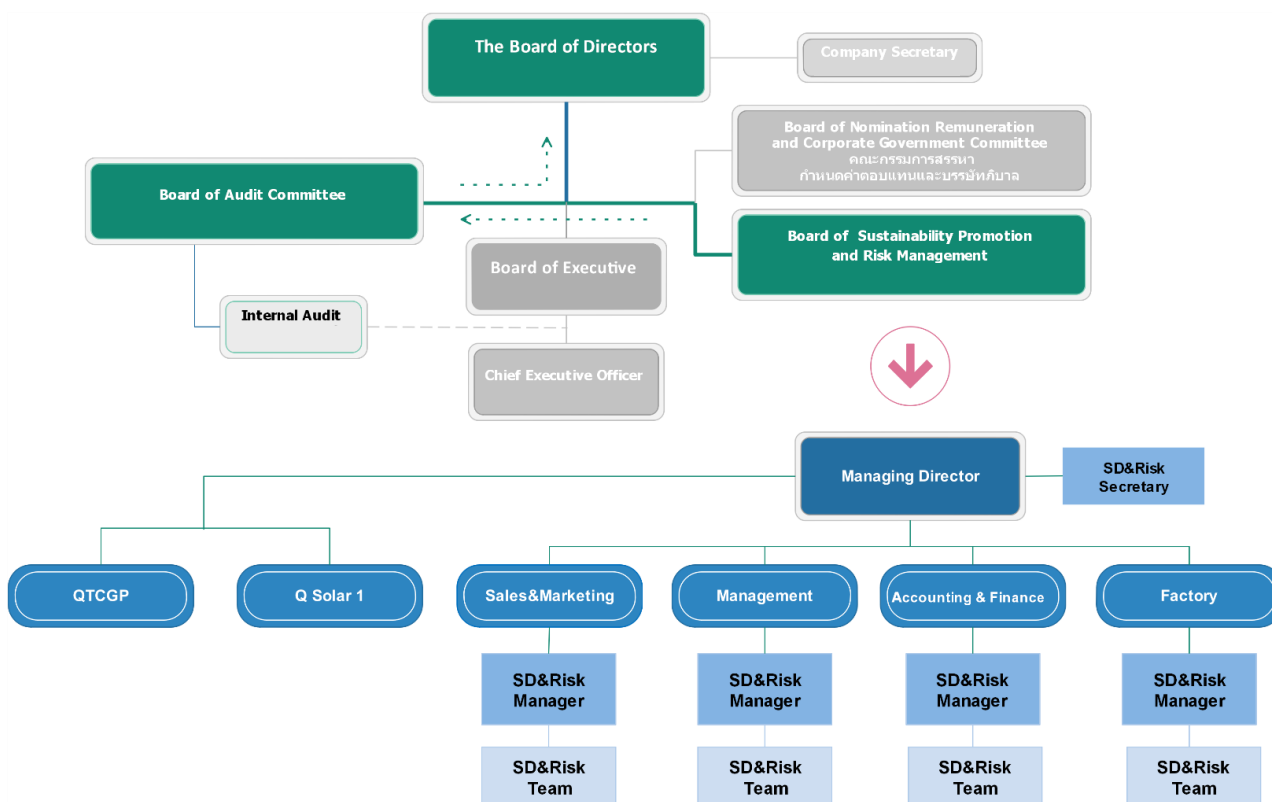
Corporate Risk Management Policy <https://qtc-energy.com/th/risk-management-policy-2/>

Corporate Risk Management Process

The Company prepared a corporate risk management handbook as clear practice guidelines according to ERM-COSO risk management standards by requiring risks to be reviewed by surveying the organization's environment or contexts in changed situations and following designated processes and steps under the responsibility of the Corporate Sustainability Promotion and Risk Management Committee along with reporting to the Board of Audit and directors on a quarterly basis.



Corporate Risk Management Structure



Performance in 2021

- The Company revised the risk management policy for the first time to be consistent with international COSO: 2017 standards which became effective on 16 November 2021.
- The Risk Management Committee organized four risk management processes in 2021 at specified times and added special agendas due to the COVID-19 pandemic.
- The Company has 8 risks with significance for the organization's objectives and the Company has risks in the COVID-19 crisis, which may cause business to cease. Details on significant risks are as follows:

Significant Risks [Disclosure 102-29]

1. Strategic Risk

Risk Topics	Measures & Performance
Dependence on Major Customers in the Transformer Business	<p>Most of the Company's income was from bidding in the government sector with political uncertainty influencing government sector budgets and expenditures. In addition, the Company has many competitors in the market. This is an uncontrollable factor. The Company has established the following measures to control and mitigate risks:</p> <ul style="list-style-type: none"> • The Company has agencies and persons directly responsible for government sales in addition to specifying clear roles and duties. • The Company modified manufacturing standards and related management procedures along with improving manufacturing standards. • The Company applied to be accredited with the Green Label to enhance competitive capacity under the terms of government agencies. Currently, the Company has six Green Label items with kVA capacity and a goal to bid. <ul style="list-style-type: none"> ➡ In 2021, the Company sold Green Label transformers valued at more than 12 million baht to the private sector. The government sector had no PEA biddings for Green Label Transformers. • The Company expanded overseas markets with OEM manufacturing in Australia and Japan (brands cannot be cited). This is a trade secret. • The Company appointed foreign sale representatives under the QTC brand to increase sale channels. • The Company developed super low loss and smart transformer products to create new different options for customers: <ul style="list-style-type: none"> ➡ In 2021, income was generated from: <ul style="list-style-type: none"> - Sales of 442 super low loss transformers valued at 78,578,364.48 baht, an increase of more than 300% from 2020. - Sales of 7 smart transformers valued at 483,000 baht, a reduction from 2020 by more than 100%. • The Company expanded the customer base in the transformer maintenance services group. <ul style="list-style-type: none"> ➡ In 2021, income from services was valued at 41 million baht, a decline of 10.87% from 2020 due to the COVID-19 pandemic and customers rescheduled transformer maintenance. • The Company restructured the organization in sales work by adding the Product Development Division to take care of customers and coordinate regarding new companies distributed by the Company in Thailand such as BUSDUCT from Dynamic Electrical SDN. BHD, solar inverters from Huawei Technologies (Thailand) Co., Ltd., PV panels from LONGI Solar Technology Co., Ltd. under the LONGI brand and from Trina Solar Co., Ltd. under the Trina brand. <ul style="list-style-type: none"> ➡ In 2021, the Company generated income from new product sales at more than 245 million baht, a 180-percent growth from 2020.

Risk Topics	Measures & Performance
Investment in Other Businesses	<p>To distribute risk of investment in energy businesses connected to the transformer business through the work of QTC Global Power Co., Ltd. (GTCGP), a subsidiary, and the energy business in which most of QTC's personnel have no expertise, the Company has the following risk prevention measures:</p> <ul style="list-style-type: none"> • The Company hires more executives and teams with special knowledge to manage QTCGP. • The Company hires outside specialist consultants to study information of projects in which the Company will invest by covering economic, social and environmental aspects. • Any investments in other businesses must be approved by the Board of Directors and shareholders' decisions. <p>➡ In 2021, the Company studied investments in one project in the business of electricity generation from solar energy. The Company did not reach a conclusion to make a decision.</p>

2. Financial Risk

Risk Topics	Measures & Performance
Exchange Rate and Raw Material Price Fluctuations	<p>Because 60 percent of the value of main raw materials used in manufacturing transformers need to be imported from abroad and 20-30 percent of transformer sales were from exports and foreign currency exchange rates and prices of raw materials such as copper and silicon fluctuate according to global economic conditions and major world situations, the Company has the following risk prevention measures:</p> <ul style="list-style-type: none"> • Policies to purchase/sell foreign currency in forward contracts. • The Company closely monitors changes in prices of main raw materials such as copper, silicon and transformer oil. The Company also reserves raw materials in advance if the Company sees trade advantages. <p>➡ In 2021, the baht currency weakened gradually from the beginning of the year because of the COVID-19 situation. At the end of the year, the baht currency appreciated in value and caused the Company to have losses from exchange rates at 3,071,986 baht.</p>
Debtor Management Risks	<p>Due to current competition in trade, loans had to be offered to customers to gain competitive advantages. In the meantime, customers who were granted loans from the Company, lack financial discipline and refuse to comply with repayment agreements will create unpaid debts, causing the Company to not receive money at the scheduled time with effects on financial liquidity management. Therefore, the Company has the following control and prevention measures:</p> <ul style="list-style-type: none"> • The Company sets allowances for bad debts (accounting expenses) if debts were unpaid for more than one year. • The Company adjusts the policy on offering credit to customer by clearly specifying criteria in assessing credit offers to customers. • In cases where customers fail to meet the criteria for credit, the Company sells in cash. <p>➡ In 2021, the Company was able to control the payment acceptance period at 61 days, a reduction from 2020 and 2019. Trade accounts receivable (before deduction of allowance for loss from depreciation) was 182.97 million baht, a reduction from 212.56 million baht in 2020 or a reduction of 13.92 percent. In addition, the value of accounts receivable unpaid for more than one year declined from 2020 by 2.62 million baht and allowance for loss from depreciation declined from 2020 by 9.45 million baht.</p>

3. Operational Risk

Risk Topics	Measures & Performance
Work Health & Safety	<p>Employee working conditions are related to use of instruments, machinery, chemicals and work procedures. In addition, the factory coexisted with the community for over 20 years. Accidents may occur with effects on employees and communities. Therefore, the Company specified the following preventive measures:</p> <ul style="list-style-type: none"> • Safety management with ISO 45001 standards. • Appropriate work safety and PPE standard specifications and periodic machine maintenance. • Electrical system and building examination and certification by outside experts. • Automatic fire alarm system installation. • Fire suppression and fire evacuation drills. • Safety awareness building with KYT activities. • Safety week activities to provide knowledge and raise awareness among employees and communities. • Safety committees (SCs) elected by employee representatives consider work safety guidelines. • Health promotion projects to reduce, abstain and quit smoking and drinking along with vaccination benefits based on epidemic situations. <p>👉 In 2021, the number of accidents dropped from 2020 by 37.14 percent. The Company did not achieve the goal to have zero accidents. Details, preventive and corrective measures can be followed up on in the sustainability report under “Employee Health and Safety”.</p>
Departures of Engineers and Skilled Technicians in Significant Positions	<p>Because the factory is located in an industrial zone with significant labor competition from the level of manual laborers to professional employees, the Company outlined the following control and prevention measures:</p> <ul style="list-style-type: none"> • Appropriate employee wage and benefit restructuring by comparing with the same industry. • Modify assessment systems and pay fair wages. • Individual personnel development along IDP career paths. • Prepare key KM of the Company and create an online center of learning. • Create organization happiness following the Happy 8 guideline. <p>👉 In 2021, the employee resignation rate was 19.85%, which was within the goal range.</p>
Dependence on Main Executives in Business Operations	<p>Most of the Company’s management has experience in transformers and product brands, which creates confidence among stakeholders. In the future, any changes concerning the organization’s leaders may affect confidence among major stakeholders such as shareholders and employees. Therefore, the Company has the following preventive measures:</p> <ul style="list-style-type: none"> • The Company prepares succession plans and selects successors. • Promote leadership and develop successor skills according to the career path. • Promote marketing by using product brands and factory standards as guidance. <p>👉 In 2021, the Company appointed personnel to succeed to some major positions based on necessity and urgency for flexibility in business operations while some developments of leadership skills and other necessary skills are pending development for some positions.</p>

Risk Topics	Measures & Performance
Hazardous Waste and Scrap Material Management	<p>In the manufacturing process and transformer service provision, the Company has scrap materials from manufacturing and hazardous waste requiring controlled disposal in compliance with Ministry of Industry notifications. Disposal is performed through disposal companies that follow methods specified by the Department of Industrial Works. However, the Company may have risks from disposal companies' irresponsibility and failure to comply with conditions, causing environmental impacts. Therefore, the Company specified the following preventive measures:</p> <ul style="list-style-type: none"> • The Company petitioned for approval to register disposal companies from the Department of Industrial Works by type of waste. • Teams evaluate areas and disposal methods in disposal companies' areas. • The Company controls transportation and containment to prevent spills and leakages before leaving the factory. • The Company uses the 3Rs principle to sort waste that can be sold and waste that cannot be sold. • The Company organizes the Zero Landfill project to deliver landfill waste to power plants. <p>👉 In 2021, the Company was able to bring 100% of landfill waste into the electricity generation process with 100% zero landfill and no complaints on environmental impact from the process of managing hazardous waste and leftover materials from production. Performance can be followed-up from Sustainability Report 2021 under "Waste and Leftover Materials from Production (Garbage)".</p>

4. Compliance Risk

Risk Topics	Measures & Performance
Compliance with the Law	<p>The transformer manufacturing business is an industrial factory that manufactures, repairs, distributes and provides services for domestic and foreign government agencies and private organizations. Therefore, the Company must comply with many laws and specifications. Laws or specifications change with time. To prevent business mistakes, the Company specified the following preventive measures:</p> <ul style="list-style-type: none"> • The Company specified persons responsible for monitoring, collecting and assessing consistency of laws and trade specifications from appropriate channels such as the Royal Thai Government Gazette and notifications. • The Company prepared work steps, assessed consistency of the law and specifications as practice guidelines covering the entire organization. • The Document Control unit prepared a registry of associated laws and trade specifications in addition to reporting to the Risk Management Committee on a quarterly basis. <p>👉 In 2021, the Company had no issues of non-compliance with the law. However, the Company is making improvements on some issues for compliance with the law. These issues are cases where laws were revised and the Company has time to make revisions pursuant to the law.</p>

Risk Topics	Measures & Performance
Corruption	<p>The transformer manufacturing business is an industrial factory with manufacturing, repair, distribution and services. The Company's work must be under specifications and laws. In addition, the Company contacts, coordinates, pays fees, pays taxes and trades with government agencies, which may create gaps for corruption. The Company specified the following control and prevention measures:</p> <ul style="list-style-type: none"> • The Company specified anti-corruption policies and related guidelines to be used in the Company and every subsidiary. • The Company trains and educates employees by specifying necessary courses in trainings. Employees are required to pass training (100%) and have understanding assessment results higher than 80%. • The Company became a member of the Thailand Collective Action against Corruption (CAC). <ul style="list-style-type: none"> ➤ In 2021, the Company renewed membership in the Thai Private Sector Collective Action against Corruption (CAC) for the first time. The Company passed consideration by the CAC Board of Directors and membership will last from 21 March 2022 to 31 March 2025. The Company is currently waiting for a formal ceremony to receive a certificate of membership.

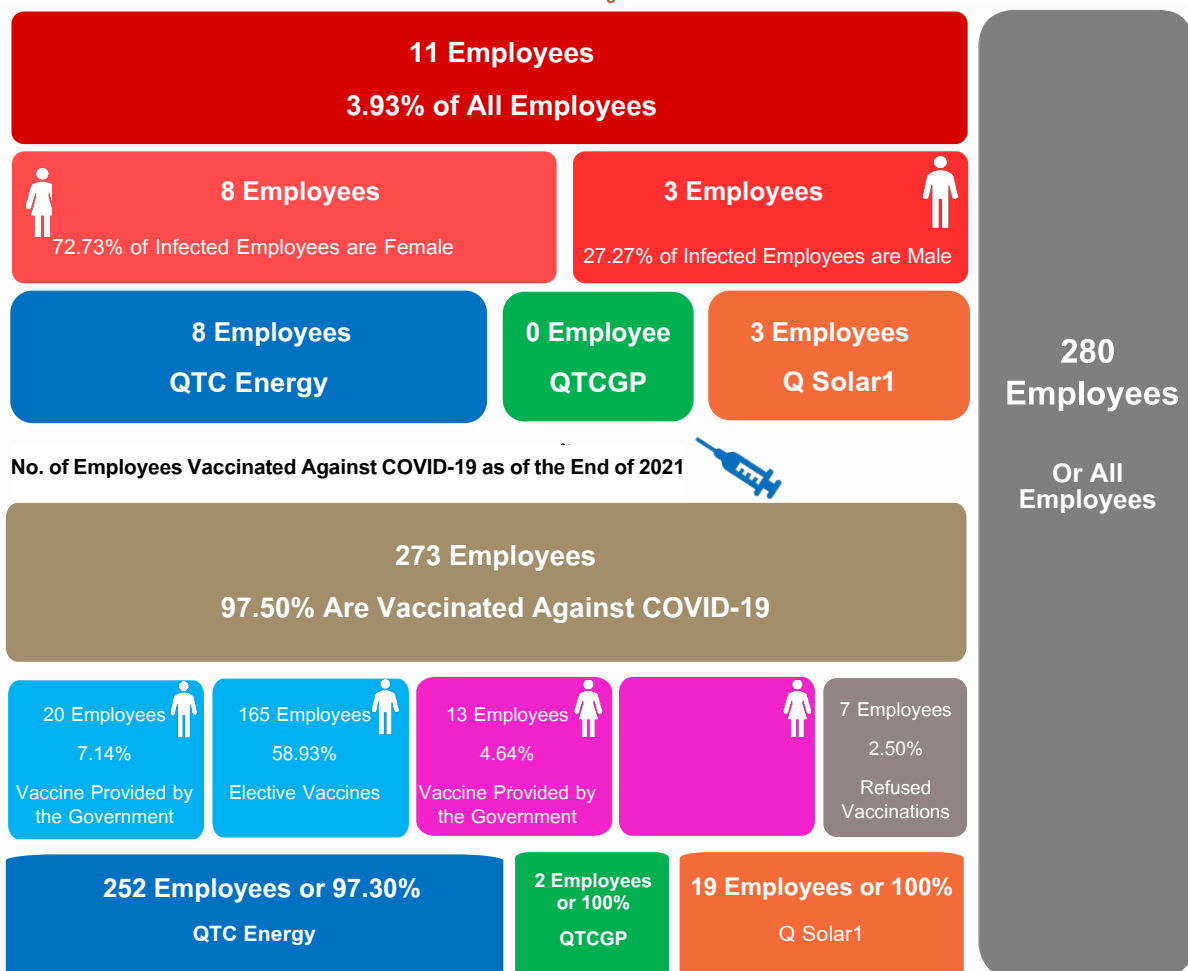
5. Business Interruption Risks

Risk Topics	Measures & Performance
Emergencies	<p>Emergencies are risks from disasters such as flooding at the Bangkok main office, fires at the main office or the Rayong factory or any subsidiary. The Company laid down the following preventive measures and emergency preparations:</p> <ul style="list-style-type: none"> • The Company prepares fire prevention and suppression plans and holds drills every year. • The Company prepares data recovery plans and practices plans on an annual basis. • The Company purchases insurance policies with coverage of risks. <ul style="list-style-type: none"> ➤ In 2021, the Company had no emergencies with effects causing business interruptions in the Company and subsidiaries. Furthermore, the Company followed measures strictly and consistently.
Cyber Threats	<p>Cyber threats are likely threats to business operations that may occur and cause damage to key business information. The Company specifies information policies and prepares strict and thorough risk prevention measures in addition to educate employees and create understanding with employees along with preparing backup plans in case of emergency.</p> <ul style="list-style-type: none"> ➤ In 2021, the Company tested employee understanding by creating phishing mails to trap employees and retest 100 percent of employees. During the year, phishing mails entered the system twice. However, the mails were captured and the Company managed to prevent damage to systems and data.

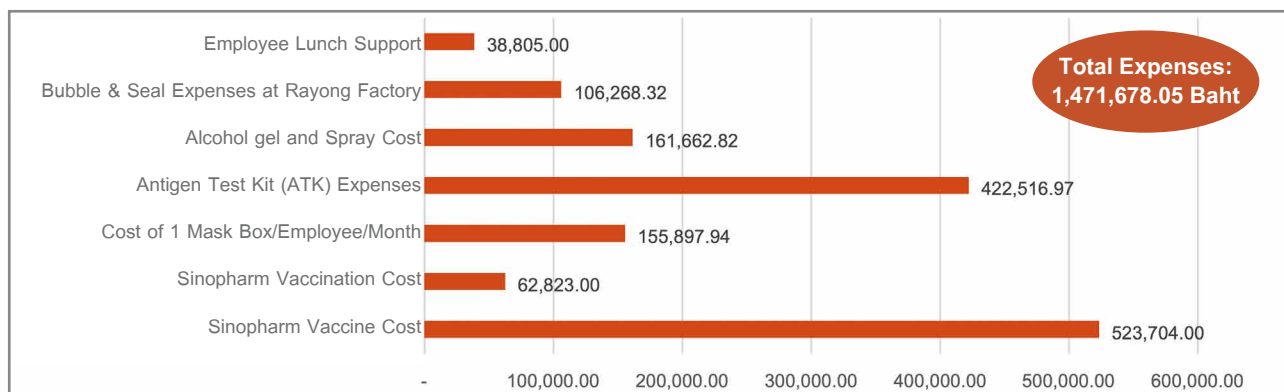
Risk Topics	Measures & Performance
COVID-19 Outbreaks	<p>Activities in the business of the Company and subsidiaries range from sales, procurement, production, delivery, marketing communication, customer support, meetings with internal and external agencies, etc. These activities have need for face-to-face communication or coordination with outside persons or groups such as customers, deliverers, contractors, mass media, etc., who may infected with COVID-19. The Company enacted the following preventive and corrective measures:</p> <ul style="list-style-type: none"> • The Company created the COVID-19 Crisis Management Committee with the Managing Director as the Chairman and specified necessary crisis management roles and duties. • The Company prepared infection prevention measures with coverage of all stakeholder groups in the Company and every subsidiary by considering advisories from the Department of Disease Control, the Central COVID-19 Operation Center and the Provincial COVID-19 Operation Center to screen, use face masks, use social distancing, work at home, etc. The Company made specifications in a manual. • The Company communicated and created understanding among employees along with providing knowledge about COVID-19. • The Company supports employees to be vaccinated by providing additional vaccines. • The Company prepared measures to support employees such as by helping with lunch costs, distributing face masks, hand sanitizer gel, providing transportation for employees from home to the work place in the case of employees who use public transportation and paying for internet costs of employees who work from home because employees were impacted by preventive measures specified by the Company, which may lead to limitation of employee rights. • The Company communicated and created understanding with customers, suppliers, contractors and outside persons regarding the Company's infection prevention measures along with providing support in using communication technology in place of face-to-face meetings. • The Company added more marketing communication content in online media to reach every customer group rather than holding face-to-face meetings. • The Company prepared emergency plans to cover every work process if the Company needs to stop the business temporarily. <p>The COVID-19 Manual can be downloaded at https://qtc-energy.com/th/risk-management/</p>

Data on Operations to Prevent and Correct COVID-19 Infections

Employees Infected with COVID-19 at the End of 2021



Expenses in Operations to Prevent, Correct and Remedy Impacts





Key Economic Issues

Business Growth



Business growth is a demonstration of the organization's ability to effectively manage resources while recognizing the importance of society and the environment under corporate governance and effective risk management, having new and unique innovations different from competitors, being able to use opportunities in risks as a business advantage with economic value, being able to create sales, make profit and pay appropriate returns to shareholders and other stakeholders. These are an important factor in investors' analysis of assets to select companies for investments in addition to building confidence, loyalty and trust in the Company among shareholders, employees and other stakeholders. Therefore, the Company needs to prioritize and maintain visions, obligations and create balance between profit, corporate governance and care for society and the environment, which has effects on sustainable business growth.

Objective:	To create sustainable business growth.
Management:	Strategic planning according to business paths, appropriate strategizing, effective corporate risk management, increase competitiveness with quality products and services including responsibility in promoting research and development to innovate products, services and production processes and expansion of investment in other businesses or new products to increase income and build financial strength.
Goal 1:	Total sales and services growth goal of at least ten percent per year.
Result:	Total organization income grew from 2020 was 14.96 percent. The goal was achieved.
Goal 2:	Income from new energy product sale (with QTC as the distributor) growth of at least 200 percent per year.
Result:	Income from new energy product sales grew by 159.27 million baht from 2020, a growth of more than 184.53 percent according to the goal. The goal was not achieved.
Goal 3:	Net profit (consolidated financial statement) no less than 12 percent.
Result:	Net profit (consolidated financial statement) in 2021 was 10.86 percent. The goal was not achieved.



Significant Performance in 2021

- The Company was officially appointed to be a distributor and post-sale service provider of Trina Solar brand solar panels on 5 January 2021 to increase sale opportunities and diversify options for customers.



- The Stock Exchange of Thailand (SET) approved transferring QTC assets from MAI to trade in the Stock Exchange of Thailand (SET) in the Resource Industry Group, Energy and Public Utilities Section. This transfer is effective as of 29 July 2021.



- The Company registered the founding of QTC Marketing Co., Ltd. or QTCM to operate the business as a distributor of electric and energy equipment to enter the market in 2022 on 10 November 2021. QTCM is under the governance of QTC Global Power Co., Ltd. or QTCGP.



Economic Results

(unit: million baht)

Financial	2019	2020	2021
Sales & Service Income	965.17	1,019.49	1,171.99
Total Income	985.04	1,040.45	1,185.03
Sales & Service Cost	(615.25)	(706.47)	(878.37)
Gross Profit	368.42	330.77	305.05
Sales & Management Expenses	(153.17)	(146.50)	(145.47)
Profit Before Interest and Income Tax	217.62	187.48	161.19
Net Profit	198.40	157.53	127.22
Profit for the Year	197.18	157.68	130.53
Net Profit Per Share	0.578	0.462	0.373
Dividends Per Share	0.15	0.40	0.20*
	(341,092,557)	(341,092,557)	(341,092,557)
Total Assets	1,856.37	1,935.66	1,986.93
Total Liabilities	217.54	243.48	250.97
Shareholders' Equity	1,638.83	1,692.19	1,735.96

*Pending approval from the Annual General Meeting of 2022.

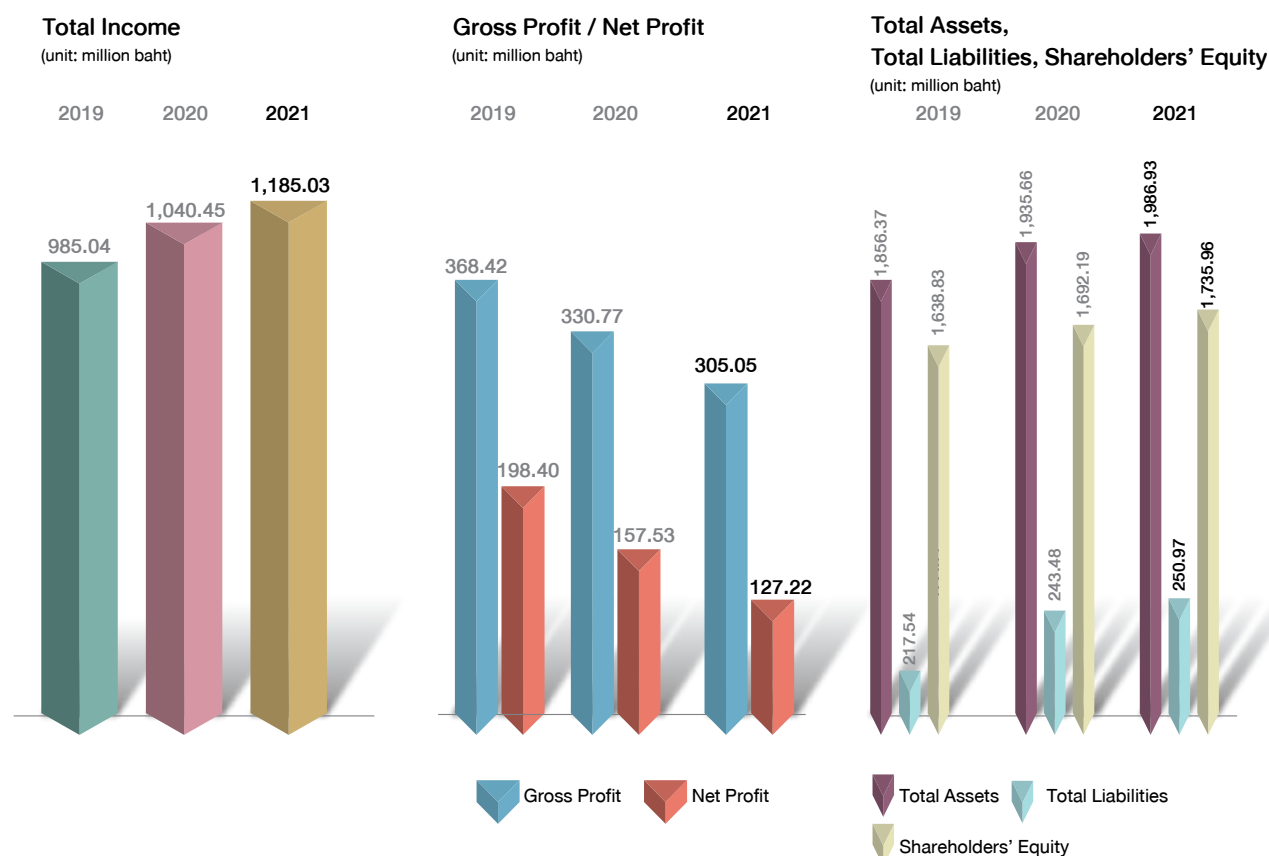
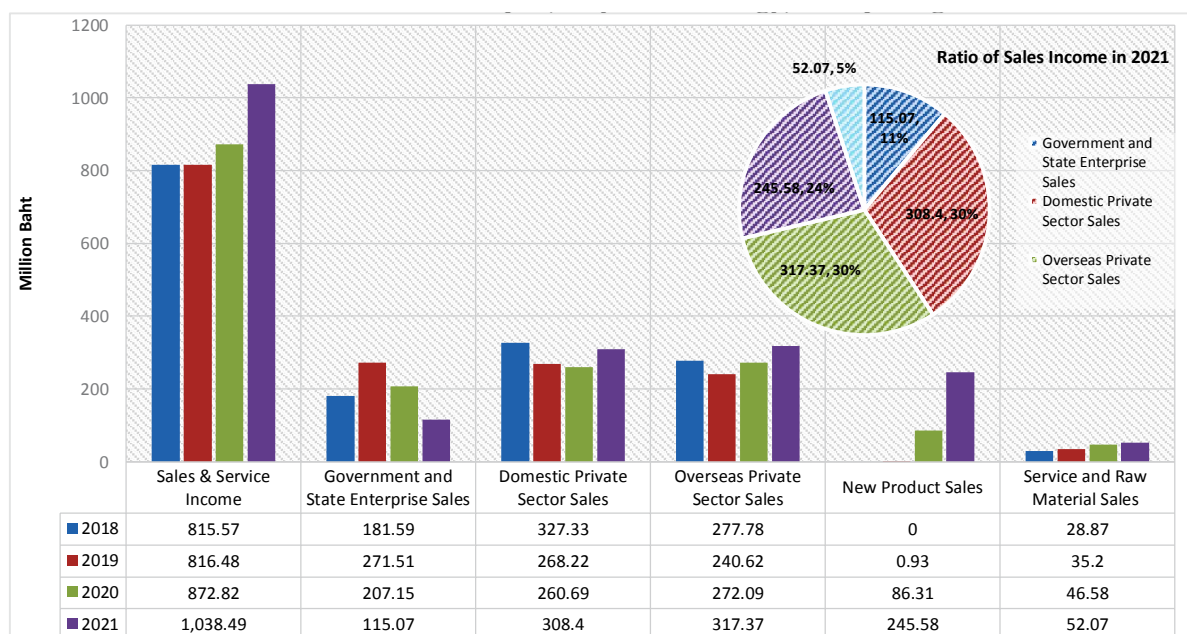


Table Showing Economic Results with Comparison of 2018-2021

Item		2018		2019		2020		2021	
		Separate Statement	Consolidated Statement	Separate Statement	Consolidated Statement	Separate Statement	Consolidated Statement	Separate Statement	Consolidated Statement
Income from Sales and Services	(million baht)	815.57	958.05	816.48	965.17	872.82	1,019.49	1038.62	1171.99
EBITDA	(million baht)	38.83	71.77	166.64	275.22	212.35	213.29	133.16	189.75
Net Profit (Loss)	(million baht)	4.10	(0.12)	122.18	198.40	178.13	157.53	94.25	127.22
Accrued Profit (Loss)	(million baht)	(64.69)	(98.93)	54.61	96.84	120.05	141.72	126.82	181.89
Net Profit per Share	(baht)	0.01	0.00	0.38	0.58	0.52	0.46	0.28	0.37
Rate of Asset Returns	(%)	0.22	(0.01)	6.87	10.51	9.87	8.31	5.04	6.49
Rate of Shareholder Returns	(%)	0.29	(0.01)	8.18	12.88	11.19	9.46	5.77	7.42

Remarks: See more details in the One Report 2021 under “Financial Report”.

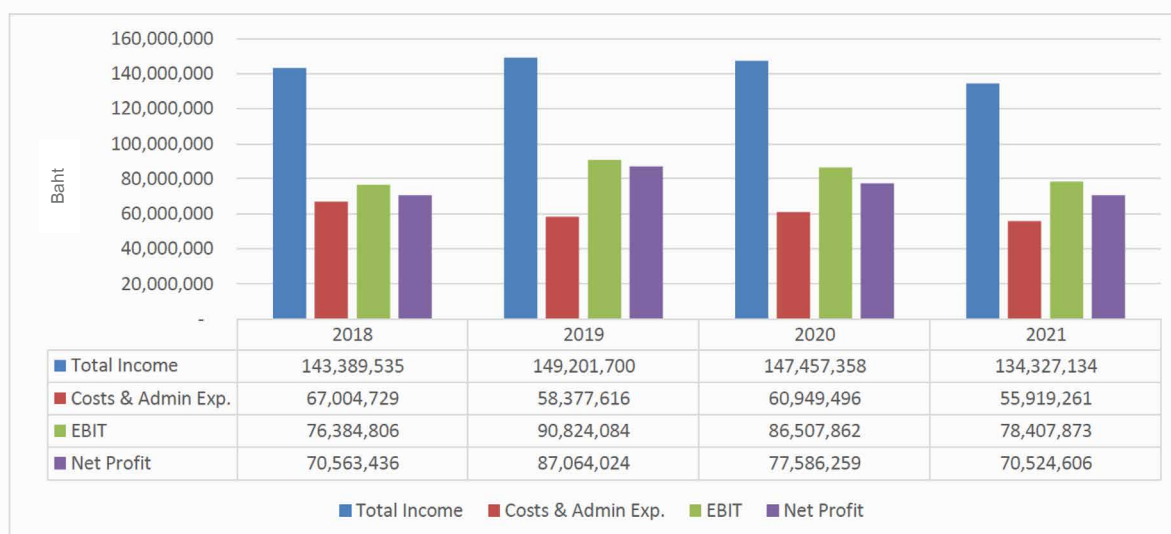
Sales & Service Income Graph (Only QTC Energy) Comparing 2018-2021



According to the Table Showing Economic Results and the Sales & Service Income Graph (only QTC Energy, QTC Energy overall grew from 2020 by 18.98 percent while income from bidding in the government sector declined by 44.45 percent because of low numbers of biddings held by the Provincial Electricity Authority and the Metropolitan Electricity Authority while the number of competitors in the market is high. Income from domestic private sector sales grew by 18.30 percent and foreign private sector sales grew by 16.64 percent. In addition, income from services and raw material sales grew by 11.79 percent while new product sales in the solar business such as PV panels and inverters enabled an income growth of more than 180 percent from 2020.

The year of 2021 was a difficult year for business operations in the COVID-19 pandemic, which affected raw material costs incurred by imports of main raw materials and continued depreciation of the baht currency in Quarters 1-3, causing the Company to have an exchange rate loss of 3.07 million baht. Furthermore, in 2021, sale costs rose by 15.12 percent due to aggressive marketing in the solar business, causing performance in the separate financial statement to have net profit lower than 2020 by 47.09 percent or a net profit ratio of 9.07 percent.

Graph of Economic Performance (Only Q Solar 1) Comparing 2018-2021



According to the graph, in 2021, Q Solar 1 Co., Ltd. had income from power sales to the Provincial Electricity Authority and other income at a total value of 134.32 million baht, a reduction of 8.90 percent from 2020. Originally, power was sold at the base price of 3.50 baht (average) + 8 baht per kWh in the adder agreement according to the government's policy. On 2 December 2021, the aforementioned agreement expired. Therefore, as of 3 December 2021, electricity was sold to the Provincial Electricity Authority at the price of 3.50 baht (average), causing income from electricity sales in 2021 to decline with a net profit of 70.52 million baht.

Q Solar 1 Co., Ltd. received BOI investment support under Promotion Card No.1114(1)/2554 dated 27 January 2001. The Company was granted juristic person income tax exemption benefits for the fiscal year of 1 January 2019 to 1 December 2019. Moreover, the Company was granted exemption from 50 percent of juristic person tax for five years from 2 December 2019 and to 1 December 2024.

Investment in Other Businesses

Concerning investments in other businesses in 2021, the Company has no projects to invest in the electricity generation business because the findings from project studies showed yields for the organization to not be consistent with conditions. Thus, the Company did not consider to invest.

Distribution of Value to Stakeholders

	QTC Energy	QTCGP & Q Solar 1
Distribution of Value to Shareholders	(Baht)	(Baht)
Dividends to Shareholders	68,218,511.40	
Dividends Per Share	0.20	
Personnel Investment		
Employees*	130,985,626.00	
Executives and Managing Directors in Subsidiaries	26,329,332.00	
Board of Directors (only independent directors)	9,752,175.28	
Social Investment		
Donations and Financial Support	477,653.40	40,730.00
Support for Social Enterprises (SE) (Indirect)	-	-
Activities for Society	309,475.18	106,512.25
Funds for Promoting and Improving Quality of Life among Disabled Persons	342,735.00	-
Environmental Investment		
Internal Environmental Management Cost	414560	58300
Waste and Other Management Cost	481510.5	11000
Sharing of Value with Business Partners		
Domestic Procurement (Raw Materials)	394,895,070.63	-
Overseas Procurement (Raw Materials)	202,536,877.40	-
Power Plant Equipment Procurement and Maintenance		2,582,280.81
Product Procurement from Disabled Persons in Communities	75,100.00	
Other Economic Value		
Financial Cost (Interest)	1,223,352.00	35,667.7
Taxes Paid to the Government**	14,206,128.00	7,745,738.00

Table Showing Comparison of Sharing of Value to Stakeholders

Stakeholder Groups	Unit	(Only QTC Energy)		Consolidated Statement		
		2017	2018	2019	2020	2021
Business Partners	(Million Baht)	564.79	545.62	426.17	390.90	600.09
Directors, Executive Directors and Employees*	(Million Baht)	116.95	123.74	156.63	159.06	167.07
Dividends for Shareholders	(Million Baht)	0	0	51.16	136.44	68.22
Dividends per Share	(Baht)	0	0	0.15	0.40	0.20
Financial Institutes (Interest)	(Million Baht)	11.27	9.41	5.98	2.32	1.26
Community & Society	(Million Baht)	0.49	0.60	1.69	1.37	0.93
Environment	(Million Baht)	0.59	0.85	0.87	0.90	0.97
Quality of Life Promotion and Improvement for Disabled Persons.	(Million Baht)	0.22	0.22	0.22	0.34	0.34
Government Sector (Taxes)**	(Million Baht)	0.38	0.37	9.45	36.60	21.95

* Salaries, wages, benefits, social security funds, the Provident Fund, monthly wages, annual wages and meeting gratuities (not including seminar and skill development costs).

** Juristic person income tax, value-added tax, land and building tax, signage tax.

Innovation Promotion

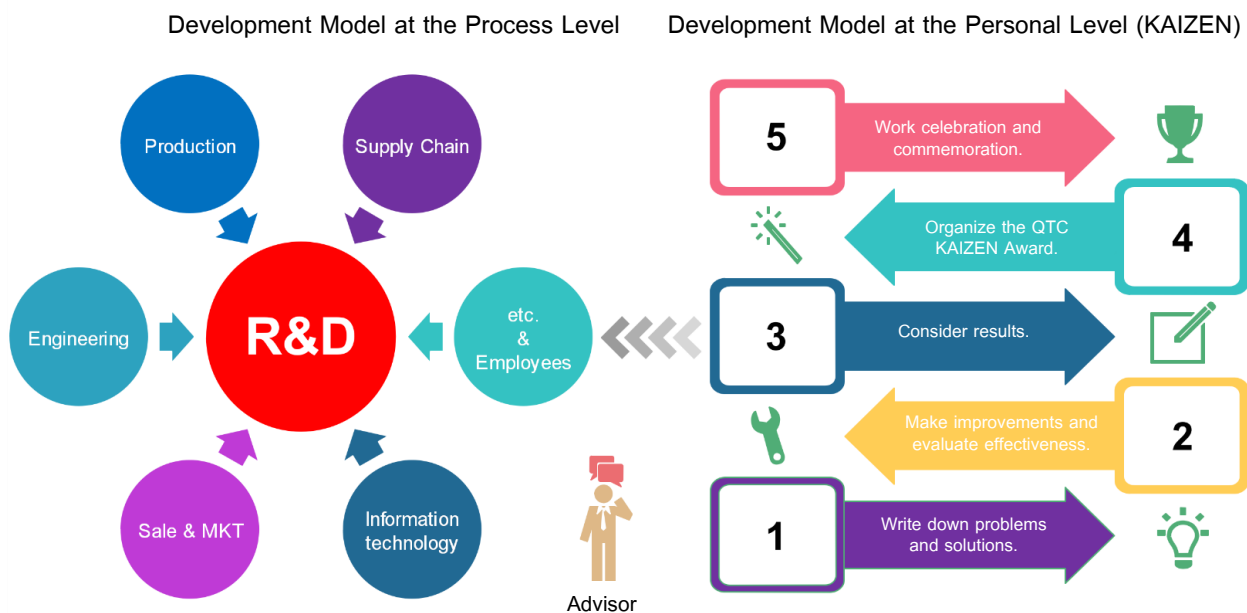


Rapid changes in digital technology, changes in industrial manufacturing processes with a greater focus on use of automated systems to replace humans including climate change have caused changes in social behaviors when considering purchases of quality, modern, simple-to-use products with fast delivery and caused effects on social expectations for business standards that give more consideration to environmental and social impacts.

Therefore, various changes have inevitably caused undeniable significant impact on the business environment inside and outside the company and changes became a concern for shareholders about the ability to manage changes which may have effects on the Company's economic status. Therefore, directors and executives must recognize the importance of changes and promote innovative thinking for employees at every level in the organization to participate in new creates and adapt to changes systematically and consciously with continual development of products, work processes and services. The Company consistently begins with small things by considering business directions to create added value for customers and stakeholders in society and the environment along with creating positive effects on the Company's employees and financial results.

Objective:	1. To strengthen the organization and prepare for changes. 2. To promote creative thinking skills among employees at every level.
Management:	Create a product and production process research and development work unit, a KAIZEN promotion team and create motivation for modification or innovation ideas along with managing the organization's risks.
Goal 1:	Have at least two articles on research and development results at the process level to create opportunities and reduce waste.
Result:	In 2021, the Company had eight research and development projects on processes. The Company spent a budget of 7.3 million baht.
Goal 2:	Income growth from distribution of products from product research and development results at more than two percent per year.
Result:	In 2021: Smart monitoring box sales growth declined from 2020 by 52.41 percent. Super low loss transformer sales grew from 2020 by over 300 percent. See results under "Climate Change" on the topic of Super Low Loss.
Goal 3:	Three KAIZEN articles on personal improvement per person per year.
Result:	Employees made modifications to work on > 3 issues or 97 percent of employees in the target group. Employees made modifications to work on < 3 issues or 3 percent of employees in the target group. (For employees who did not achieve the goal, the KAIZEN promotion team will improve skills according to work plans in 2022)

Innovation Promotion Process in the Organization



The innovation promotion process in the organization is divided into two levels. At the personal level, the Company promotes employee use of KAIZEN modification techniques without limit to concepts and methods while focusing on results. Every employee is able to do KAIZEN in the areas of quality, safety and the environment independently according to employee views. However, employees are required to show effects from that KAIZEN and KAIZEN results that can have effects and change work processes will be promoted and built on. Every KAIZEN presented by employee will earn rewards according to the specified criteria. At the process level, development is carried out by research and development teams with a focus on developing product and production process innovations in order to meet customer needs and expectations which change with the environment, situation or new rules.

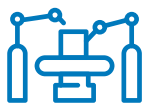


Innovation at the Process Level

Innovation in the organization at the process level considers risk assessment from changes in external and internal factors and may have effects on changes to customer and social expectations, which may impact the Company's sustainable business operations. The Company had changes with significance for innovation in the organization in the following three areas:

1. Production technology changes.
2. Information technology changes.
3. Climate change (see information on the issue of "Climate Change" under "Super Low Loss Transformer").

In 2021, the Company had eight research and development projects to create innovation in the organization and spent 7.3 million baht. The following projects were successful with qualitative effects on the Company:



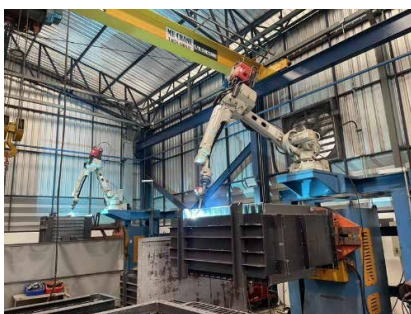
The Project to Modify Manufacturing Processes to Reduce Costs by Using Automation/TQM/Lean Systems

In 2021, the research team continued to develop processes to use robots in place of manual labor from 2020. The following project was successful in creating value for the organization:

- **The Project to Develop Transformer Fin Welding with Robots** – The research team designed five additional programs for Q-Robot1 and Q-Robot2 machines to weld transformer tanks for 50 kVA [PEA], 50 kVA [EDL], 100 kVA [EDL], 250 kVA [EDL] and 300 kVA [MEA] transformers. This reduced time in manufacturing transformer tanks for three sizes. Welding quality is consistent. Labor and time savings can be calculated into financial values as follows:

Table of Modification Results

Transformer Size	Cycle Time [min]			Amount Manufactured [transformers]	Value Saved [baht]
	Welded by Skilled Technicians	Welded by Robots	Time Saved		
50kVA PEA	40	25	15	38	10,688
50kVA EDL	50	30	20	63	23,625
100kVA EDL	70	40	30	54	30,375
250kVA EDL	80	50	30	75	42,188
300kVA MEA	100	60	40	127	95,250
Total				357	202,125



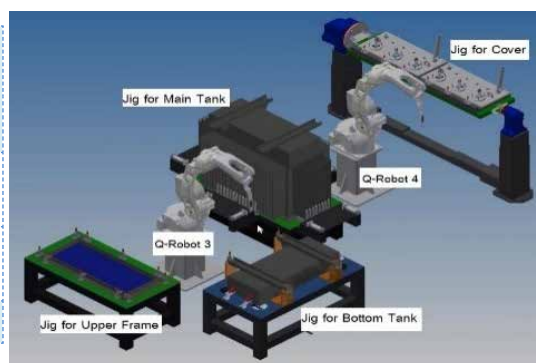
Sample Images of 300 EDL Tank Welding

- Project to Develop Transformer Tank Assembly and Lid by Using JIG [BOI 2.0 MB]** – Transformer tank manufacturing has steps in which steel sheets and shaped steel are assembled into structures designed by engineers with dimensions or distance specifications allowing deviations from designs at no more than 3 mm. This process takes significant time for measuring and welding. Therefore, the research and development team modified the manufacturing process by using Q-Robot4 and Q-Robot5 valued at two million baht. This project applied for BOI support in order to receive tax privileges (refer to Promotion Application No. 0402/2563). Currently, the matter is approved and in the step of submitting a request to receive a promotion card in order to apply for tax privileges.

Formerly, employees used hands to position, measure and arrange each piece before welding to make jigs (Prototype Jig Tr. 100 kVA). Assembling tanks, lids and welding with Q-Robot3 and Q-Robot4 enhanced work efficiency by more than 31 percent.

In real use (prototype model) to assemble transformer tanks with capacities of 300 kVA MEA and 50 kVA PEA, total tank and lid assembly time was found to have been reduced by 100 minutes. This enhanced work efficiency by 54 percent and saved 60,563 baht with quality that met standards consistently.

Manufactured Model (Prototype)	Cycle Time [min]			Transformers Manufactured (transformers)	Value Saved (baht)
	Welder	Robot Welder	Time Saved		
300 kVA MEA Lids	100	35	65	47	57,281
50 kVA PEA Tanks	85	50	35	5	3,281
Total			100	52	60,563



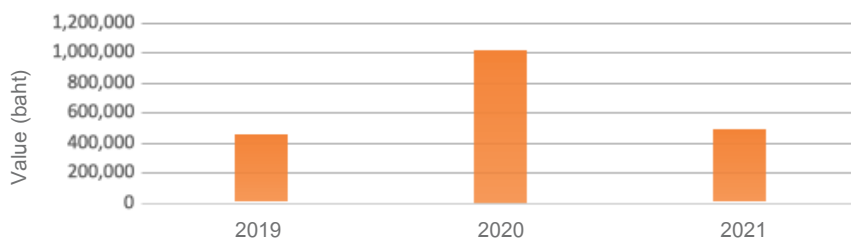
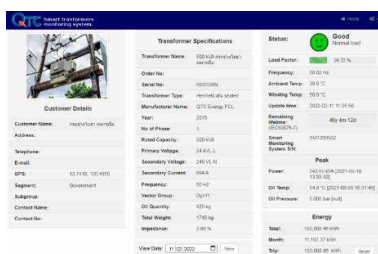
Sample Image of Welding to Assemble 300 kVA (MEA) Lids and 50 kVA (PEA) Tanks



Smart Transformer Monitoring Product or Smart Monitoring Box Development

This development is a continuation from 2017. A smart transformer monitoring device is a smart system that monitors transformer functions with sensors that monitor key variables such as electricity in wire coils, voltage, body temperature, transformer oil level, oil temperature, particularly imbalances that may have negative effects on transformers. Data is sent via phones and the internet, enabling caretakers to monitor data for all 24 hours. Therefore, smart transformer monitoring systems are accessory systems that make transformers become Transformer 4.0 because “QTC is more than transformers”. Commercial distribution began in 2019. In 2021, the Company was able to sell only 7 smart transformer monitoring systems valued at more than four hundred thousand baht, a decline from 2020 by more than 50 percent. Due to economic conditions, customers are not considering to add this option among transformers purchased from QTC.

In 2021, Smart Transformer Monitoring System Version 3.1 remains in use because this version enables users to use the system more easily via a website even though users have no basic knowledge of transformers because all variables were summarized as an emoticon on the dashboard. In addition, QTC's Smart Transformer Monitoring System received the Best Innovative Company Award at the SET Awards 2021 hosted by the Stock Exchange of Thailand.



Graph of Smart Transformer Monitoring Sale Value



Example of Values Displayed in Smart Transformer Monitoring System V3.1 (Super Low Loss Transformer, QTC Factory)



Considered for the Best Innovative Company Awards at SET Awards 2021 on 3 November 2021. Award announced online.

Government sector customers such as the PEA and the Naval Public Works Department have begun to show interest in QTC's Smart Transformer Monitoring System V3.1. An agreement was made to borrow QTC's Smart Transformer Monitoring System V3.1 for a trial-use with existing transformers of other brands and QTC transformers to collect data and measure cost-efficiency. Results were satisfactory. However, details cannot be officially disclosed.



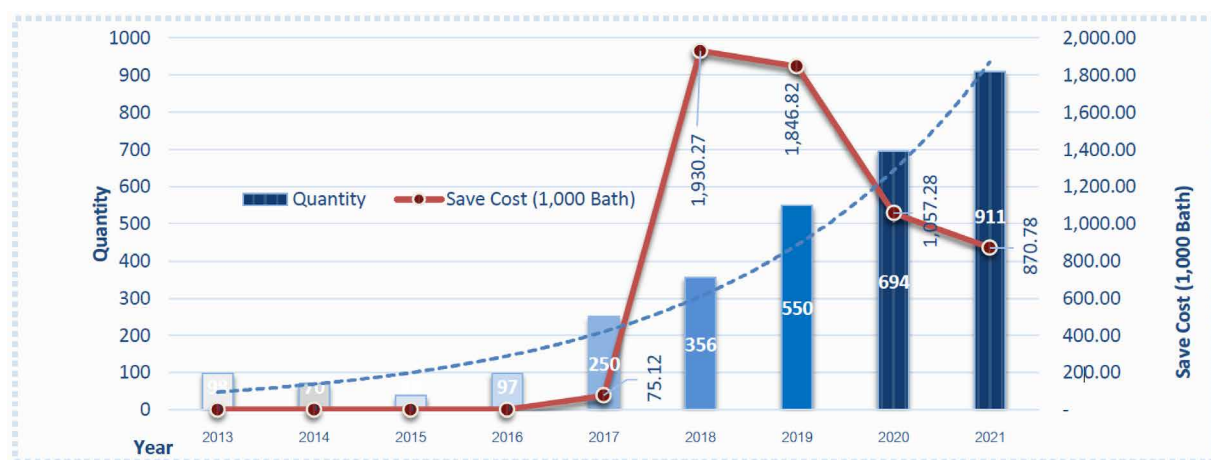
Smart Monitoring Box Set Installation in the Trial-Use Agreement

Innovation at the Personal Level

QTC implemented KAIZEN and promoted involvement in operations from employees at every level since 2013 with continual modifications to the promotion process. Currently, the Company supports employees to complete KAIZEN in employees' work first because employees will have the most knowledge of employees' work. Education on KAIZEN and practicing thinking, analysis, experimentation skills with budget and time support for KAIZEN is important in pushing employees to dare to think and do many KAIZENs, which can reduce waste, work time, improve work quality and create satisfaction for internal and external customers. Therefore, employee KAIZEN can support and promote effective work process development and cost reduction.

In 2020, modifications were made to 694 KAIZEN works. The Company provides rewards for results amounting to 83,380 baht and saved 1,057,283 baht from modifications made to employees'

- Value for QTC:**
- Benefits for the Company from Supporting Employee KAIZEN
 - Strength at the operational level and ability to continually adapt and improve.
 - Added value for quality products and services while reducing work time.
 - Profit created by cost reductions from modifications to employee KAIZEN work.



Graph of Statistics Showing Amount of Savings from KAIZEN Modifications in 2013 – 2021

- Value for Employees:**
- Benefits for Employees from KAIZEN Modifications
 - Good work environments under safety standards.
 - Employees are able to work effectively with less fatigue.
 - Higher income from KAIZEN results.
 - Increased knowledge and ability from KAIZEN modifications.
 - Pride when the Company sees the value of employees and praises employees.

In 2021, employees had 911 KAIZEN results and employees received financial support as indirect income in the amount of 91,594 baht. In 2021, the Company canceled the QTC KAIZEN Award 2021 due to the COVID-19 pandemic. However, the Company will collect results to judge in 2022.

Responsibility for Products and Services



Transformers are a main piece of equipment in power transmission systems used for transferring electricity connected between high voltage and low voltage systems. Transformers can convert voltages or electricity currents, depending on designs and functions, to be consistent with objectives. Errors in design or substandard production may have effects on the safety of workers who are company employees and ordinary people and may cause economic impacts on customers and users. Furthermore, errors in design or substandard production may cause impacts on product brand image, resulting in loss of confidence in products among customers and negative advertisement by word-of-mouth.

Therefore, the Company needs to prioritize good and effective design standards, production standards and service standards in order to produce good results in the area of product quality, safety and display of labels related to main transformer properties for correct use. Furthermore, the Company recognizes the importance of maintaining confidential information belonging to customers and providing accurate and real technical information through advertisements, public relations and seminars in order to build confidence among customers, create good image for product brands and attachment to the Company's products and services.

Objective:	To produce quality and safe products for users and create customer satisfaction.
Management:	Manage various areas with international standards (International Organization for Standardization) and total quality management (TQM); design, manufacture and test under product standards and customer specifications; manage customer relations to create awareness of news and information and customer attachment along with surveying customer satisfaction and making continual improvements.
Goal 1:	Zero danger to transformer users due to substandard product quality.
Result:	In 2021, no dangerous events occurred to users of QTC transformers.
Goal 2:	Customer satisfaction > 90%.
Result:	Customer satisfaction in 2020 was at 90.82 percent.
Goal 3:	Manage 100 percent of customer complaints.
Result:	In 2021, the Company had 24 customer complaints and was able to successfully respond to 100 percent of complaints.
Goal 4:	Provide transformer testing and maintenance services for more than 90 percent of transformers within the warranty period.
Result:	In 2021, the Company was able to achieve this at 77 percent. The Company did not achieve the goal.
Goal 5:	Zero complaints from leaks of customers' personal data.
Result:	In 2021, the Company had no complaints from leaks of customers' personal data.

The Company implemented international standards in the organization by considering domestic and foreign customer needs from law enforcement and specifications along with considering the organization's consent to improve personnel ability, build confidence among customers and stakeholders in addition to increasing opportunities to compete. The standards applied include requests for accreditation from agencies trusted at the national and world levels and references for appropriate application without accreditation. The list of standards is as follows (not including accounting standards and product quality control standards):

Table of Work Standards for Which System Accreditation Was Requested

No.	Accredited Standards	Evaluation Frequency	Accrediting Agency	Accreditation No.
1	ISO14001:2015	Once per Year	SGS-NAC	TH08/1236
			SGS-UKAS	TH08/1235
2	ISO45001:2018	Once per Year	SGS	TH08/1237
3	ISO9001:2015	Once per Year	SGS-NAC	TH00/2729
			SGS-UKAS	TH00/2728
4	ISO/IEC17025	Once per Year	สผอ.	18035/0659
5	Green Industry Level 4	4 Years/Time	Ministry of Industry	4-116/2559 Accreditation No. is currently expired and pending renewal evaluation.
6	Q-Mark (Trade & Services Sector)	4 Years/Time	Thai Chamber of Commerce, Thai Bankers' Association, Federation of Thai Industries	Q002/2562
	Q-Mark (Manufacturing Sector)			Q004/2559 Accreditation No. is currently expired and pending renewal evaluation.

Table of Standards Used for Reference

No.	Reference Standards	Remarks
1	ISO26000	Used as reference for practice guidelines in the area of corporate social responsibility
2	ISO14064	Used as reference for guidelines in preparing reports on greenhouse gases and requesting annual accreditations.
3	ISO50001:2011	Used as reference for guidelines in energy management.
4	COSO-ERM	Used as reference for corporate risk management guidelines.
5	5S	Used as reference for work basics.

Product Standards



QTC transformers are designed, manufactured and tested under IEC standards, TIS 384-2543 standards and customer standards or standards of trading partners' countries such as ANSI, IEEE and JIS, etc. Furthermore, the Company sends transformers to be tested in the Short Circuit Performance Test in order to gain accreditation for QTC transformer quality from abroad such as to KAMA in the Netherlands and GFH Engineering & Test GmbH in Germany. In addition, the Company uses Green Label requirements for transformer products (TGL-117-16) as a manufacturing standard and requested permission to use the Green Label for transformer products from the Thailand Environment Institute, License No. GL2019/042.

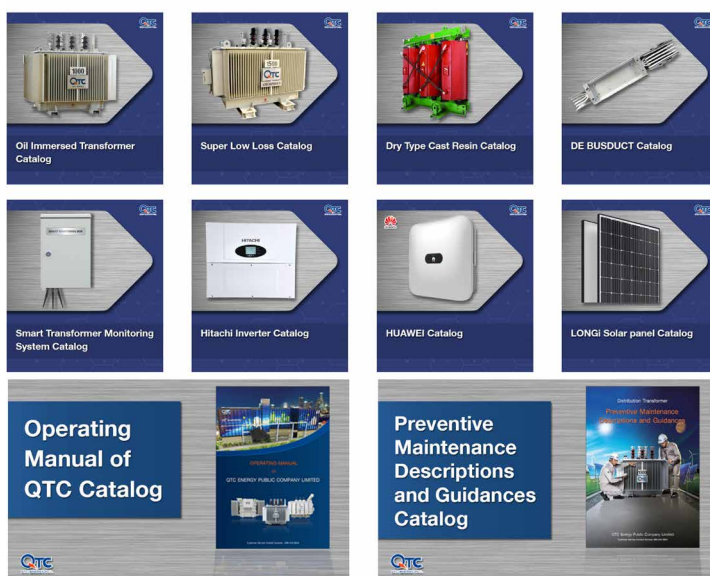
Table of Standards Used as References in Designing QTC Transformer Products

IEC	ANSI/IEEE	UL	NEMA	DIN	JIS	AS	Other
IEC 60071-1	IEEE C57.12.90	UL 1561	NEMA Standards Publication No.TR 1-1993 (R2000)	DIN 42530	JIS C 3104	AS 2374	TIS 384-2543/ TIS84-2000
IEC 60076-2	IEEE Std. C57.104-1991			DIN 42531	JIS C 3202		BS EN 50464
IEC 60076-3	ASTM D117-02			DIN 42532			EN 50588
IEC 60076-4	IEEE Std. C57.12.00			DIN 42533			Electricity Installation Standards for Thailand BE. 2556 (A.D. 2013)
IEC 60076-5	IEEE C57.110			DIN 7168			TGL-117-16
IEC 60076-6				DIN 125			
IEC 60076-7				DIN 127			
IEC 60076-8				DIN 933			
IEC 60076-10				DIN 934			
IEC 60076-11							
IEC 60076-12							
IEC 60076-14							
IEC 60296							
IEC 156							
IEC 61378-1							
IEC 61378-2							

QTC recognizes the importance of design, manufacturing and testing standards by referring to international standards in order to ensure that QTC transformer products have quality and safety for people in society when used along with helping to reduce environmental impacts as much as possible.

Table of Showing Standards of Licensed Products

Product Model	Licensed Product Standards	License No.
Oil-type transformer 3Ph < 250kVA 50Hz Voltage > 12kV < 24kV	<p>TIS 384-2543/TIS84-2000</p>  <p>TIS. 384-2543</p>	1248-335/384
Oil-type transformer 3Ph > 250kVA < 1000kVA 50Hz Voltage > 12kV < 24kV		-
Oil-type transformer 3Ph > 1000kVA < 2000kVA 50Hz Voltage > 12kV < 24kV		-
Oil-type transformer 3Ph < 250kVA 50Hz Voltage > 24kV < 36kV		1249-336/384
Oil-type transformer 3Ph < 250kVA 50Hz Voltage < 12kV		1250-337/384
Oil-type transformer 3Ph > 250kVA < 1000kVA 50Hz Voltage < 12kV		-
Oil-type transformer 3Ph < 250kVA 50Hz Voltage 12/24kV		-
Oil-type transformer 3Ph > 250kVA < 1000kVA 50Hz Voltage 12/14kV		-
Oil-type transformer 1Ph < 50kVA 50Hz Voltage > 12kV < 24kV		1251-337/384
Oil-type transformer 1Ph < 50kVA 50Hz Voltage 33kV		-
Oil-type transformer 1Ph < 50kVA 50Hz Voltage < 12kV		1447-373/384
Oil-type transformer 1Ph > 50kVA < 167kVA 50Hz Voltage < 12kV		-
Oil-type transformer 1Ph > 50kVA < 167kVA 50Hz Voltage > 12kV < 24kV		-
Oil-type transformer 1Ph < 50kVA 50Hz Voltage 12/24kV		-
Oil-type transformer 1Ph > 50kVA < 167kVA 50Hz Voltage 12/24kV		-
Oil-type transformer 3Ph > 1000kVA < 2500kVA 50Hz Voltage < 12kV		1460-373/384
Oil-type transformer 3Ph > 1000kVA < 2500kVA 50Hz Voltage > 12kV < 24kV		-
Oil-type transformer 3Ph > 250kVA < 1000kVA 50Hz Voltage > 24kV < 36kV		-
Oil-type transformer 3Ph > 1000kVA < 2500kVA 50Hz Voltage > 24kV < 36kV		-
Oil-type transformer 3Ph > 2500kVA < 7500kVA 50Hz Voltage < 12kV		2199-403/384
Oil-type transformer 3Ph > 2500kVA < 7500kVA 50Hz Voltage > 24kV < 36kV		-
Oil-type transformer 3Ph > 2500kVA < 7500kVA 50Hz Voltage > 12kV < 24kV		212-405/384
Transformers with a capacity of 500kVA 3Ph 50Hz 24000-240/416 V	<p>Green Label: TGL-117-16</p> 	GL2018/036
Transformers with a capacity of 50kVA 3Ph 50Hz 22kV		GL2019/042
Transformers with a capacity of 100kVA 3Ph 50Hz 22kV		-
Transformers with a capacity of 160kVA 3Ph 50Hz 22kV		-
Transformers with a capacity of 250kVA 3Ph 50Hz 22kV		-
Transformers with a capacity of 160kVA 3Ph 50Hz 33kV		-
Transformers with a capacity of 250kVA 3Ph 50Hz 33kV		-
Transformers with a capacity of 250kVA 3Ph 50Hz 33kV		-



Catalogs of Products and Services

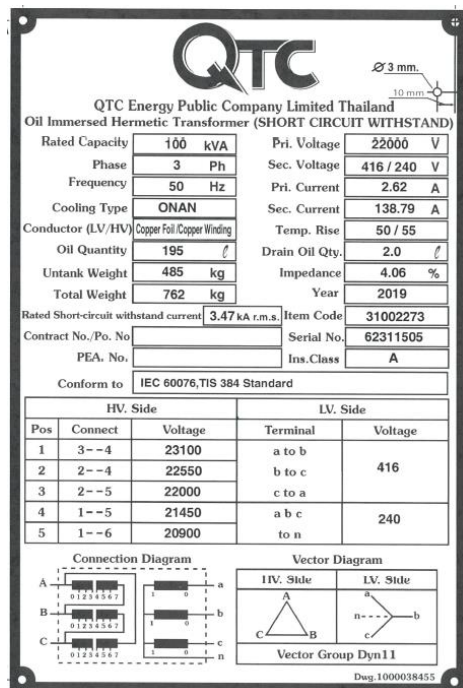
Can be downloaded at

<https://qtc-energy.com/download/>



Display of Product Labels and Brands

QTC transformer products are required to display to following basic product labels, TIS standards and brands:



QTC Ø 3 mm.
10 mm.

QTC Energy Public Company Limited Thailand
Oil Immersed Hermetic Transformer (SHORT CIRCUIT WITHSTAND)

Rated Capacity	100 kVA	Pri. Voltage	22000 V
Phase	3 Ph	Sec. Voltage	416 / 240 V
Frequency	50 Hz	Pri. Current	2.62 A
Cooling Type	ONAN	Sec. Current	138.79 A
Conductor (LV/HV)	Copper Foil / Copper Winding	Temp. Rise	50 / 55
Oil Quantity	195 ℓ	Drain Oil Qty.	2.0 ℓ
Untank Weight	485 kg	Impedance	4.06 %
Total Weight	762 kg	Year	2019
Rated Short-circuit withstand current	3.47 kA r.m.s.	Item Code	31002273
Contract No./Po. No.		Serial No.	62311505
PEA. No.		Ins. Class	A

Conform to IEC 60076, TIS 384 Standard

HV. Side			LV. Side	
Pos	Connect	Voltage	Terminal	Voltage
1	3--4	23100	a to b	416
2	2--4	22550	b to c	
3	2--5	22000	c to a	
4	1--5	21450	a b c	240
5	1--6	20900	to n	

Connection Diagram

Vector Diagram

Vector Group Dyn 11

Dep. 1000038455

Sample of Nameplates Showing Significant Electricity Information



Product Logo

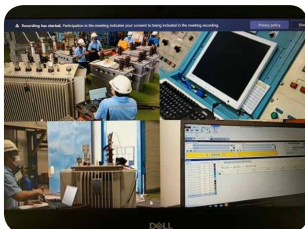


TIS. 384-2543

Symbols Showing Licensed Product Standards

Electricity Testing Standards

QTC has a policy to certify product quality by testing electrical properties at 100 percent along with issuing QR codes for transformer test results according to serial numbers. QTC's testing laboratories are accredited for testing laboratory capacity according to TIS 17025-2548 (ISO/IEC17025), Accreditation No. Test 1657. In addition, the Company allows product owners to view product test results for Factory Acceptance Tests (FAT) in order to perform acceptance inspections and create confidence that customers will receive transformers with the highest quality according to expectations. The Company created the FAT VDO conference system through the MS Team. This new innovation was created as a result of the COVID-19 pandemic since 2020. Currently, the Company continues to provide Factory Acceptance Test (FAT) services via VDO conferences to customers who own products.



Approved to use the ilac-MRA mark with the ISO/IEC 17025 mark on 4 October 2021 to showcase internationally accepted testing laboratory capabilities and build confidence for overseas customers in test results from QTC's testing laboratory.

Customer Care

The Company recognizes the importance of customer needs and the Company is committed to meeting customer needs in order to solve problems from the Company's products and services via customer complaint acceptance channels and customer satisfaction survey channels in order to make modifications and improvements to issues in customers' interests and concerns along with giving importance to communication and advertisement with accurate technical information through major marketing channels such as the Company's official Line Application account, Facebook and Catalog, etc. In addition, the Company hosts seminars to provide knowledge about products by giving consideration to customer privacy and confidentiality.

Performance in 2021

- Due to the COVID-19 pandemic in 2021, the Company modified guidelines in communicating and meeting with customers via online media and online seminars rather than onsite events to prevent infections. Examples of online seminars are as follows:

Online Seminar on Reduce BOS Cost with LONGi Solar Hi-mo5 Technology on 11 August 2021



Online Seminar on Huawei Off-Grid Inverter Huawei iSitepower-M on 25 November 2021



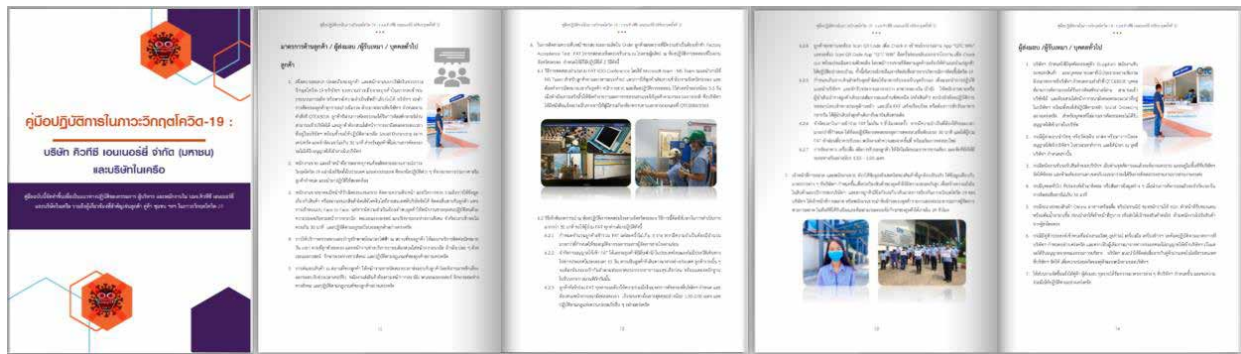
- The Company opened an onsite booth at the Huawei GREEN for Future event at Central World Square on 24 December 2021.



- The Company prepared content and articles to provide knowledge on electricity for customers and ordinary people via the Facebook Fanpage at <https://m.facebook.com/QTCENERGYPCCL/?tsid=?0.7510739142977152&source=result>.

- Responsibility to Customers in the COVID-19 Pandemic**

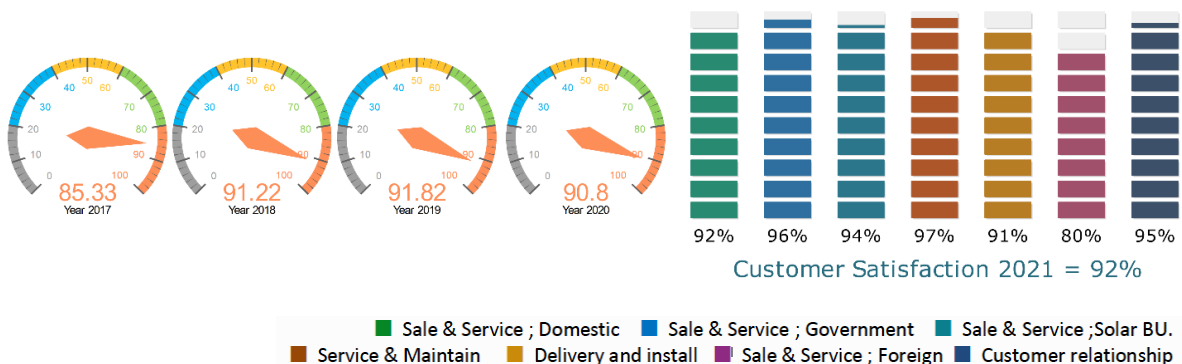
Due to the COVID-19 pandemic in 2021, the Company continued to maintain strict preventive measures by facilitating customers in factory acceptance tests via the FAT VDO Conference system to virtually view the site for the safety of customers and company employees. However, customers who needed to enter the factory had to receive special approval and strictly comply with preventive measures. In the past year, the Company received good cooperation from customers. In 2021, the Company had a total of 93 customers who used the FAT VDO Conference system.



Sample of the COVID-19 Crisis Operations Handbook (Customer Measures)

The full version can be downloaded at <https://qtc-energy.com/th/risk-management/>

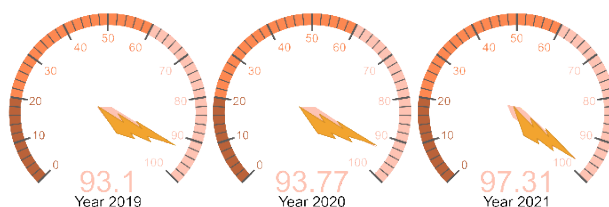
- The Company surveys customer satisfaction annually. The Company must receive no less than 70 percent of survey forms back and, of the replies, satisfaction must reach the target goal of no less than 90 percent. The Company's performance in 2021 achieved the goal at 92 percent.



📌 Overall customer satisfaction survey results achieved goals, except for foreign customer satisfaction. The Company was unable to have customer satisfaction on the issues of communication and meetings with customers in 2021. The Company will improve on this issue to improve satisfaction levels.

- Customer satisfaction toward ISO/IEC17025 laboratory testing services. Goal > 90%.

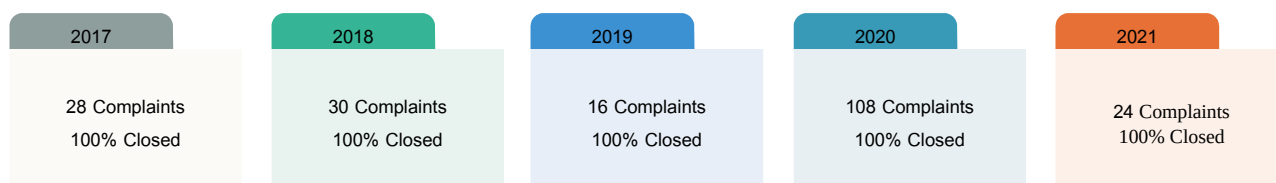
From performance in 2021, 84 customers entered the FAT VDO Conference system and 9 customers came onsite. Results from satisfaction assessment were at 97.31 percent. The Company achieved the goal.



Customer satisfaction @ QTC Lab. ISO/IEC 17025

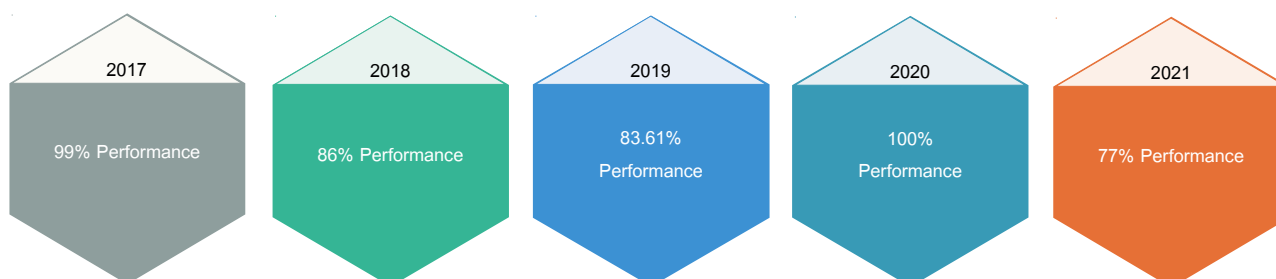
- Ability to Manage Customer Complaints in the Area of Goods and Services – Performance Goal: 100%

Concerning performance in 2020, the Company had 24 complaints from customers, a reduction from 2020 by 77.78 percent. In 2021, the Company received **no complaints concerning leaks of customer personal information.**



- Ability to Provide Inspection Services: The Company maintained transformers within the warranty period and achieved more than 90 percent of the goal.

Performance in 2021 showed 1,459 transformers within the warranty period. The Company was able to work according to customer confirmations for 1,124 transformers and failed to work according to plans with 335 transformers. Work steps became more complicated and time-consuming due to the COVID-19 pandemic. This prevented the Company from working as planned. In addition, some customers were inconvenienced by concerns with COVID-19. Therefore, 335 transformers within the warranty period were moved to work plans in 2022 according to customer confirmations. Performance in 2021 was at 77%. **The Company did not achieve the goal.**



- To confirm the quality of QTC transformers under international standards, danger for transformer users from substandard product quality must be zero.

Performance : There has never been a case of users being endangered by using QTC transformers



Trade Partner Development



Currently, many diverse needs of customers or new legal rules and regulations or environmental changes have affected competition among manufacturers in order to be able to adapt to and meet the needs of customers and stakeholders effectively. Customers who place importance on sustainable development place importance on stakeholders throughout the value chain with direct impacts on the Company in meeting the needs of every customer group. Therefore, the Company needs to recognize the importance of improving supplier capabilities with sustainability and coverage of economic, social and environmental dimensions in order to enable the Company to register vendors with major customers and enable QTC's suppliers to be able to control production with quality, punctual development and management with good governance.

QTC categorizes suppliers into the following three main groups: 1. Suppliers who produce and deliver raw materials from abroad, 2. Suppliers who are domestic raw material producers/deliverers and 3. Suppliers who sell raw materials/accept contracts. The group of suppliers prioritized by the Company as a goal for development is the group of domestic raw material producers/deliverers, most of whom are SMEs without capital for investing in standard systems and requesting accreditation according to policies and guidelines for assessing supplier capabilities. Therefore, the Company has a mission to improve capabilities of the aforementioned group of suppliers to be able to effectively meet the needs of QTC and QTC customers.

- Objective:**
1. To reduce the risk of production interruptions from shortages of key raw materials.
 2. To build economic strength for SME suppliers in Thailand.
 3. To deliver quality goods on time and create satisfaction in customers.

Management: The Company prepares the procurement policy, the QTC Supplier Code of Conduct to cover ethical issues in business, human rights, labor rights, safety, resistance against corruption, communication and assessment of supplier capabilities according to business ethics, supplier registration and prepares plans for improving key SME suppliers along with managing with ISO9001 standards.

Goal 1: Procure raw materials to have quality > 95% (higher than 95% in 2020).

Result: In 2021, the Company achieved 99.32% of the goal.

Goal 2: > 98% of raw materials are delivered on time (higher than 95% in 2020).

Result: In 2021, the Company achieved 98.11% of the goal.

Goal 3: Communicate and recommend guidelines in the QTC Supplier Code of Conduct to 100% of suppliers.

Result: In 2021, the Company continued to work with new suppliers and achieved 100% of the goal.

Goal 4: Improve at least one target SEM supplier in Thailand per year.

Result: In 2021, the Company had plans to advise suppliers and improve areas where problems were found. However, the Company did not carry out the plan due to the COVID-19 outbreak. The Company did not achieve the goal.

Performance in 2021

• Communication and Recommendation of the QTC Supplier Code of Conduct

The Company communicated the QTC Supplier Code of Conduct to 100 percent of suppliers. In 2021, the Company had the following performance:

→ The Company assessed 236 suppliers/deliverers (producers and deliverers of raw materials with effects on quality) according to the criteria for selecting/assessing deliverers and the QTC Supplier Code of Conduct in order to register quality suppliers in 2021. The Company's performance was as follows:

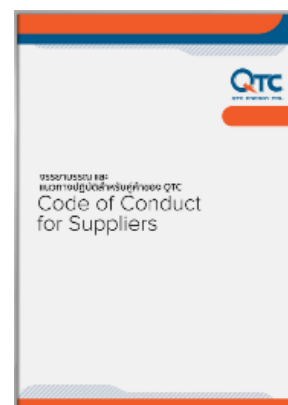
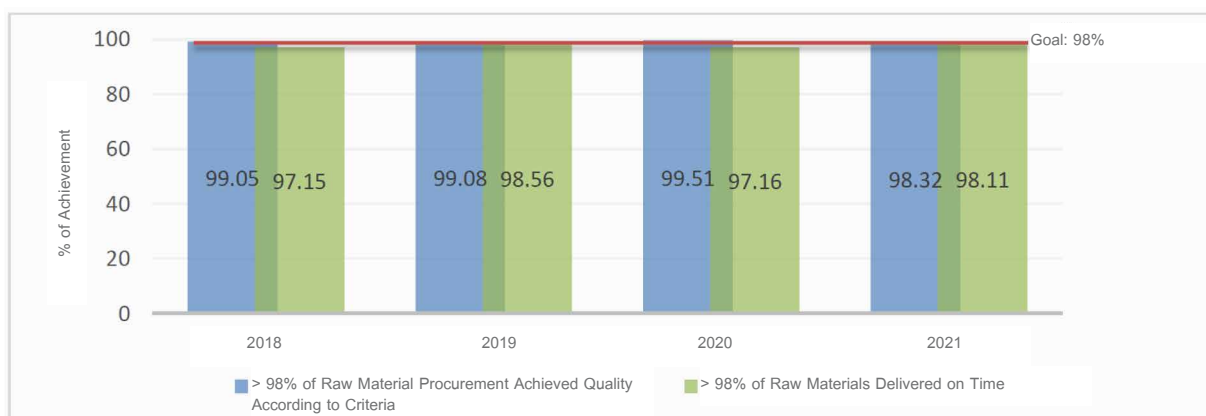
- Suppliers/deliverers who met the criteria at Level A = 191 suppliers
- Suppliers/deliverers who met the criteria at Level B = 43 suppliers
- (suppliers cooperated with QTC to prepare plans for improvements on product quality control issues)
- Suppliers/deliverers at Level C = 1 supplier
- (The Company did not have cooperation from the supplier to jointly prepare development plans.
- Suppliers/deliverers at Level D = 2 suppliers

From reviewing assessments in 2021, information on new suppliers who communicated about the Code of Conduct for Supplier is as follows:

Table Showing Communication Performance in 2018 – 2021

Item	2018 (Communication Began)	2019 (Only New Customers)	2020 (Only New Customers)	2021 (Only New Customers)
Domestic Suppliers (suppliers)	1,411	82	73	74
Foreign Suppliers (suppliers)	86	10	9	4

• Performance According to Main Goals of the Procurement Process

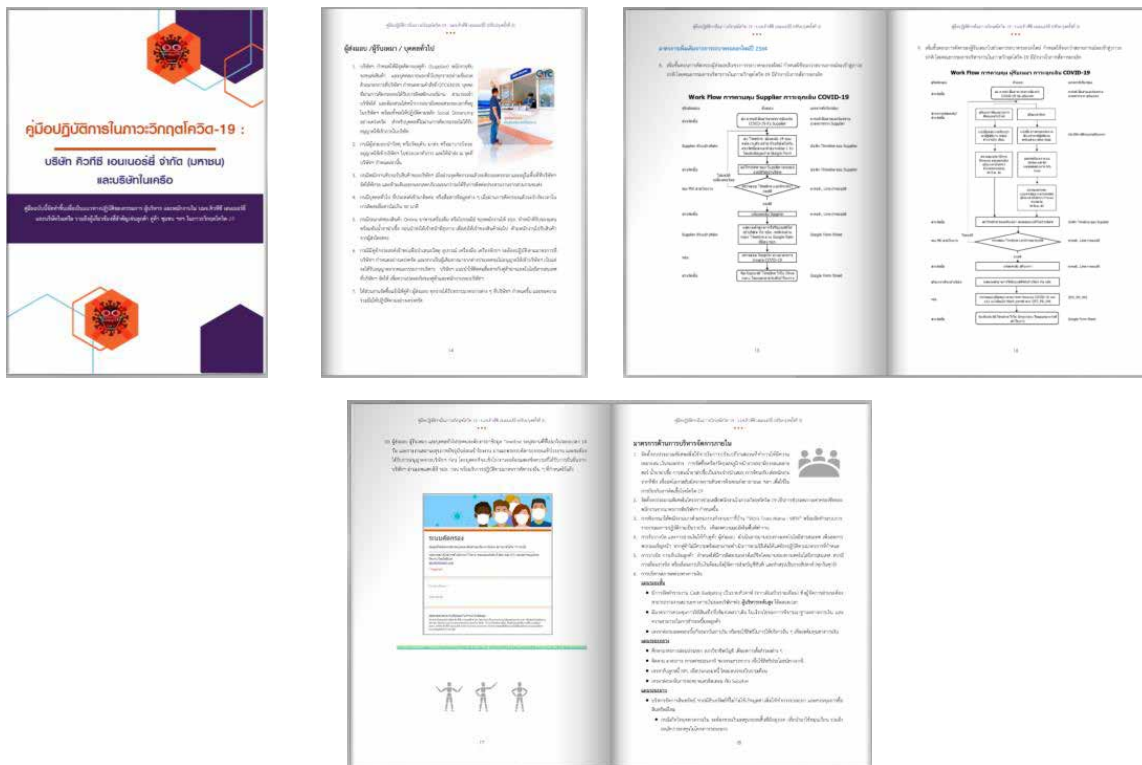


- **Supplier Development**

Plans to develop suppliers in 2021 remain the same to develop five suppliers as in 2020. The Company did not carry out the plan due to the COVID-19 pandemic. However, the Company received good cooperation from all five suppliers in making modifications to processes according to QTC recommendations in order to be able to deliver raw materials on time with consistent quality.

- **Specification of COVID-19 Prevention Measures**

The COVID-19 Management Committee specified clear measures for preventing COVID-19 infections from delivered products/raw materials, use of goods/raw material transports from outside contractors, construction performed by outside contractors and visitors. The Company created an application from Google Form to be a system for screening outside persons before entering the factory. Suppliers, contractors or visitors must record personal information and a true timeline of travel to send to the system in order to request approval for one day in advance. After being approved, suppliers, contractors or visitors can enter the factory by strictly following preventive measures for the safety of every person. The Company received good cooperation from every group of supplier.



Sample of the COVID-19 Crisis Operations Manual

(Measures for Suppliers/Contractors/Ordinary People)

The full version can be downloaded from <https://qtc-energy.com/th/risk-management/>



Key Environmental Issues

Waste and Scrap Material Management: Garbage



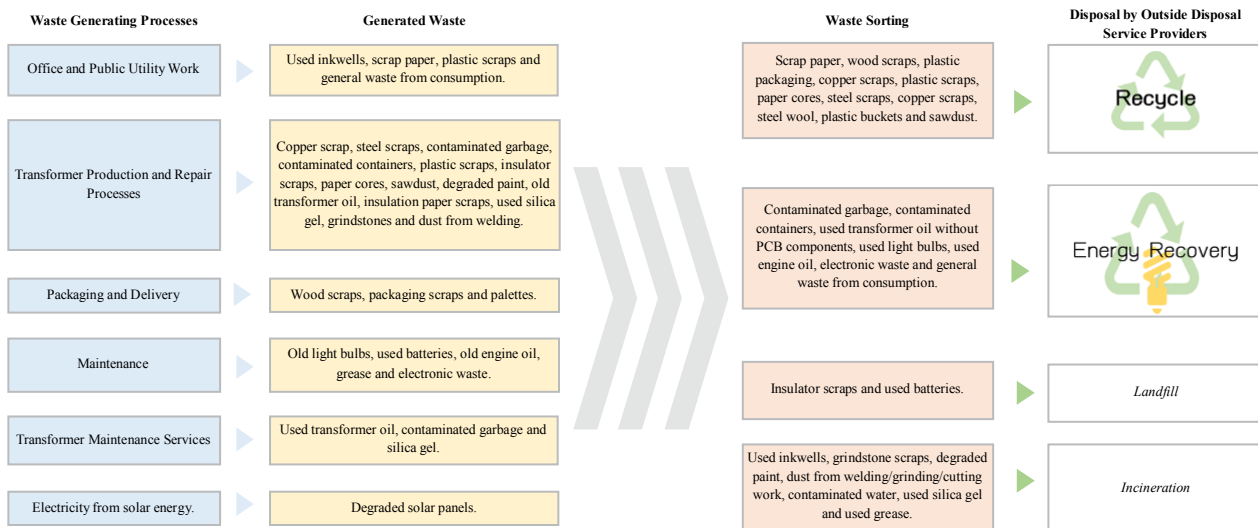
Toxic or hazardous waste from industrial factories or industrial waste remains a national problem requiring urgent correction to reduce impact on people in society and the environment. Hazardous waste from industrial factories should be disposed of by licensed waste disposal plants which are accredited with standards by the Department of Industrial Works (DIW). However, in the cycle of disposing of hazardous waste created by industrial factories, industrial waste usually does not reach factories capable of proper disposal, resulting in leaks and improper disposal. Hazardous waste disposal plants may have income from waste disposal and want to have low operating costs, causing waste disposal plants to improperly dispose of hazardous waste by burying in landfills for non-hazardous waste to lower expenses or dispose of liquid hazardous waste in rivers, streams, swamps, canals, lakes or the sea in order to not create disposal expenses. These actions will lead to severe impacts on the environment and people in the future. Furthermore, improper waste disposal may cause impacts on the reputation and brand of the hazardous waste creator, even though the hazardous waste creator did not break the law.

Due to the abovementioned circumstances, the Board of Directors and executives are concerned and recognize the importance of managing hazardous and non-hazardous waste and disused materials from production. Furthermore, this issue is given attention by stakeholders in the community who have concerns regarding how good factory management processes are and if there will be any impact on community members' lifestyles. The Company promises to work correctly to be above criteria and standards specified by the law because the Company is well aware that the aforementioned issue is a significant risk to the Company's reputation and sustainability.

Objective:	<ol style="list-style-type: none"> 1. To create a green culture in the organization. 2. To ensure that management of waste from production processes are in compliance with legal specifications. 3. To demonstrate responsibility for in the life cycle of QTC transformer products.
Management:	Environmental management with ISO14001 standards, environmental policies, laws, zero landfill guidelines, sort waste with the 3Rs principles, select, check and follow-up on waste disposal service providers along with preparing for waste management emergencies.
Goal 1:	Volume of waste sent for disposal and treatment per kVA does not exceed Base Year 2018 + 10% (no more than 0.048 kg/kVA).
Result:	In 2021, the Company did not achieve the goal and had a waste increase 25.52% from the base year (0.059 kg/kVA).
Goal 2:	Create a green culture to sort waste toward the goal of having zero waste to landfill.
Result:	In 2021, the Company achieved the goal.
Goal 3:	Complaints or negative news about improper disposal or dumping of hazardous waste from factories.
Result:	In 2021, the Company had no environmental complaints or negative news.

Waste management risks may affect the Company's reputation and trust from stakeholders. Therefore, the Company planned a system to manage disused materials according to the 3Rs principle to make management consistent with standards and laws by specifying processes that create waste, sort waste, store waste systematically and identify waste and disposal methods. When the Company has large volumes of waste, the Company considers opportunities to make improvements in order to reduce waste volume from the point of origin. In the area of disposal methods, the Company considers disposal methods with the least impact on the environment. Disposal of disused materials is carried out by outside disposal service providers licensed by the Department of Industrial Works, Ministry of Industry.

Image of Waste Origins, Sorting and Disposal of Disused Materials



The Company recognizes the importance of properly sorting waste for disposal according to the 3Rs principle in order to reduce landfilling and incineration. The Company emphasizes processing to recycle waste as raw materials and disposal for energy recovery. In each year, the Company selects disposal service providers licensed by the Department of Industrial Works and evaluates disposal service providers' operations on an annual basis.



Waste Disposal Service Provider Selection

Selection of waste or disused material collection, transportation, treatment and disposal service providers is the main mission of the Systems Development Division and the Corporate Social Responsibility Division, which must select, request approval and randomly inspect disposal service provider factory areas and monitor operations of disposal service providers from transportation to treatment to ensure that disposal service providers follow steps permitted by the Department of Industrial Works (DIW) and decrees of the Map Yang Porn Sub-district in 2021.

List of QTC's Waste or Disused Materials Collection, Transportation, Treatment and Disposal Service Providers in 2021

Akkhie Prakarn Public Company Limited

Collected and Disposed of: Contaminated containers, contaminated garbage, construction waste, used grease, used silica gel, used inkwells, lead- and copper-contaminated water, oil-contaminated water, wastewater from washing paint spraying containers, dust and powder from welding/grinding/cutting work, grindstone scraps, degraded paint, oil filters

Disposal Method: 075 (incineration in an incinerator specifically for hazardous waste)

Professional Waste Technology (1999) Public Company Limited

Collected and Disposed of: Batteries, insulator cup scraps, oil-contaminated fabric scraps and oil-contaminated sawdust, and glue scraps

Disposal Method: 073 (safe burial in landfills after stabilization or being made solid, 042 (used to make mixed fuels)

Eastern Seaboard Environmental Complex Company Limited

Collected and Disposed of: Contaminated containers, ceramic cups, used grease, oil-contaminated water, contaminated materials, glass scraps, empty spray cans, expired light bulbs, contaminated sawdust, electronic waste

Disposal Method: 071 (sanitary burial in landfills specifically for non-hazardous waste), 042 (used to make mixed fuels) and 049 (reuse by other means)

Thong Wattana Waste Management Company Limited

Collected and Disposed of: Contaminated containers, electric wires, paper scraps (including cardboard), wood scraps (including sawdust), plastic scraps, 15-liter plastic barrels, paper cores

Disposal Method: 011 (sort for redistribution)

Choksahaphat & Supply Company Limited

Collected and Disposed of: Electric wires, paper scraps, wood scraps, lathing scraps, aluminum scraps, steel scraps, copper scraps, plastic scraps.

Disposal Method: 011 (sort for redistributions)

Sapphaisan Factory Company Limited

Collected and Disposed of: Paper cores, steel scraps, aluminum scraps, pure copper scraps, contaminated copper scraps, thick steel scraps.

Disposal Method: 011 (sort for redistribution)

N & J Inter Trade (555) Company Limited

Collected and Disposed of: Used lubricant oil

Disposal Method: 042 (used to make mixed fuels)

Lydia Oil (Thailand) Company Limited

Collected and Disposed of: Used oil (used transformer oil with no PCB components, used lubricant oil

Disposal Method: 042 (used to make mixed fuels)

Mechanitech Limited Partnership

Collected and Disposed of: Glass scraps

Disposal Method: 011 (Sort for redistribution)

Thong Wattana Waste Management Company Limited

Collected and Disposed of: General waste from consumption (licensed under Map Yang Porn Sub-district decrees)

Disposal Method: Sent for disposal only at Better World Green PCL and N 15 Technology Co., Ltd.

Kridsada Service Co., Ltd.

Collected and Disposed of: Wastewater from sumps (licensed under Map Yang Porn Sub-district decrees)

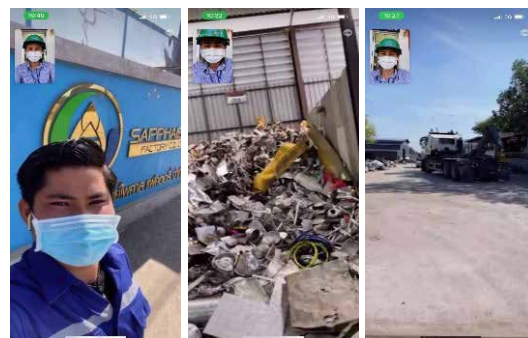
Disposal Method: Sent for disposal only at Siam Environmental Technology Co., Ltd.

“Transportation and disposal of waste (garbage) is done in Thailand and not transported for disposal abroad”

“Operations of the Company and Disposal Service Providers in 2021 are in compliance with legal requirements”

Checking and Monitoring Disposal Service Providers

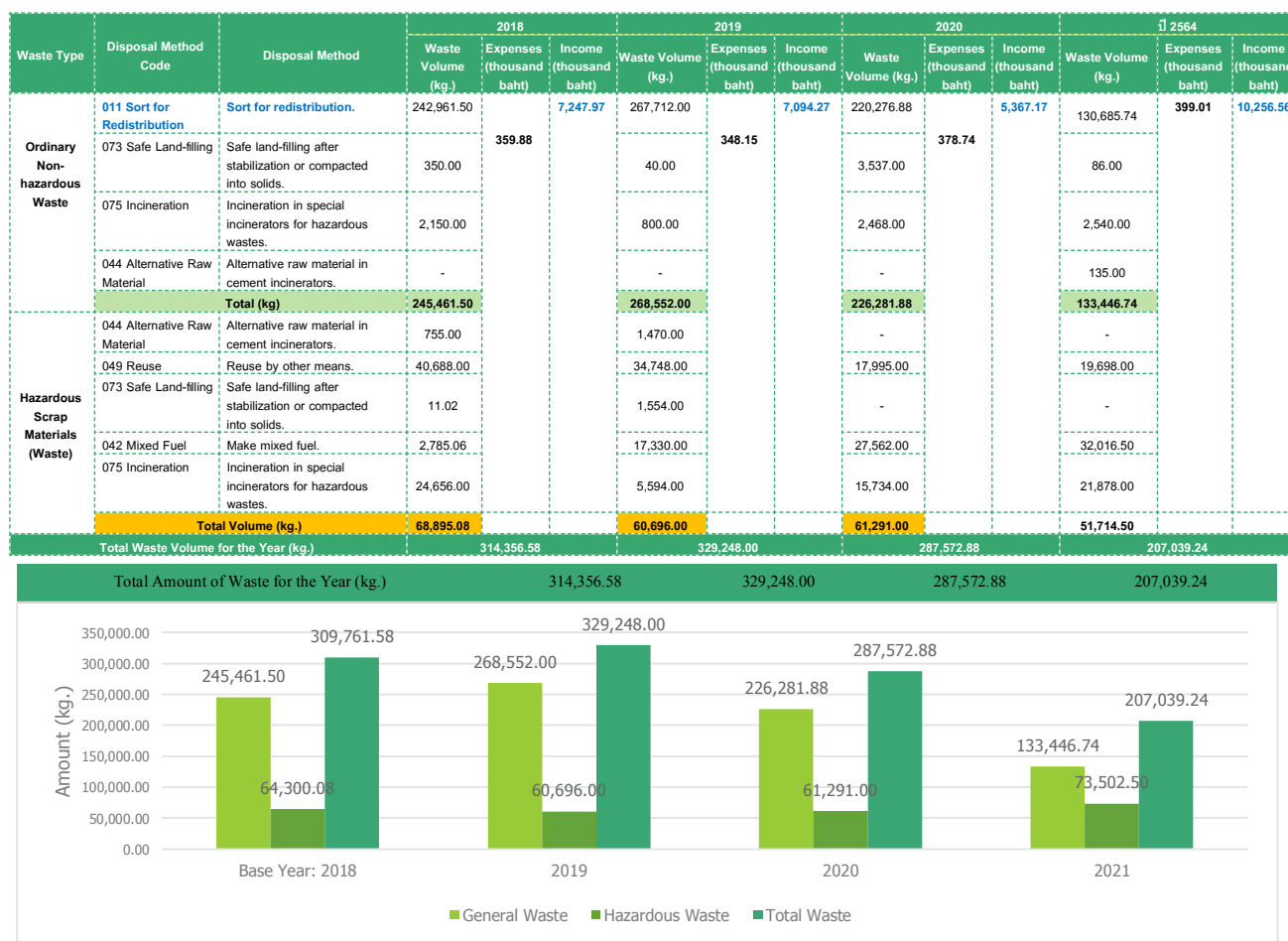
Because of the COVID-19 pandemic, checking and monitoring of disposal service providers in 2020 had limitations in the area of worker health and safety. Therefore, the Company changed methods from entering the site to monitoring through video calls or photographic evidence of arrival at disposal and treatment facilities. The Company received good cooperation from every service provider and had no case of the Company's waste being dumped or improperly disposed of.



Performance

- Volume of Disused Materials from Production

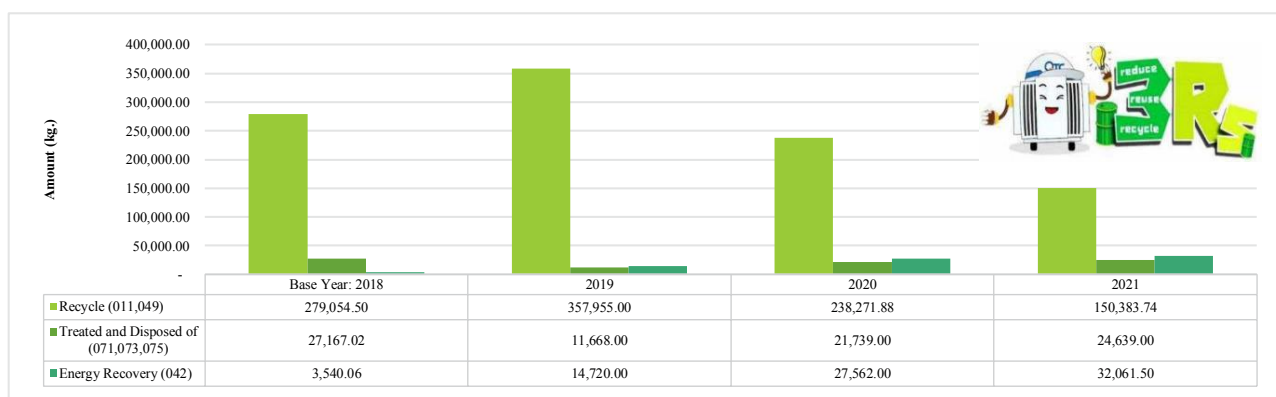
Table E1 – Volume of Disused Materials from Production in 2018 – 2021



Graph E1 Showing a Comparison between Ordinary and Hazardous Waste Volumes from Production Processes in 2018-2020

From Table E1 and Graph E1, the total volume of disused materials from production processes or waste can be seen to have declined. In 2021, the volume of disused waste from the manufacturing process was 207,089.24 kg, a reduction from the 2018 base year by 102,722.34 kg. or a 33.16% decrease. However, hazardous waste increased from the base year of 2018 by 9,292.42 kg. or a 14.45% increase because the Company experimented with changes to the painting process after 2020, causing the Company to have more paint-contaminated containers due to use.

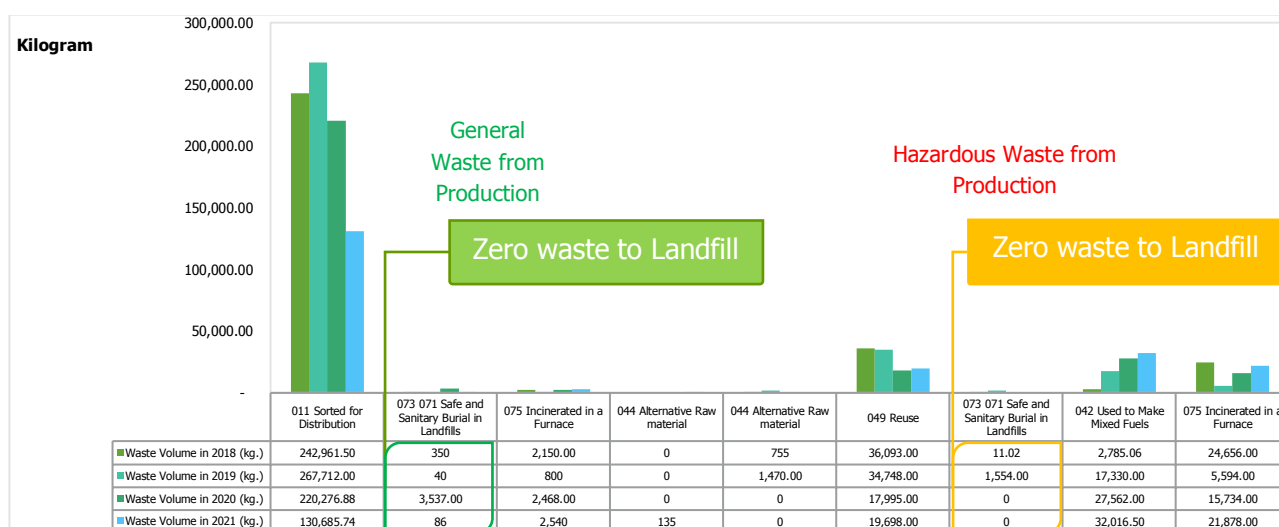
- Waste Sorting Based on the 3Rs Principle to Create a Green Culture



Graph E2 Showing a Comparison of Management of Disused Waste (Garbage) from Production Processes in 2018 – 2021

According to Table E1 and Graph E2, in the area of waste sorting based on the 3Rs principle in 2020, waste sent to be treated and disposed of in compliance with the law can be seen to have decreased from 2018 by 2,528.02 kg or 9.31 percent. In addition, the amount of waste sent to generate electricity increased by 28,476.44 kg or over 800 percent, causing disposal and treatment expenses to increase by 39,134.10 baht or 10.87 percent. At the same time, the ratio of recyclable waste under the law and sold as income for the Company dropped by 128,670.75 kg or 46.11 percent. The sale price in 2021 rose with market conditions, causing income from disused materials to be 41.51 percent higher than the base year of 2018.

- Zero waste to Landfill



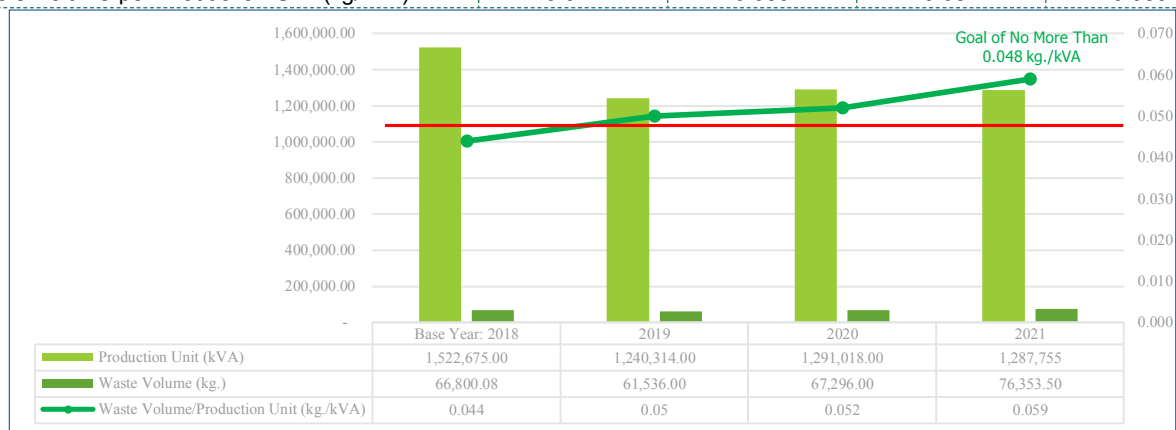
Graph E3 Showing Comparison of Disused Materials (kg) from Production Processes by Type of Disposal in 2018 – 2020

From Table E1 and Graph E3, in 2021, no hazardous waste from production processes was sent for disposal by burial in landfills and 86 kg of ordinary waste was granted exception to be disposed of by safe burial in landfills according to zero landfill criteria. Performance was consistent with the Zero Landfill policy and waste sorting according to the 3Rs principle.

- Waste Volume Per Production Unit

Table E2 Showing Creation of Disused Waste per Production Unit (kVA) (only Disposal Methods 044, 042, 049, 071, 073 and 075)

Item	Year of Work			
	Base Year of 2018	2019	2020	2021
Production Volume (kVA)	1,522,675.00	1,240,314.00	1,291,018.00	1,287,755
Waste Volume (kg)	66,800.08	61,536.00	67,296.00	76,353.50
Waste Volume per Production Unit (kg/kVA)	0.044	0.050	0.052	0.059



Graph E4 Showing Waste Volume per Production Unit (kg/kVA)

Table E2 and Graph E4 shows the volume of disused waste from production processes sent for disposal by the 044, 042, 049, 071, 073 and 075 methods to show continual increases per production unit (kVA). In 2021, the ratio of disused waste per production unit (kVA) was higher than the goal in the base year of 2018 (0.048 kg./kVA) by 25.52 percent. The Company did not achieve the goal. This was mainly caused by continual changes to materials and raw materials used in production in 2019-2021. In 2021, the Company disposed of large amounts of expired transformer paint materials due to changes to paint specifications. In addition, when an emergency occurs from transformer oil leaks in the work area, large amounts of absorbing materials are needed. In the end, disused materials would be stored and collected in the same sorting plant, preventing direct sorting of items created by production processes. This caused the amount of disused materials per production unit (mVA) in 2021 to rise significantly. The Environmental Work Group is studying this issue and plans to manage disused materials and control operations under production processes clearly in order to see effects from efficient use of resources from production processes along with reducing waste in processes. New indicators will be created to be more clear and accurate in 2022.

- Disposal of Expired Transformer Products

Return Policy for Product Remains

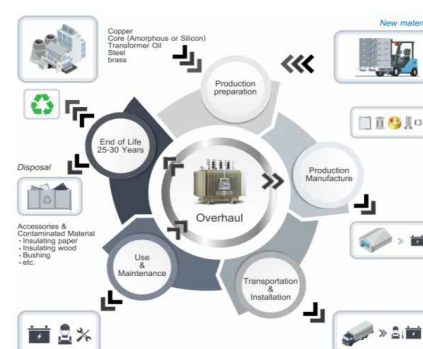
“When QTC transformers are expired, customers can return transformer remains to QTC’s production factories to enter the separation process and product remains will be sent for proper disposal at no expense to customers. However, the Company requires written consent from customers because QTC transformers are considered the legal property of customers and customers must deliver QTC transformers to the QTC production factories in Rayong in person.”

In 2021, no expired transformers were sent for disposal at QTC’s Factories in Rayong.

- Management of Disused Solar Panels

In 2021, Q Solar 1 did not send solar panels for disposal. Because BOI rights are in use, disused material storage rights are extended pursuant to the law.

Product Life Cycle of QTC Transformers



Environmentally-friendly Production Processes



When speaking of important environmental issues other than waste from industrial factories, the Company cannot avoid the topics of air pollution and water pollution from fuel combustion and production processes of industrial factories, which are major causes of impacts on air and water quality and impacts on health and hygiene of people in society, communities and the environment. If operations in any industrial factory did not consider the aforementioned impacts and did not recognize the importance of control processes in compliance with standards of the law, that industrial factory may encounter resistance from community members and be unable to operate business in the area smoothly or have business licenses suspended or have businesses closed under laws enforced by government agencies.

QTC is aware of potential impacts on workers in the factory and people in surrounding communities including the environment and impacts on the business. Therefore, the Board of Directors and executives recognize the importance of management in production processes, selection of energy-conserving machines and tools for production without creating environmental impacts. The Company has systems to effectively prevent or hold pollution. In addition, the Company checks and monitors pollution according to legal requirements in the Company and subsidiaries.

Objective:	1. To ensure control of pollution from production processes in compliance with legal requirements. 2. To develop work processes and production processes in order to reduce environmental impacts.
Management:	Environmental management with ISO14001 standards, environment policies, related laws, measurement of standard values specified by law and green procurement with consideration given to product quality and environmental impacts from products.
Goal 1:	Environmental measurements of pollution sources have scores meeting standard specified by law.
Result:	In 2021, environmental measurements met standards prescribed by law.
Goal 2:	Value of Green Label materials and equipment used increases by at least five percent per year.
Result:	In 2021, green procurement value was 621,587.65 baht, an increase of 31.49 percent from 2020. The Company achieved the goal.
Goal 3:	Complaints from the community in case of pollution impacts from activities of the Rayong factory.
Result:	In 2021, the Company had no complaints from the community (certified by Mab Yang Porn TAO)

Environmental Management Systems

The Company implemented ISO14001: 2015 environment management standards and asked to be certified by an outside auditor once per year. QTC Energy asked to be certified for systems by SGS (Thailand) Limited. Q Solar 1 asked to be certified for systems by Intertek Certification Limited.



ISO14001: 2105 (UKAS & NAC) Standard Certification Document: QTC Energy



ISO14001: 2105 (UKAS) Standard Certification Document: Q Solar 1

Environmental Policy: <https://qtc-energy.com/th/energy-policy/>

Wastewater Quality

QTC's manufacturing factory is located in a place without public water resources, whether natural or via plumbing. Hence, water usage is only possible through extraction of ground water. Nevertheless, no water is used in the manufacturing process of electrical transformers. Water is used only for the cooling circulation of the vacuum oven system and reducing temperature of weld works. In these usages, water is stored for repeated usage throughout the entire year and then transported for proper disposal. As for the rinsing of contaminated equipment of the company, the company provides water containers for storing contaminated water and transports them for disposal outside according to schedule. Hence, discarded water is water resulting from washing in bathrooms and kitchens and car washing only. Used water is collected in wells dug inside the Company to water trees. The Company measured factory wastewater quality regularly for at least twice a year by using Chemlab Services (Thailand) Co., Ltd., a company accredited with ISO/IEC17025 standards, Accreditation Number Testing-0064.

Table Showing QTC Energy's Factory Wastewater Quality Test Results at the Final Point (2019-2021)

Tested Parameters	Test Results						Standard	Unit
	1/2019	2/2019	1/2020	2/2020	1/2021	2/2021		
	30/7/19	6/12/19	24/3/20	20/10/20	10/5/21	24/11/21		
BOD ₅	7	<2	3	4	9	3	20	mg/l
Oil and Grease	Not Detected	Not Detected	Not Detected	Not Detected	4.9	Not Detected	5	mg/l
PH	7.94	7.74	7.26	7.23	7.48	6.67	5.5-9.0	-
Sulfides	Not Detected	<0.5	<0.5	<0.5	<0.5	Not Detected	1	mg/l as H ₂ S
Suspended Solids	74	31	9	19	21	17	50	mg/l
Temperature	34	27	32	27	33	28	40	°C
Total Dissolved Solids	316	68	77	<65	<65	Not Detected	3000	mg/l
Total Kjeldahl Nitrogen	5.7	10.6	1.7	2.0	1.6	Not Detected	100	mg/l as H ₂ S

Table Showing QTC Energy's Bangkok Office Wastewater Quality Test Results at the Final Point (2019-2021)

Tested Parameters	Test Results					Standard	Unit
	1/2019	1/2020	2/2020	1/2021	2/2021		
	6/12/19	17/3/20	25/11/20	27/8/21	1/12/21		
BOD ₅	18	8	4	4	7	40	mg/l
Oil and Grease	3.9	<2.5	Not Detected	Not Detected	Not Detected	20	mg/l
PH	7.35	7.19	7.16	7.07	6.81	5.0-9.0	-
Sulfides	<0.5	0.7	<0.5	<8	0.7	3	mg/l as H ₂ S
Suspended Solids	79	<8	10	<0.5	16	50	mg/l
Temperature	27	30	30	28	28	N/R	°C
Total Dissolved Solids	550	272	446	159	356	500	mg/l
Total Kjeldahl Nitrogen	9.9	29.3	19.5	2.4	14.4	40	mg/l as H ₂ S

Q Solar 1 generates solar energy to sell to the Provincial Electricity Authority. Water is used to clean 86,688 solar panels for 20 times per year, for agriculture at a center for studying the Sufficiency Economy Philosophy and for cleaning in daily life. The Company's water is from ground water and reservoirs for holding water to use during dry seasons. When rainwater or overflow is drained from reservoirs, the water is released into public canals. Therefore, Q Solar 1 gives importance to consistent wastewater quality control, installs aerator systems to increase oxygen for water in reservoirs and tests water quality once per year. The Company uses services of Accufas Lab Center Company Limited, Private Analytical Laboratory Registration No. Wor. 142. Accufas Lab Center Company Limited is accredited with ISO/IEC17025 standards, Accreditation Number Testing-0156.

Table Showing Wastewater Quality Test Results of Q Solar 1 (2019-2021))

Tested Areas	Tested parameters	Test Results				Standard Scores	Unit
		1/2019	1/2020	2/2020	1/2021		
		20/9/2019	16/7/2020	3/9/2020	21/7/2021		
Wastewater from Water System	Acidity and Alkalinity (pH)A	7.3	2	-	<2	5.5-9.0	-
	BOD	2	ND.	-	<5	20	mg/l
	DOC	<40	7.1	-	7.1	120	mg/l
	Total Suspended Solids (TSS)A	3	<40	-	<40	50	mg/l
	Oil & Grease	<5	4	-	<2.50	5	mg/l
Wastewater from the Lodgings' Cesspool	Acidity and Alkalinity (pH)A	7.5	4	-	<2	5.5-9.0	-
	BOD	6	Not Detected	-	Not Detected	20	mg/l
	DOC	<40	7.2	-	7.0	120	mg/l
	Total Suspended Solids (TSS)A	4	<40	-	<40	50	mg/l
	Oil & Grease	ND.	7	-	11	5	mg/l
Wastewater from the Office Building's Cesspool	Acidity and Alkalinity (pH)A	7.4	6	-	<2	5.5-9.0	-
	BOD	5	<5	-	Not Detected	20	mg/l
	DOC	92	7.2	-	7.2	120	mg/l
	Total Suspended Solids (TSS)A	16	213	<40	<40	50	mg/l
	Oil & Grease	ND.	38	-	7	5	mg/l

Air Quality

QTC's electrical transformer production processes involve stages that have to release air outside. Hence, the company has installed a modern preliminary prevention system in related production processes to minimize the release of pollution to outside atmosphere and conducts regular air quality inspection twice per year using Chemlab Services (Thailand) Co., Ltd., a company with ISO/IEC17025 standard accreditation, Accreditation Number Testing-0064. Air quality test results at the end of stacks when working were consistent with legal requirements. Test results were as follows:

Table Showing Comparison of Air Measurement Results in Stacks for QTC Energy (2019 – 2021)

Area	Parameters	Test Results								Standard	Unit
		1/19	2/19	3/19	1/20	2/20	1/21	2/21	3/21		
		23/7	24/9	17/12	23/3	20/10	17/12	23/3	20/10		
Wood Cutting Room Sawdust Vacuuming Duct Spray Booth Stacks MC 139 Factory 6	Particulate	0.82		1.83	1.30	1.69	0.95		1.87	400	mg/m ³
	Particulate		0.97		2.57	6.56		4.66	2.98	400	mg/m ³
	Xylene							Not Detected	Not Detected	200	ppm
	Total VOCs		33.2		23.2	69.0		152.0	121.0	-	ppm
Spray Booth Stacks MC 199 Factory 6 Spray Booth Stacks (Installation)	Particulate		6.29		2.54	1.61		0.84	7.67	400	mg/m ³
	Total VOCs		61.3		28	835		135	242	-	ppm
	Particulate	17.7		111	1.55	3.94		Not Detected	4.25	400	mg/m ³
	Xylene						3.43		2.25	200	ppm
	Volatile Organic Compounds	18.9		643	29.2	101	0.65		0.26	-	ppm
Plasma Cutting Machine Stacks, Factory 4	Particulate			33	29.1	15.2	111		268.0	400	mg/m ³
	Oxide of Nitrogen as Nitrogen Dioxide			<1	Not Detected	Not Detected	19.3		35.2	-	ppm
	Carbon Monoxide						<1		27	870	ppm
	Oil mist						212.0		3.87	-	mg/m ³
Oven Stacks (Vacuum)	Particulate						Not Detected		Not Detected	400	mg/m ³
	Oil mist	150		78	167.0	46.8	0.25		3.10	-	mg/m ³
	Carbon Monoxide								Not Detected	690	ppm
	Oxide of Nitrogen as Nitrogen Dioxide	3		Not Detected	Not Detected	1	<1		Not Detected	200	ppm
Oven Stacks (Transformer Repair)	Oil mist	4.19		68.8	0.37	29.6	0.16		7.89	-	mg/m ³
	Xylene						<1		Not Detected	200	ppm
	Oxide of Nitrogen as Nitrogen Dioxide				Not Detected	Not Detected	1/64	2/64	3/64	200	ppm
Transformer Moisture Vacuuming Stacks (Power Plant)	Oil mist			949	0.52	0.14	09-04-64	30-04-64	24-11-64	-	mg/m ³
	Oxide of Nitrogen as Nitrogen Dioxide			<1	Not Detected	Not Detected	0.95		1.87	-	ppm

Remarks: Q Solar 1 had no activities that caused air pollution.

Green Procurement

The Company began to have a green procurement policy in 2019. In procuring materials and equipment for production or office work processes, the Company selected Green Label products to support manufacturers who give importance to reducing environmental impacts and build awareness among employees for all employees to see that every person and every process can directly and indirectly reduce environmental impacts. In 2020, the Company procured three items of Green Label office supplies:



Item : 70-Gram Copying Paper
 Trademark : One Green
 Procurement Value : 48,956.50 baht



Item : Eraser Product, Model ZL102-W
 Office Supply Code : 0038
 Trademark : PENTEL
 Procurement Value : 3,800.64 baht



Item : AAA Alkaline Batteries, LR03T Model, and AA Batteries, LR6T Model
 Trademark : Panasonic
 Procurement Value : 6,454.08 baht



Rents of Green Label Copying Machines in 2021

Trademark **RICOH** 9 machines valued at 488,941.43 baht
 Trademark **FUJI XEROX** 3 machines valued at 73,435 baht

Table with Summary of Green Procurement Value in 2019-2021

Item	Trademark	Green Procurement Value		
		2019	2020	2021
70-Gram Copying Paper	Shih-Tzu	66,346.00	52,155.60	-
70-Gram Copying Paper	One Green	-	-	48,956.50
Eraser Product, Model ZL102-W	PENTEL	6,786.12	2,454.58	3,800.64
AAA Alkaline Batteries, LR03T Model, and AA Batteries, LR6T Model	Panasonic	-	-	6,454.08
Rented Copying Machines	RICOH	104,040	227,200	488,941.43
Rented Copying Machines	Fuji Xerox	-	190,920	73,435
Total Value		177,172.12	472,730.18	621,578.65

Green Procurement Value in 2021 increased from 2020 by 31.49 percent or 148,857.47 baht.

Climate Change



The Company accepts climate change as a global environmental problem in terms of causes and effects with origins from greenhouse gas emissions from human economic activities to create prosperity and good living conditions for over a hundred years. Development caused energy consumption and carbon dioxide emissions in the atmosphere. Every country had a part in climate change, causing the world's temperature to rise and causing impacts on the overall environment worldwide. As polar icecaps melt, countries in the tropical zone will have more crises from heat and droughts.

From 2021 and after, every country must reduce greenhouse gas emissions in line with the Paris Agreement. Every country is able to do this freely because of differences in each country's ability, capacity and readiness including different geographic limitations and climate.

Although Thailand emitted less than one percent of the world's greenhouse gases, this likelihood is rising. To reduce potential impacts and comply with the Paris Agreement, the Thai government set a goal to reduce greenhouse gas emissions by 139 million tons of carbon dioxide equivalents by 2030.

QTC recognizes current environmental impacts and severity of future impacts as part of Thai society and an organization contributing to greenhouse gas emissions in the atmosphere, albeit a small part. However, QTC has given importance to this issue and is making efforts to reduce greenhouse gas emissions by developing manufacturing processes and modifying behaviors to use energy cost-effectively, researching and developing products capable of reducing greenhouse gases from use. These efforts build value for the organization and stakeholders while contributing to the effort to reduce greenhouse gas emissions according to Thailand's goals.

- Objective:**
1. To have processes for collecting and analyzing data for preparing greenhouse gas emission reports.
 2. To develop the organization's personnel to have awareness of impacts from climate change.
 3. To reduce greenhouse gas emissions in the atmosphere.
 4. To create business opportunities from climate change

Management: Environmental management with ISO14001 standards, ISO1464-3 standards, TGO greenhouse gas report criteria and policies on the environment, energy and organization carbon footprint.

Goal 1: Greenhouse gas emissions for three types of gases dropped from the base year by five percent.

Result: In 2021, greenhouse gas emissions in Type 3 were not reported.

Goal 2: Greenhouse gas emissions for Type 1 and Type 2 greenhouse gases per MVA dropped by five percent from the base year.

Result: In 2021, emissions rose by 1.69 percent from the base year of 2019. The Company did not achieve the goal.

Goal 3: Promotion of sales of environmentally-friendly products to grow by more than five percent per year.

Result: In 2021, sales for super low loss transformers increased by more than 300 percent from 2020. The Company achieved the goal. Green Label products increased by more than 200 percent from 2020. The Company achieved the goal.

Carbon Footprint for Organization Report Preparation Process.

The Company began preparing the Carbon Footprint for Organization Report (CFO report) since 2015 and the Company continued work with a scope covering activities at the Rayong factory and an objective to be reviewed and certified for organization carbon footprint at the Limited Assurance Level with a reliability of 95 percent by using ISO14064-3 standards and TGO greenhouse gas reporting criteria as references and guidelines in greenhouse gas management. The gases monitored were CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃. In addition, the Company appointed the organization's carbon footprint work group to perform the following duties:

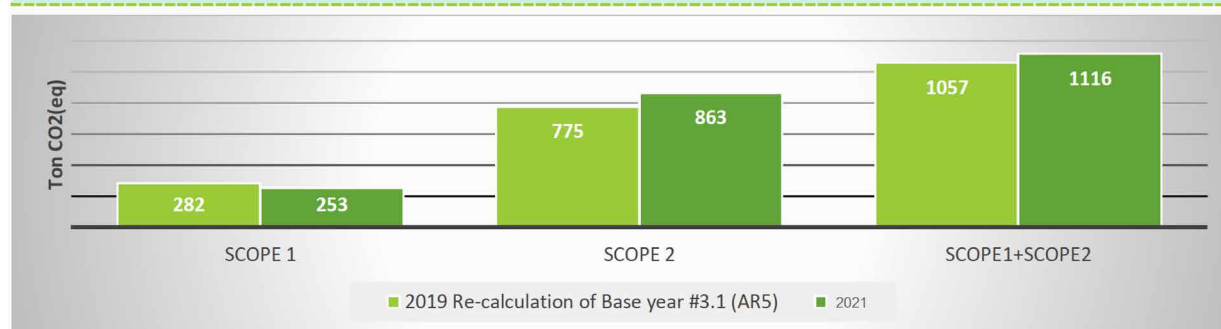
- Collect data on volume of use according to items specified in TGO greenhouse gas reporting criteria on a quarterly basis.
- Calculate and analyze results on a quarterly basis.
- Make performance reports to the Board of Directors on a quarterly basis.
- Prepare reports on greenhouse gas emissions based on TGO criteria on an annual basis.
- Request certification of results from an outside reviewer on an annual basis.
- Report to the MRB Committee to prepare greenhouse gas emission reduction plans on an annual basis.
- Register the organization's carbon footprint on an annual basis.
- Disseminate greenhouse gas emissions data to employees in the organization.



Corporate Carbon Footprint

Table C1 Showing the Organization's Greenhouse Gas Emissions in 2015 – 2021

Year	GHG Emission (ton CO ₂ eq.)				
	Scope 1 (ton CO ₂ eq.)	Scope 2 (ton CO ₂ eq.)	Scope 3 (ton CO ₂ eq.)	Total Emission Scope 1 + 2 (ton CO ₂ eq.)	Total Emission Scope 1+2+3 (ton CO ₂ eq.)
2015 (Old Base year#1)	426	899	63	1,325	1,388
2016	401	672	68	1,073	1,141
2017	391	907	57	1,298	1,355
2018 (Old Base year #2)	328	909	64	1,237	1,301
2019	282	908	50	1,190	1,240
2019 Re-calculation of Base year #3 (AR5)	284	780	50	1,064	1,113
2019 Re-calculation of Base year #3.1 (AR5)	282	775	N/A	1,057	N/A
2020	276	745	N/A	1,020	N/A
2021	253	863	N/A	1,116	N/A
% change (2019 Re-calculation of Base year #3.1 (AR5) & 2021)	-10.21%	11.28%	N/A	5.55%	N/A
Types of GHGs included :	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃				



Graph C1 Showing Volume of Scope 1 and 2 Greenhouse Gas Emissions Compared to the Base Year of 2019 – Re-calculation of Base Year#3.1 (AR5)

Table C1 and Graph C1 showed the Company to have recalculated greenhouse gas emissions in the base year of 2019 again (2019 Re-calculation of Base Year#3.1 (AR5)) due to adjustments to some greenhouse gases' EF and increases to calculations of separate fuel types used to separate biogas in fuel oil in order for the database used for comparison to be consistent with calculations in 2021. In 2021, no greenhouse gas emissions in Type 3 were shown due to requirements in Scope 3. According to TGO accreditation conditions, relevant data with a scope connected to the process from the beginning to the end must be collected. In 2021, data was not sufficient to make reports on greenhouse gas emissions in Scope 3 reliable. However, the Company will continue to move forward and seek cooperation from stakeholders in the process to obtain data in order to calculate greenhouse gas emissions in Scope 3.

From the abovementioned data, in 2021, Type 1 greenhouse gas emissions can be seen to have dropped by 10.21 percent while Type 2 greenhouse gas emissions increased by 11.28 percent, Collectively, both types of emissions increased by 5.55 percent from the base year of 2019 (Re-calculation of Base Year#3.1 (AR5)).

Table C2 Showing Carbon Intensity of Greenhouse Gas Emissions per Production Unit

Year	Total Emission Scope 1+ 2 (ton CO ₂ eq.)	Capacity (Unit)	Carbon intensity ton CO ₂ eq./Unit	Capacity (MVA)	Carbon intensity ton CO ₂ eq./MVA
2015 (Old Base year#1)	1,325	3,728	0.3554	1,791.85	0.7395
2016	1,073	2,341	0.4584	1,136.98	0.9437
2017	1,298	4,162	0.3119	1,659.53	0.7821
2018 (Old Base year #2)	1,237	3,602	0.3434	1,522.68	0.8124
2019	1,190	1,693	0.7029	1,240.31	0.9594
2019 Re-calculation of Base year #3 (AR5)	1,064	1,693	0.6285	1,240.31	0.8578
2019 Re-calculation of Base year #3.1 (AR5)	1,057	1,693	0.6243	1,240.31	0.8522
2020	1,020	1,686	0.6050	1,291.02	0.7901
2021	1,116	1,878	0.5942	1,287.76	0.8666
% change (2019 Re-calculation of Base year #3.1 (AR5) & 2021)	5.58%	10.93%	-4.82%	3.83%	1.69%

From Table 32, carbon intensity per production unit (MVA) was shown to have risen by 1.69 percent from the base year of 2019 (Re-calculation of Base Year#3.1 (AR5)). The Company **did not achieve the goal of 5 percent** from the base year of 2019 (Re-calculation of Base Year#3.1 (AR5)) while carbon intensity per production unit declined by 4.82 percent. Reasons that caused greenhouse gas emissions to be different from the base year of 2019 (Re-calculation of Base Year#3.1 (AR5)) were as follows:


Explanation of Differences between Greenhouse Gas Emissions of the Base Year and the Current Year

- From activities in Scope 1, greenhouse gas emissions in the current year of 2021 were less than the base year of 2019 by 29 TonCO₂ or 10.28 percent. This was because less fuel was used for transports due to the COVID-19 pandemic. The Company enacted WFH measures for employees who use office cars or fleet cards in addition to using communications by telephone, email, LINE and MS Team. This reduced contact between the Bangkok Office and the Rayong Factory, reduced refueling of office vehicles and the Company's vehicles, which reduced Type 1 greenhouse gas emissions significantly. In the current year, improvements were also made to transformer tank manufacturing by using two robots in place of workers. This enabled the Company to significantly control quality, manufacturing and use of resources such as CO₂ in the welding process.
- From activities in Scope 2, greenhouse gas emissions in the current year were more than the base year of 2019 by 88 TonCO₂ or 11.35 percent. This was because production was higher than in 2019 by 47.45 MVA and 185 units, causing higher electricity consumption in electrical testing processes because every machine was tested. In addition, because of the COVID-19 pandemic, the Rayong Factory was affected by COVID-19 infections, causing the Company to use bubble and seal measures in July, August and October to control high-risk employees to stay in factory areas along with preventing disruption to production without bringing outside risks into the Company. Therefore, electricity consumption in 2021 was abnormally higher than months when bubble and seal measures were enacted. Activities in Scope 2 also caused carbon intensity of MVA units to rise higher.

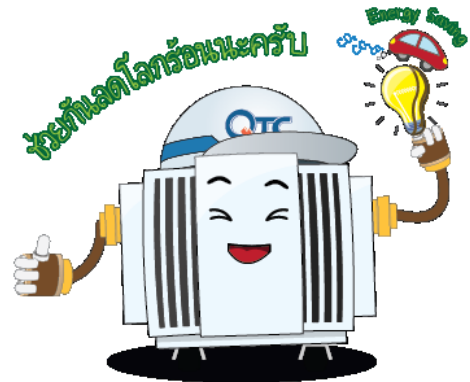
Certificate of Corporate Greenhouse Gas Emissions in 2021 from 1 January 2021 to 31 December 2021, No. TH-ENV-2021-5001240-001, Reviewed and Certified by SGS (Thailand) Company Limited



The full Greenhouse Gas Verification Statement can be downloaded from

 <https://qtc-energy.com/wp-content/uploads/2021/03/5-CFO-2.pdf>

Regarding the Corporate Carbon Footprint Report of 2020, the Company asked to be accredited by the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) in 2021, Accreditation No. TGO CFO FY21-06-039 (Verification Period: 01/01/2020 – 31/12/2020). In 2021, the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) canceled the Unity Against Global Warming event due to the COVID-19 pandemic.



Activities for Reducing Greenhouse Gas Emissions

The Company continues to support the concept for every employee in the Company and subsidiaries to improve work with KAIZEN or changes to work processes or activities that can help reduce environmental impacts along with direct and indirect greenhouse gas emissions. In 2021, activities for reducing greenhouse gas emissions had the following main issues:

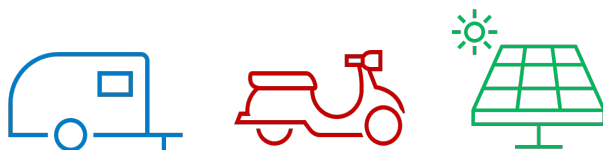
• Solar Energy Tuk-Tuk Project

The Project made five solar energy tuk-tuks in 2020. In 2021, this number was increased by another and another four-wheel solar energy vehicle was built to be used in checking solar panels and control box functions daily. In emergencies or abnormal situations where the control center needs to check and make corrections urgently in an area of more than 200 rai, the inventions in the project can be used. Results from the project are as follows:

Year of Operation	Amount of Diesel (liter)	Greenhouse Gas Emission (ton CO2 eq)	% of Change
Base Year: 2019	4,448.58	12.19	0
2020	3,352.16	9.19	-24.61%
2021	1,702.34	4.66	-61.77%

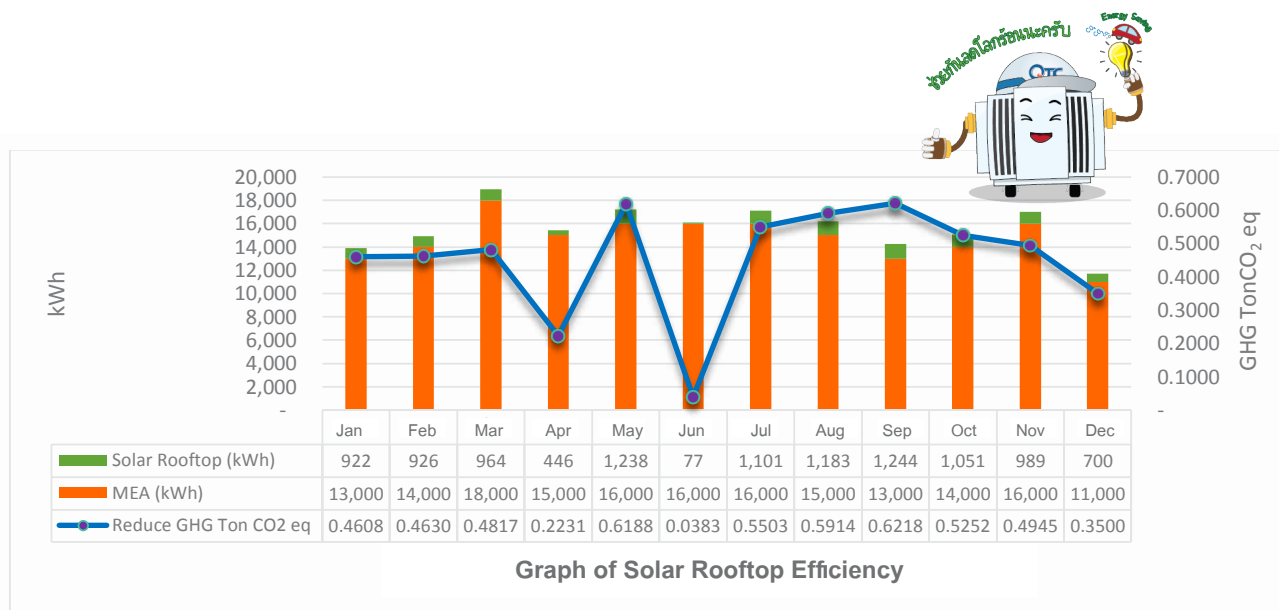
From the table, diesel consumption in 2021 can be seen to be lower than the base year of 2019 by more than 60 percent, meaning diesel combustion was reduced from the base year of 2019 by 61.77 percent with a repayment period of 3.5 years. Over 1,700 liters of diesel remain in use because some activities continue to need diesel engines in fire engines and large trucks, etc.

In addition, Q Solar 1's solar energy tuk-tuks can generate income for power plans. In 2021, 12 solar energy tuk-tuks were commissioned with a value of 112,149.53 baht. This is another major step capable of pushing stakeholders to participate in reducing greenhouse gas emissions at affordable prices.



• 12kW Solar Rooftop Installation Project at the Bangkok Office

At the end of 2020, the Company installed a 12-kW solar rooftop at the Bangkok office as a center of learning for engineers, sales employees and service technicians about maintenance techniques. The Company installed the system on grid in the MDB for use in the office during daytime. In 2021, the Company was able to generate 10,841 kWh of electricity from the Metropolitan Electricity Authority, save 43,362.36 baht in electricity costs and reduce greenhouse gas emissions from electricity use by 5.4188 ton CO₂ eq. Results have not been as effective as expected because the location and directions of sunlight do not facilitate receiving sunlight for the entire day. However, installation of a solar rooftop at the Bangkok Office had another objective for the rooftop to be used by students and to pass on accurate and transparent knowledge to customers. In 2021, four online PV panel seminars were hosted to instruct customers.



Sample Image of Online Seminars to Transfer Solar Rooftop Knowledge from Studying Data of Used Products

Environmentally Friendly Products

Super low loss transformers are transformers researched and developed by the QTC engineering teams and a trade ally, Hitachi Metals, Ltd., since 2008 from the Company's vision and mission to be committed to manufacturing quality products while recognizing the importance of the environment including changes in the world caused by climate change. People in the world's societies are beginning to place importance on changing consumption behaviors to reduce environmental impacts and greenhouse gas emissions into the atmosphere. QTC sees opportunities in these changes. Therefore, QTC has the concept of manufacturing transformers capable of using energy in the system at full efficiency to significantly reduce energy loss and greenhouse gas emissions from electricity use in order to provide an option for customers who recognize the importance of environmental impacts.

Super low loss transformers received funding from the National Innovation Agency (NIA) to install production lines at the Rayong factory and marketing for commercial distribution officially began in 2018. For over ten years in the product's development, QTC continued to push for super low loss transformers to become an option for users to reduce environmental impacts and create benefits for users. **Save the World, Save Your Money.**

In 2021, super low loss (SLL) transformer sales were higher than 2020 by over 300 percent with 421 exported transformers and 21 domestically distributed transformers at a total value of 79 million baht.

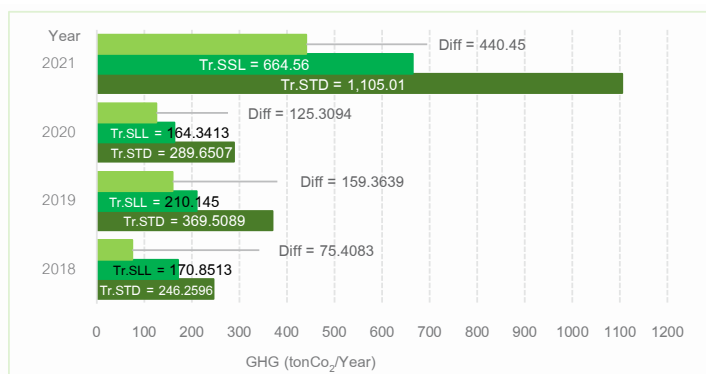
Value for QTC

Extra income, different products.

Year	Quantity (EA)	Selling value (MB.)	%Growth
2018	11	22	0
2019	22	29	100.00%
2020	16	24	-27.27%
2021	442	79	393.75%

Value for the Environment

Tr.SLL have 40% less greenhouse gas emissions from electricity use than standard transformers (Tr.STD)



Graph of Sales Volume and Value and Graph of Comparing Greenhouse Gas Emissions between Tr.SLL and Tr.STD at the Same kVA Over 3 Years



Value for Customers

With unique properties, super low loss transformers (Tr.SLL) can reduce energy loss in the steel core by as much as 70 percent when compared to standard transformers, thereby saving electricity cost by 30 percent and reaching the cost-efficiency point in 3-5 years.

Save The World



Save Your Money



• **Green label transformers** are standard transformers modified and designed to have product quality meeting Green Label standards with approval to use the Green Label for transformer products from the Thailand Environment Institute, Certificate Number: GL2018/036 and GL2019/04 in order to increase opportunities to compete and deliver environmentally-friendly products for the domestic electricity consumptions system.

In 2021, sales of Green Label transformers rose by more than 200 percent from 2020. The sales were only to domestic private sector customers without biddings for Green Label transformers from the Provincial Electricity Authority.



Year	Quantity(EA)	Selling value (MB.)	%Growth
2019	277	35	0
2020	28	3	-91.4%
2021	91	12	300.0%

Table of Green Label Transformer Sale Volumes and Values in 2019-2021



Green Label Transformer Certificates

Certificate Showing QTC Did Not Receive Environmental Complaints from the Community in 2021

ที่ รย ๗๒๔๐๔/๒๒๒



ที่ทำการองค์การบริหารส่วนตำบลมายางพร
ถนนปลวกแดง-ห้วยปราบ รย ๒๑๑๔๐

✓ กุมภาพันธ์ ๒๕๖๕

เรื่อง ขอร้องเรียนด้านสิ่งแวดล้อม

เรียน กรรมการ/ผู้จัดการ บริษัท คิวทีซี เอนเนอร์ยี จำกัด (มหาชน)

อ้างถึง หนังสือ บริษัท คิวทีซี เอนเนอร์ยี จำกัด (มหาชน) ที่ CSR๒๒๐๐๒ ลงวันที่ ๒๘ มกราคม ๒๕๖๕

ตามอ้างถึง บริษัท คิวทีซี เอนเนอร์ยี จำกัด (มหาชน) ประกอบกิจการเกี่ยวกับการผลิตหม้อ
แปลงไฟฟ้า ตั้งอยู่เลขที่ ๑๔๙ หมู่ที่ ๒ ตำบลมายางพร อำเภอปลวกแดง จังหวัดระยอง ได้ขอให้ตรวจสอบ
และรวบรวมข้อมูลเกี่ยวกับข้อร้องเรียนด้านสิ่งแวดล้อมที่เกิดจากการดำเนินการของบริษัท นั้น

ในการนี้ องค์การบริหารส่วนตำบลมายางพรได้ตรวจสอบข้อมูลการรับเรื่องร้องเรียน ระหว่าง
วันที่ ๑ มกราคม ๒๕๖๔ ถึงวันที่ ๓๑ ธันวาคม ๒๕๖๔ แล้วพบว่า ไม่มีข้อร้องเรียนที่เกิดจากการดำเนินการ
ของบริษัทฯ แต่อย่างใด

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ



(นายเพิ่มศักดิ์ ยอดยาค)

ปลัดองค์การบริหารส่วนตำบล รักษาการแทน

นายกองค์การบริหารส่วนตำบลมายางพร

ฝ่ายบริหารงานสาธารณสุข

กองสาธารณสุขและสิ่งแวดล้อม

โทร. ๐ ๓๘๐๒ ๖๘๒๘ ต่อ ๑๑๕

โทรสาร ๐ ๓๘๐๒ ๖๘๒๙

Sustainable Use of Resources



Natural resources are used by humans for basic living. However, because humans need many amenities, natural resources are used for commercial benefits and business activities such as use of fossils for fuel production, use of water for food and beverage production, coal excavation for electricity generation, cutting trees for furniture and use of other natural resources to create equipment, tools, instruments and clothing, etc. If these activities use natural resources in a wasteful manner without using resource for full benefits, natural resources will become gradually depleted and unable to replenish to meet human needs, which may have future impacts on the future because of imbalance in nature, causing disasters such as floods, degraded soil, droughts and famines, etc.

QTC is a juristic person engaged in the energy business. Transformers are used with electricity. When manufacturing transformers, electricity is needed for manufacturing and testing at the highest ratio when compared to other resources. Furthermore, fuel is used to transport products and raw materials in addition to making business contacts. Moreover, Q Solar 1, the Company's subsidiary that generates electricity from solar energy, needs to use main electricity to support the solar energy generation process. In addition to electricity and oil, water is used for consumption and management. Therefore, the Company places importance on cost-effective use of electricity, oil and water with awareness that resources such as electricity or oil came from converting natural resources into energy and cost-effective use will help to extend use of that resource for mutual social benefits and cut the Company's costs.

Objective: 1. To use resources for maximum cost-efficiency.
2. To reduce business operation costs.

Management: Quality management with ISO9001 standards, energy management with ISO50001 standards (implemented without requesting accreditation) and ISO14001 standards including the organization's environment, energy and corporate carbon footprint policies.

Goal 1: Energy consumption per MVA production unit rise by no more than five percent from the base year of 2019.

Result: In 2021, the Company did not achieve the goal to increase by 7.71 percent.

Goal 2: Diesel use for transportation per MVA production unit rise by no more than five percent from the base year of 2019.

Result: In 2021, the Company achieved the goal with a reduction of 8.84 percent.

Goal 3: Water and groundwater use by the Company in every area where the Company is located is reduced by five percent from the base year of 2019.

Result: In 2021, the Company had the following performance:

1. Use of water from the Metropolitan Waterworks Authority by the Bangkok office increased by 0.46 percent from the base year of 2019. The Company did not achieve the goal.
2. Use of groundwater by the Rayong Factory declined by 4.54 percent from the base year of 2019. The Company did not achieve the goal.
3. Use of groundwater by the Q Solar 1 power plant declined by 9.73 percent from the base year of 2019. The Company achieved the goal.

Energy Use

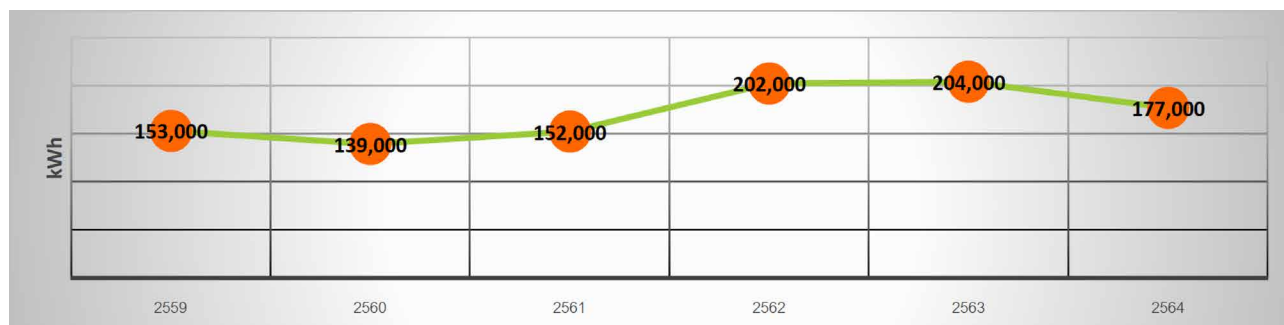
Processes in manufacturing activities, service provision, office work and electricity generation of QTC, QTCGP and Q Solar 1 use energy from the following two parts:

1. Electricity

QTC's factory does not fit the criteria for energy conservation pursuant to the law. The Company uses electricity purchased from two outside sources consisting of electricity from the Metropolitan Electricity Authority for use in the main office in Bangkok and electricity from the Provincial Electricity Authority for use in the factory in Rayong.

Table EN1 Showing Amount of Electricity Used in the Bangkok Office

Item	QTC Energy, Bangkok Office					2021
	2016	2017	2018	2019	2020	
Provincial Electricity Authority (kWh) (Non-Renewable Energy)	153,000	139,000	152,000	202,000	204,000	177,000

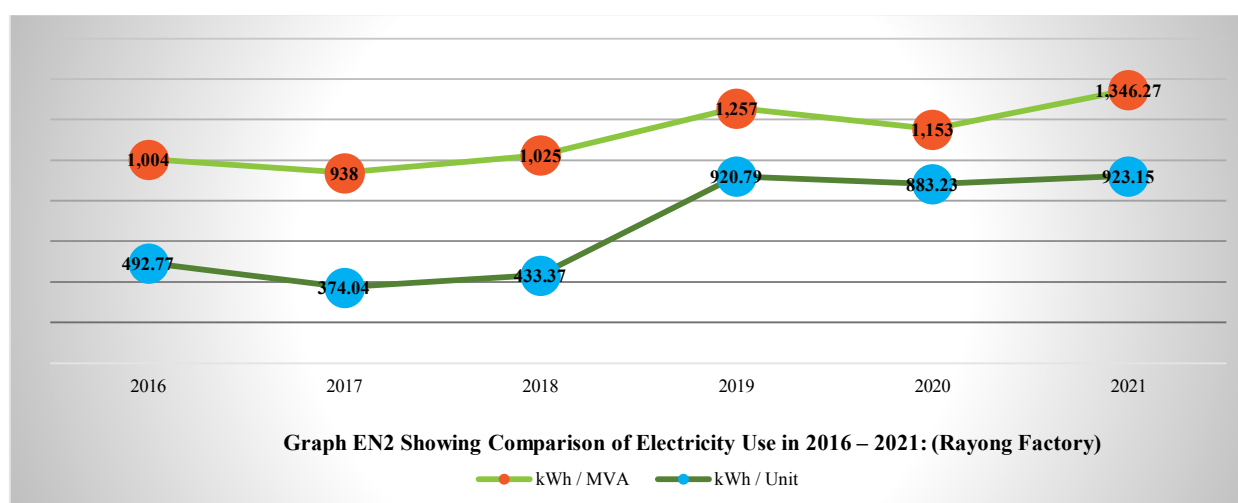


Graph EN1 Showing Comparison of Electricity Use in 2016 – 2021: Bangkok Office

From Table EN1 and Graph EN1, electricity use by the Bangkok office declined due to installation of a 12kW on grid solar rooftop. In 2021, the Company was able to generate 10,840.58kW of electricity to replace electricity from the Metropolitan Electricity Authority. In addition, WFH measures enabled some employees to work from home. This reduced electricity consumption from air conditioners and water pumps. Electricity consumption in 2021 dropped by 15.25 percent. Additional data on solar rooftops can be studied under the topic of the project to install a 12-kW solar rooftop at the Bangkok office under the issue of climate change.

Table EN2 Showing Efficiency of Electricity Use at the Rayong Factory

Item	QTC Energy, Rayong Transformer Manufacturing Factory					
	2016	2017	2018	2019	2020	2021
Provincial Electricity Authority (kWh) (Non-Renewable Energy)	1,153,576	1,556,768	1,561,008	1,558,904	1,489,120	1,733,672
Production Volume (MVA)	1,148.6	1,659.53	1,522.68	1,240.31	1,291.02	1,287.76
Production Volume (unit)	2,341	4,162	3,602	1,693	1,686	1,878
kWh/MVA	1,004.33	938.08	1,025.17	1,256.87	1,153.44	1,346.27
kWh/Unit	492.77	374.04	433.37	920.79	883.23	923.15



In Table EN2 and Graph EN2, electricity use by the Rayong factory in 2021 can be seen to be higher than the base year of 2019 by 11.21 percent while electricity use per MVA production unit increased from the base year of 2019 by 7.11 percent. The Company did not achieve the goal to have increases not exceeding five percent of the base year because production volume was higher than 2019 by 47.45 MVA and 185 units, causing higher electricity consumption in electrical testing processes because every machine was tested. In addition, because of the COVID-19 pandemic, the Rayong Factory was affected by COVID-19 infections, causing the Company to use bubble and seal measures in July, August and October to control high-risk employees to stay in factory areas along with preventing disruption to production without bringing outside risks into the Company. Therefore, electricity consumption in 2021 was abnormally higher than months when bubble and seal measures were enacted. This caused use of energy per MVA to be higher.



In 2021, the Company applied for tax privileges from the BOI to install a 420 kW solar rooftop valued at more than 13 million baht. The Company received permission from BOI in September 2021. However, the Company was unable to install the system in 2021 because of COVID-19 outbreaks. Contractors were unable to move labor across provincial borders to install the rooftop. Therefore, the project was rescheduled to 2022 or until outbreak situations and preventive measures improve.

Table EN3 Showing Efficiency of Electricity Use at Q Solar 1

Item	Q Solar 1 Solar Energy Generation					
	2019		2020		2021	
	Meter 6100034354 Public Utilities	Meter 27668614 Systems	Meter 6100034354 Public Utilities	Meter 27668614 Systems	Meter 6100034354 Public Utilities	Meter 27668614 Systems
Provincial Electricity Authority (kWh) <i>Non-Renewable Energy</i>	31,106.00	47,520.00	28,651.00	51,183.60	17,529.00	51,600.00
Production Volume (MWh) <i>Renewable Energy</i>	13,201.8		13,130.58		12,895.08	

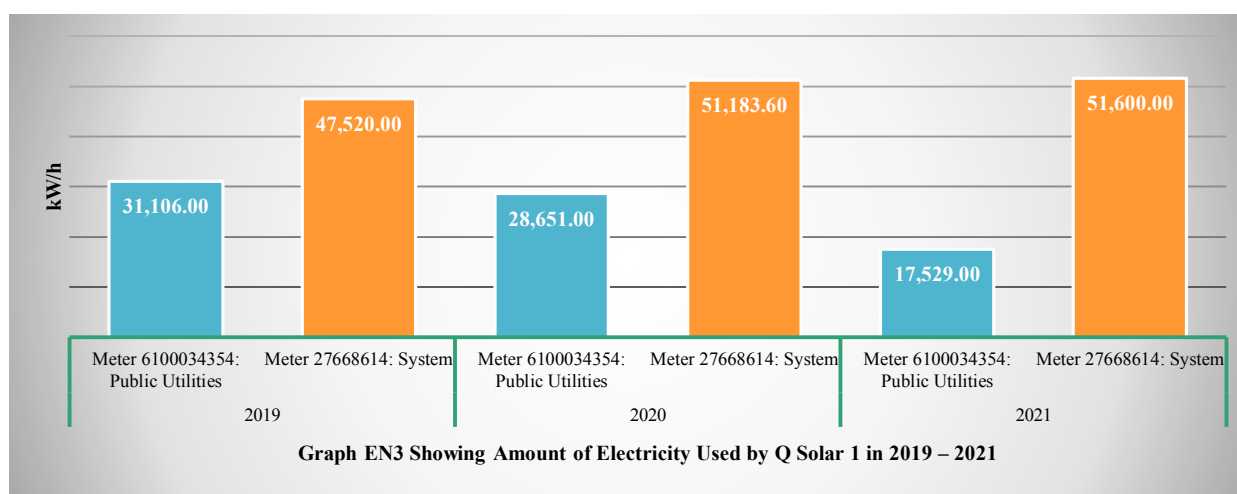


Table EN3 and Graph EN3 show the efficiency of electricity use by the Q Solar 1 power plant with two separate meters for public utilities and offices. In 2021, additional solar panels were installed to generate electricity and replace part of electricity from the PEA, causing electricity use to drop by 38.82 percent from 2020. The meter for systems controlling electricity generation from solar energy at night showed electricity use to increase by 0.81 percent. The Company had environmental factors in cases where the sun rises late or when there is heavy cloud cover or heavy rain. When the Company was unable to generate electricity, electricity from the meter distributes electricity into the system to support control systems. If no system shutdown problems occurred at night, electricity meters distributed electricity at all times at night as can be seen from reductions in the amount of electricity generation in 2021 compared to 2020. Therefore, the amount of electricity use for electricity meters was opposition to the amount of electricity generated in each year.

Because electricity used by Q Solar 1 was not high or significant, goals were not set to reduce electricity use. However, the Company supported teams to use knowledge and resources to develop systems and use electricity cost-effectively.

2. Thermal Energy-Fuel (Renewable)

Diesel and benzene (gasoline) are used for transportation outside the Company, services, transportation inside the Company, employee shuttles and office cars. In 2020, the Company used fuel according to the following table:

Table EN4 Showing the Amount of Energy Used by QTC (Non-renewable Energy)

Item	QTC Energy					2021
	2016	2017	2018	2019	2020	
Diesel	110,765	107,332	95,634	74,638	76,588.91	70,646.996
Benzene	29,276	27,584	27,486	32,595	27,001.45	24,036.17
Total (Liter)	140,041	134,952	123,121	107,233	103,590.37	94,683.166
Production Volume (MVA)	1,148.6	1,659.53	1,522.68	1,240.31	1,291.02	1,287.76
Liter (Diesel) / MVA	96.44	64.68	62.81	60.18	59.32	54.86

Table EN4 shows a reduction in diesel use by 7.76 percent from 2020. At the same time, benzene fuel use was reduced by 10.98 percent as a result of WFH COVID-19 prevention measures, causing benzene use for office cars to be reduced. Use of diesel per MVA production unit was less than the base year of 2019 by 8.84 percent. **The Company achieved the goal of having deviations not exceeding five percent from the base year.**

Table EN5 Showing the Amount of Fuel Used by Q Solar 1 (Non-renewable Energy)

Item	Q Solar 1		
	2019	2020	2021
Diesel fuel (for trucks, cars)	4,448.58	3,352.16	1,702.34
Gasoline (for lawn mowers, water pumps)	2,760.68	3,881.96	3,153.26
Total Fuel Use	7,209.26	7,234.12	4,855.60

From Table EN5, diesel fuel use in 2021 can be seen to have been reduced by 49.22 percent because Q Solar 1 invented solar energy tuk-tuks to use in place of vehicles used for checking or working in the power plant (see the Solar Energy Tuk-Tuk Invention Project).

Benzene use by grass cutters and water pumps in 2021 was reduced by 18.77 percent due to external factors around the power plant. Particulates in the air that landed on solar panels reduced electricity generation capacity, causing solar panels to have to be cleaned for frequently. In 2021, solar panels were cleaned for fewer times than in 2020, causing benzene use to be correspondingly lower.

No goals were set for fuel use because the amount of fuel used was small and insignificant.

Water Management of Rayong Factory

QTC's factory is located in an area without natural and public water sources. Groundwater had to be used for consumption. No water was used in the transformer manufacturing process. The main office in Bangkok used water from the Metropolitan Waterworks Authority.

Picture showing the activities of using groundwater - groundwater of QTC factory, Rayong

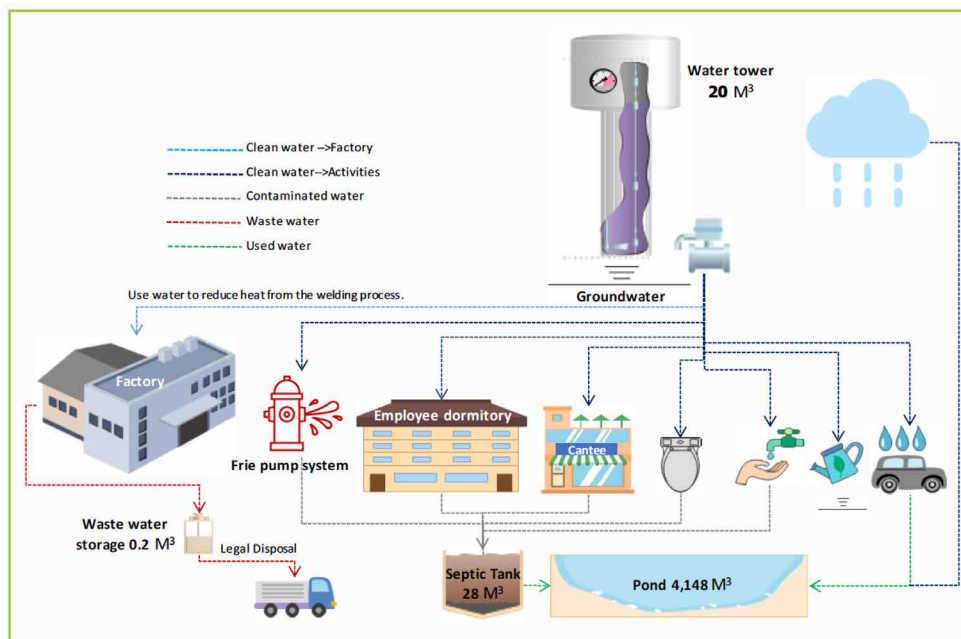
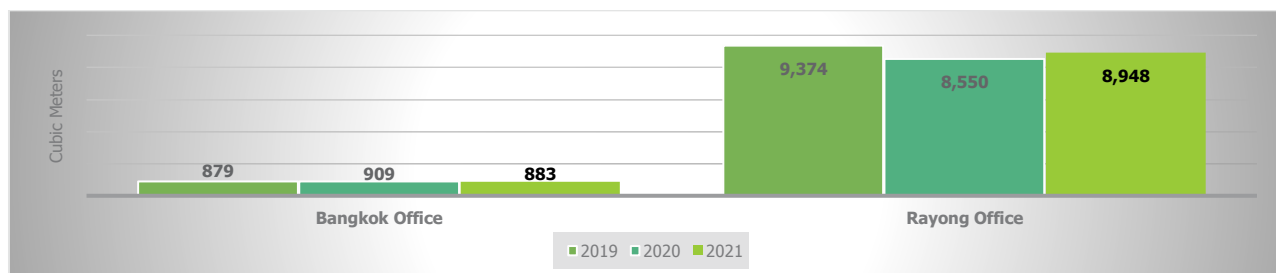


Table EN6 Showing Volume of Water Used in 2019-2021

Item	QTC Energy		
	Base year 2019	2020	2021
Metropolitan Waterworks Authority (cubic meter)	879	909	883
Surface Water (cubic meter)	-	-	8,948
Groundwater (cubic meter)	9,374	8,550	9,9
Total (cubic meter)	10,253	9,459	



Graph EN6 – Comparison of Volume of Water Used in 2019 – 2021

From the graph, performance in 2019-2021 can be summarized as follows:

1. Volume of water from the Metropolitan Waterworks Authority used by the Bangkok office in 2020 increased by 0.46 percent. The Company did not achieve the goal.
2. Volume of groundwater used by the Rayong factory in 2021 declined by 4.54 percent. The Company did not achieve the goal.

• Water Management by the Rayong Factory

The Rayong factory area has high rainfall per year and the Company does not use natural rainwater for consumption because the area is in an industrial estate where pollution is mixed in the air. In 2021, the Rayong factory collected rainwater for emergency use in fires with a legal storage volume of 70 cubic meters. When water overflowed, water is drained to be stored in earthen ponds behind the factory to water plants in dry seasons. This can reduce groundwater pumped to fill emergency water storage reservoirs by more than 70 cubic meters per year.



Water Management by Q Solar 1

Q Solar 1 has an area of more than 200 rai in the community of Ban Bo Thong, Kabinburi, Prachinburi, and needs to use water for benefits in two areas:

1. Use of water for public consumption and to clean 86,688 solar panels in order to maximize electricity generation efficiency. Solar panels were used for 20 times per year and needed 6,500 cubic meters of clean groundwater per year to remove heavy metals and stains before operations.
2. Use of water to water trees and for activities in agricultural plots of the Sufficiency Economy Philosophy Center. In this part, water does not need to be treated water. Therefore, QTC dug three ponds to hold water in the rainy season to use in dry seasons with a capacity for storing 149,996 cubic meters of rainwater per year. The remaining water is gradually drained into public canals. This can reduce groundwater pumping and have an added benefit from slowing potential floods from rainwater from areas where solar panels are installed to communities around the power plant.

Water Management Plan Model

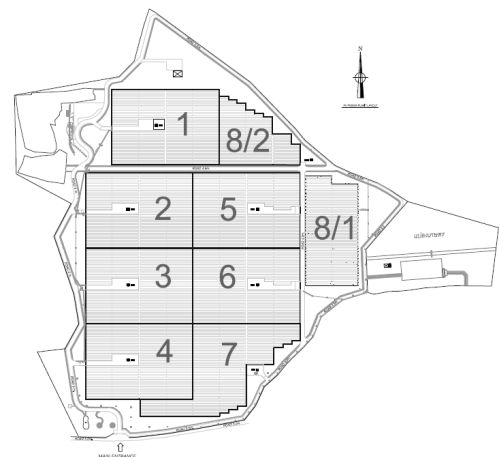
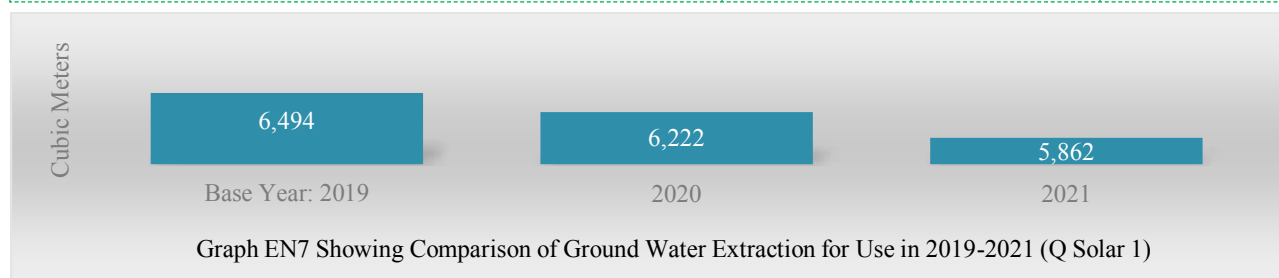


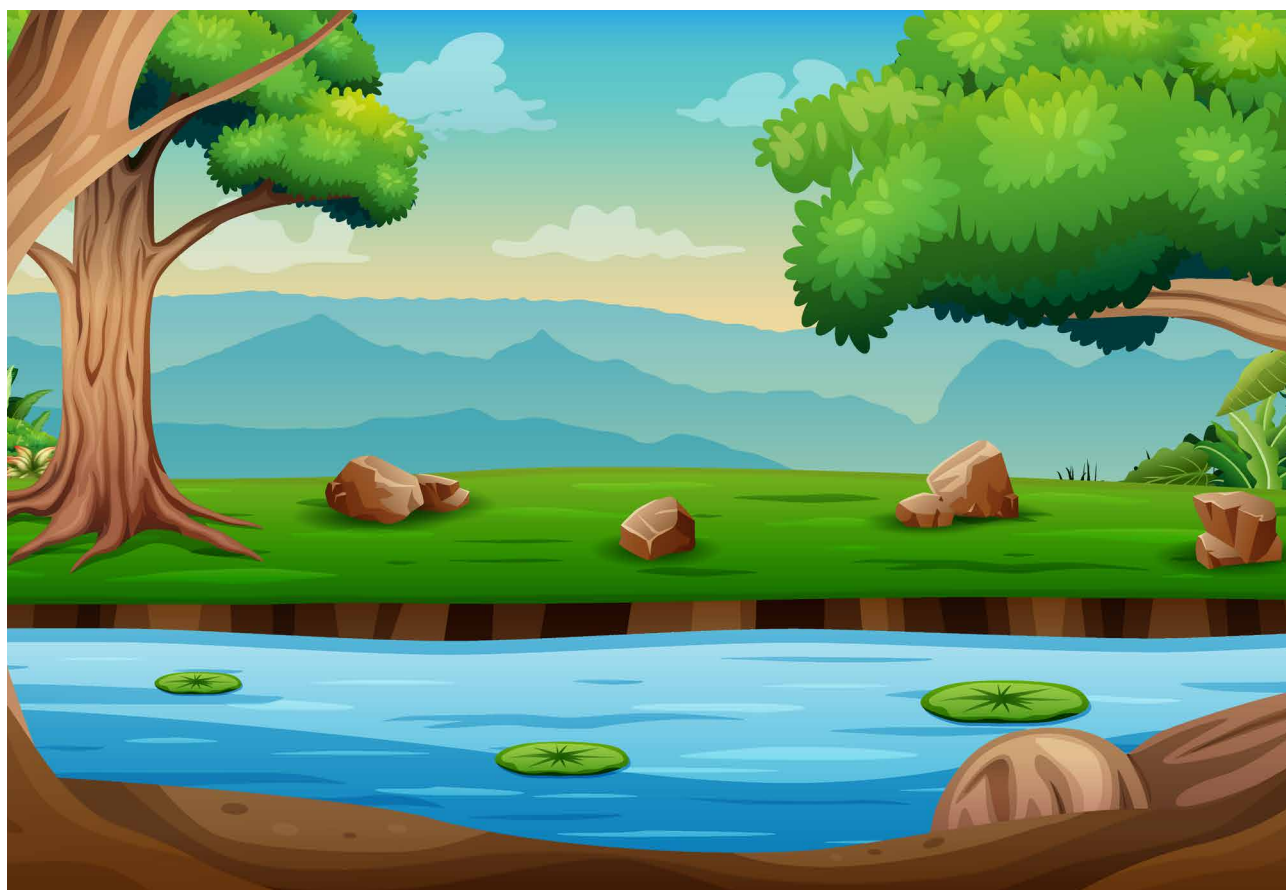
Table EN7 Showing Groundwater and Natural Water Extraction Storage Volume in 2019-2021 (Q Solar 1)

Item	Year of Operation		
	Base year 2019	2020	2021
Q Solar 1 Groundwater (cubic meters)	6,494	6,222	5,862
Natural Water Storage Pond (Pond 1) (cubic meters)	>101,076	>101,076	>101,076
Natural Water Storage Pond (Pond 2) (cubic meters)	>42,972	>42,972	>42,972
Natural Water Storage Pond (Agricultural Plot) (cubic meters)	>5,948	>5,948	>5,948



According to the Table and Graph EN7, the volume of ground water used by the Q Solar 1 power plant in 2021 was lower than 2019 by 9.73 percent. The Company achieved the goal of reducing by five percent due to reduced solar panel cleaning frequency compared to 2019 and 2020 including modifications to make solar panel cleaning machines use less water (currently in prototype stage).

All three of the Company's areas did not have a wastewater treatment system. Thus, the Company has no projects to reuse treated water but uses measures to conserve water and use water efficiently.



Use of Raw Materials for Production and Service Provision

The QTC Factory in Rayong manufactures distribution transformers and provides transformer maintenance and repair services. Some materials were imported from abroad while some materials were procured in Thailand. Some raw materials can be reused after being recycled in a processing plant and cannot be reused immediately due to effects on transformer quality. Some raw materials cannot be reduced and have to be disposed of as waste. The year of 2021 became the first year when data on weight of raw materials used in production was collected. Some items can be calculated in weight units and other units needed to be converted by the following methods:

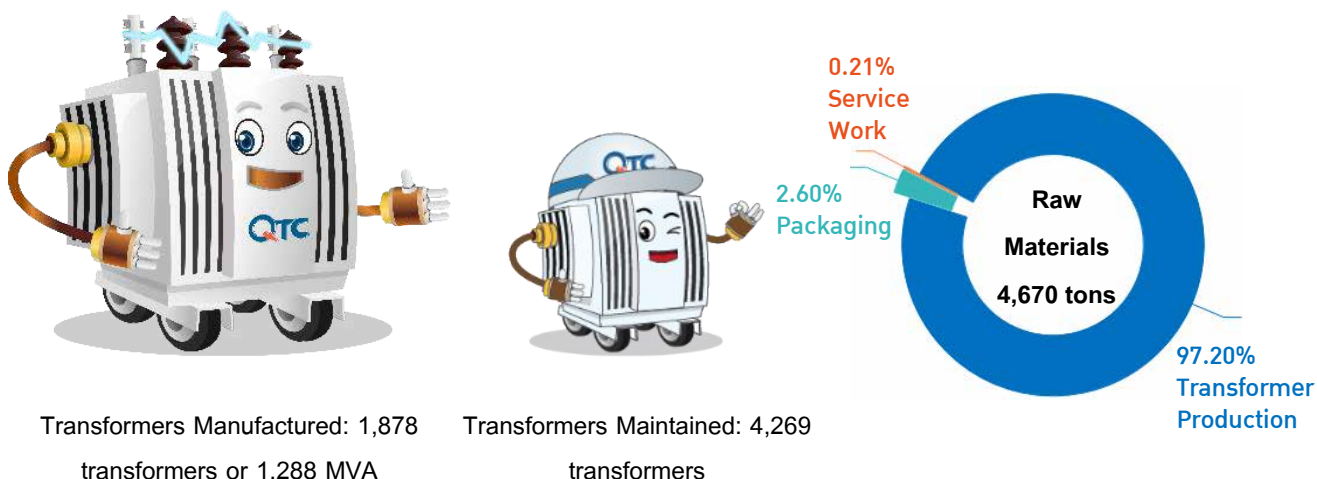
Raw materials with counting units that are not weight units such as meters, sheets, pieces, sets and liters, etc., will be sampled for one weighing unit and converted into kilograms before use to calculate pieces for production or be converted by using an international metric to convert the value in kilograms.

- When transformers are designed, transformer weight is calculated by using the weight of raw materials to calculate weight in kilograms according to the standard design and production formulas are issued to requisition raw materials specified in designs. The list of raw materials requisitioned and production formulas may be different by no more than + %5.
- Packaging done in some orders according to must customer agreements are packages for export and biddings. Weight of materials used from the design to order production is to have a deviation of no less than 5 percent.
- Most raw materials used in providing services were transformer oil and other accessories, which are converted in kilograms.

Table EN8 Showing Volumes of Production, Services and Raw Materials in 2021

Item	Counting Unit		
	Unit	Capacity (MVA)	Weight (Ton)
1. Volume of new Transformers Manufactured and Repaired Transformers.	1,878	1,288	4,391
2. Volume of Maintenance Services	4,269	N/A	N/A
3. Volume of Raw Materials Used in Production	N/A	N/A	4,539
4. Volume of Raw Materials Used for Packaging	1,531	N/A	121
5. Volume of Raw Materials Used for Services	N/A	N/A	10
6. Volume of Materials Sent for Recycling to Process into Starting Raw Materials (Copper and Steel)	N/A	N/A	112

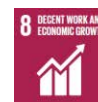
Production Amount: 4,394 tons





Key Social Issues

Employee Health & Safety



Every industrial factory has tools, machines, or chemicals necessary for production and raw materials that may be heavy, sharp or hazardous liquids, depending on the products produced by that factory. Human labor is necessary for using the aforementioned tools, machines, chemicals or raw materials to produce products for the business owner. There is high likelihood that work performed by people and tools, machines or chemicals will have risk of accidents causing minor injuries or death to employees or hazards that may cause employees to become sick and die. If factories and business owners have no appropriate accident prevention measures, if employees do not see the importance or recognize dangers from accidents and if severe accidents occur to any factory, there will be impacts on that factory's business operations to the point of temporary business interruptions, damage to corporate image or brands and distrust among stakeholders because many laws protect labor welfare in the areas of safety and many other laws are involved in industrial factory operations.

Assessment of issues important to stakeholders and QTC found employee safety and health to be the most important sustainability issue and a risk requiring strict control. The Company's directors and executives are aware of risks with potential impacts on employees and the Company's business. Therefore, the Company sees the importance of this issue and is committed to create safety for the work of employees and stakeholders in order to prevent accidents, injuries, illnesses and the Company makes efforts to discover, remove or control lack of safety and create a culture of safety in the organization.

Objective:

1. To create a culture of safety in the organization.
2. To prevent risk of factors that may cause accidents or employee health problems
3. To modify work environments to be suitable and support employees' physically and psychologically when working.

Management: Management of safety, occupational health and work environment with ISO45001:2018 standards, designation of safety policies and goals to create guidelines, health promotion policies and organization health along with providing necessary personnel in the area of safety in addition to promoting procurement of personal protective equipment (PPE), modifying work environments to facilitate work and supporting activities that promote a culture of safety in the organization.

Goal 1: Zero accidents from work.

Result: In 2021, the Company had 25 accidents and did not achieve the goal.

Goal 2: Zero health problems or illnesses from work.

Result: In 2020, the Company had two employees who were sick because of work. The Company did not achieve the goal.

Goal 3: 100 percent of employees in the target group were trained in work safety courses.

Result: 80.5 percent of employees in the target group in 2021 were trained. The Company did not achieve the goal.

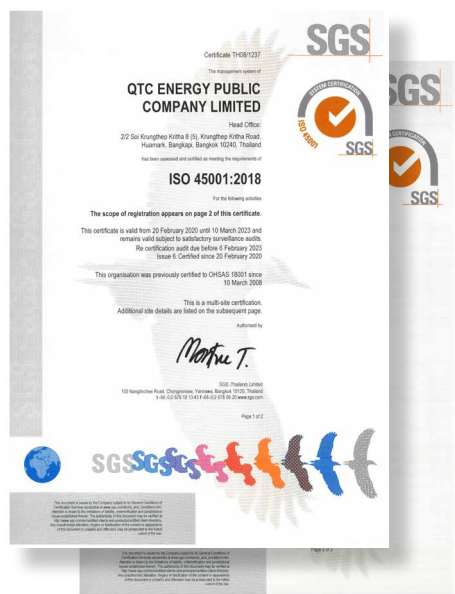
Employee work safety is the most important issue for every employee at every level including other stakeholders involved. In 2020, the Company continued to make work safety a risk that must be controlled along with building a culture of safety to create the most benefit for employees.



Safety, Occupational Health and Work Environment Policy: <https://qtc-energy.com/th/safety-policy/>

Standard Systems

The Company managed from safety, occupational health and work environment management system by implementing ISO45001 standards and the Company was accredited for standards on an annual basis by SGS (Thailand) Company Limited. The Company made the following clear personnel and framework specifications:



ISO45001:2018 Standard Accreditation

Safety, Occupational Health and Work Environment Management Framework



The Company requires safety to be evaluated and reviewed at least on an annual basis to select significant issues to prepare risk control and mitigation plans. Significant safety risks consist of fires, chemical leaks and use of forklifts to move objects.

The Company sent personnel to be trained and appointed as safety officers at various levels to perform duties required by law with the following safety officer-to-employee ratio:

Level	QTC Energy		Q Solar 1 Amount (person)
	Services & Bangkok Office Amount (person)	Rayong Factory Amount (person)	
Supervisor SOs	10	17	1
Technical SOs	-	-	1
Professional SOs	-	2	-
Executive SOs	15	10	1



1 to 5
SO-to-Employee Ratio



1 to 6

Safety Committee (SC) Members in 2021-2022 (from elections in 2020)

First-Last Name	Position	Remarks
1. Mr. Charoensak Sarawong	Committee Chairman	Appointed
2. Mr. Somyot Taptimtong	Director	Appointed
3. Mr. Piyachai Peungpensook	Director	Appointed
4. Mr. Tanwa Pumraya	Director	Elected
5. Miss Yupawadee Nontapab	Director	Elected
6. Miss Wilaiwan Nakoon	Director	Elected
7. Miss Arunroj Intasiri	Director/Secretary	Appointed

Calculated as 2.72 percent of all employees on the Committee.

The roles and duties of the Safety Committee are in compliance with the Ministerial Regulations on Specification of Standards for the Management of Safety, Occupational Health and Environments in Working of B.E. 2549 (A.D. 2006). Executives at every level recognize the importance of this issue and provided support including time, supporting tools, personnel and the budget necessary for proper use in safety management. A high ranking executive was appointed to be the Chairman of the Safety Committee to closely monitor safety, follow-up and report performance to the Executive Committee on a monthly basis along with reporting performance to the Board of Directors on a quarterly basis.



Motivation Building

In 2021, the Safety Committee (SC) prepared safety plans to reduce the number and severity of accidents to be less than 2020 by more than 80 percent. Plans included activities in various areas such as campaigning for employees to participate in safety risk assessment, plans to use Completely Check Completely Find Out Activities (CCCCF) to build safety awareness among employees, plans to modify workplace strategies, ergonomic modification plans to modify work spaces to suit work postures in order to reduce accidents and fatigue from work along with building motivation for every employee to participate in reducing accidents. In 2021, the number of accidents was lower than 2020 with target areas that did not have accidents in 2021. Therefore, the Company give awards and prizes to motivate employees and create role models for employees along with creating safety role model areas. The following areas should be praised.

1. Areas with the least reduction
 - ➔ Tank areas had the number of accidents reduced by 69 percent.
 - ➔ Steel core areas had the number of accidents reduced by 75%
2. Areas with zero accidents in 2021
 - ➔ Coiling areas
 - ➔ Maintenance areas
 - ➔ Quality Assurance Department areas.
 - ➔ Oil Baking and filling areas
 - ➔ Amorphous steel core areas.



Transfer of Knowledge into Practice

In transferring knowledge and improving employee skills related to work safety, the Company used multiple channels to work such as by training in specified necessary courses, KYT activities and safety practices to learn and share experiences from persons who were in accidents, use of videos or public relations documents to help employees including outside persons who work in the Company to have awareness of safety, generosity and help to prevent accidents to themselves, colleagues and the Company's property. In 2021, the Company organized four major practical training courses and spent 35,000 baht in operations as follows:

1. **The basic firefighting and first evacuation drill course** was taught by lecturers from the Public Disaster Prevention and Mitigation Department, Mab Yang Porn, free of charge on 29 December 2021 with 66.34 percent of trainees who were trained.



2. **The firefighting and fire escape training course** taught by lecturers from the Public Disaster Prevention and Mitigation Department, Hua Mak, spent a budget of 13,000 baht on 21 December 2021 with participation from 53.85 percent.



3. **The safety when working in high places course (online)** was taught by Eastern Training & Consultant Co., Ltd. on 11 November 2021. Training was provided for 28 employees in the target group who worked in high places with a budget of 22,000 baht.

Objective: To help employees recognize potential dangers from working in high places and prioritize preventing danger, being aware of danger when working in high places and being capable of properly checking and maintaining fall prevention equipment



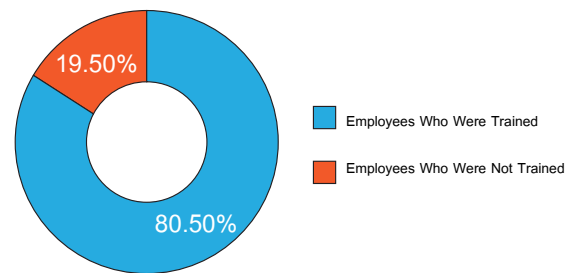
4. **Training on steps for working with safety in high and step places** was provided by professional safety officers on 9 September 2021 for 4 maintenance employees with an attendance rate of 100 percent.

Objective: To let workers in high places have knowledge of steps for working in high places and the ability to work safely in high places.



Safety Training Goals for Employees in the Target Group

In 2021, the Company organized four safety training courses with 80.5 percent of employees in the target group who were trained. The Company did not achieve the goal because Some groups of employees had other work and were unable to participate in fire-fighting and fire evacuation drill. Employees who were not trained will be trained later in 2022.



Enforcement of Regulations

The Company has strict measures for enforcing safety rules and regulations. According to accident reports from past to present, most accidents are caused by human negligence in not wearing personal protective equipment before working or removing personal protective equipment when there is no one watching. This is because of lack of awareness of danger that may happen at all times. Executives and supervisors have the duty to understand and give warning according to the system in addition to disciplining employees.

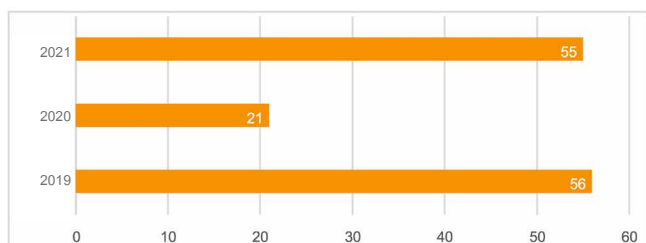


In 2021, safety rules were strictly enforced and warning forms were issued for unsafe work to employees who worked without consideration for personal safety, the safety of colleagues and the Company's property, a total of 11 items. Strict enforcement of safety regulations reduced the number of accidents in 2020.

Build Participation

Support for KAIZEN and writing near-miss reports promoted employee participation in presenting concepts and eliminating lack of safety before accidents. In 2021, employees sent 55 safety KAIZEN articles out of 911KAIZEN articles and 36 near-miss reports were sent.

Statistics on Participation in Preparing Safety KAIZEN



Statistics on Participation in Writing Near-miss Reports

Year	Amount	Severity Level		
		RED	YELLOW	GREEN
2019	275	45	109	121
2020	29	7	10	12
2021	36	17	14	5

Because outbreaks of the Delta strain of COVID-19 is growing more severe, the Company temporarily suspended the **5S Safety & Happy Workplace Week** activity in 2021.

Tests and Measurements in the Areas of Safety, Occupational Health and Work Environments

The Company regularly measures and tests work environments to monitor risk factors for employee health. Results from tests and measurements in 2021 are as follows:

Table Showing Sound Measurements in Work Areas

Area	Test Point	Test Results						Standard	Unit
		1/2019	2/2019	1/2020	2/2020	1/2021	2/2021		
		15/3/19	23/7/19	20/3/20	20/3/20	10/5/21	11/6/21		
Factory 3	Unicoil Metal Cutting Machine		77.9	79.9		74.6		85	dB(A)
Oil Baking & Filling	Tanking		75.0	76.2		74.9		85	dB(A)
Amorphous Steel Core	Amorphous Steel Cutting Machine					73.1		85	dB(A)
Assembly	Wood Cutting Room		78.8	80.6		80.5		85	dB(A)
Steel Core	Workshop		89.0	82.0		85.4		85	dB(A)
Assembly Workshop			74.3	75.9		76.7		85	dB(A)
Equipment Installation	Spray Booth		76.8	77.3		73.5		85	dB(A)
Coiling Building	Coiling Machine		73.0	71.0		69.0		85	dB(A)
Coiling Building 2	Coiling Machine					71.0		85	dB(A)
Paper Cutting Room	Paper Cutting		77.2	77.0		74.9		85	dB(A)
Factory 4	Chassis Assembly and Welding		86.0	95.7		87.5		85	dB(A)
Factory 4	Plasma Cutting Machine		85.7	85.7		84.5		85	dB(A)
Factory 5	Chassis Welding and Assembly	86.4		92.0		85.1		85	dB(A)
Factory 5	Robot Chassis Welding and Assembly			88.3		83.8		85	dB(A)
Factory 5	Steel Pellet Shooting Area	84.3		89.3			82.3	85	dB(A)
Factory 5	Automatic Steel Pellet Shooting Area			88.6		86.7		85	dB(A)
Factory 6	Spray Booth	80.1		81.6		75.9		85	dB(A)
Factory 6	Spray Booth (Large)	81.0		85.3	81.3	81.3		85	dB(A)

In 2021, the results from two tests and measurements of noise disturbance in work areas showed five areas to have higher sound levels than legal requirements, which have been designated as danger areas for workers. Workers who will enter the area are required to wear PPE specified in hearing conservation plans. The Company is looking for opportunities to make modifications in order to reduce sound levels, particularly in the spray booth (large) area of Factory 6, by modifying work environments and processes to reduce sound levels to be lower than criteria specified by the law.

Results from Measuring Noise Disturbance outside Factories in 24 Hours (Community)

Parameter	Area	Annual Test Results*			Standard	Unit
		1/2019	1/2020	1/2021		
		23-24/7/19	23-24/3/20	19-20/5/21		
General Volume Level (Leq 24hr)	Employee Dormitory	67.0	68.4	65.4	70	dB(A)
General Volume Level (Lmax)	Employee Dormitory	104.0	90.2	91.1	115	dB(A)

Test Results of the Environment for Working with Chemicals

Area	Parameter	Annual Test Results					Standard	Unit
		01/19	02/19	01/20	02/20	01/21		
		15/3/19	23/7/19	20/3/20	30/6/20	10/5/21		
Steel Core: Steel Cutting/Slitting Factory 3	Iron Dust		Not Detected	Not Detected		Not Detected	10	mg/m ³
	Total dust		Not Detected	Not Detected		<0.20	15	mg/m ³
Steel Core: Steel Arrangement Factory 3	Acetone		Not Detected	Not Detected		Not Detected	1,000	ppm
	Xylene		Not Detected	Not Detected		Not Detected	100	ppm
	Toluene		<0.25	1.52		Not Detected	200	ppm
	Total dust		Not Detected	Not Detected		0.25	15	mg/m ³
Steel Core: Steel Arrangement Factory 1	Xylene					Not Detected	100	ppm
	Toluene					0.43	200	ppm
	Acetone					Not Detected	1,000	ppm
	Total dust					0.25	15	mg/m ³
Steel Core: Steel Clamp Paint	Xylene		1.86	Not Detected		Not Detected	100	ppm
	Toluene		8.62	0.32		<0.25	200	ppm
	Acetone		10.0	Not Detected		Not Detected	1,000	ppm
Steel Score: Steel Cutting Machine Workshop/Base Drill	Iron Dust		Not Detected	Not Detected		<0.007	10	mg/m ³
	Iron Fume		Not Detected			<0.007	10	mg/m ³
	Total dust		1.19	Not Detected		0.34	15	mg/m ³
Coiling: Coiling	Copper Fume		Not Detected	Not Detected		Not Detected	0.1	mg/m ³
	Respirable Dust		Not Detected	Not Detected		Not Detected	5	mg/m ³
Coiling: Coiling 2	Copper Fume					Not Detected	0.1	mg/m ³
	Respirable Dust					<0.15	5	mg/m ³
Coiling: Paper Cutting Room	Total dust		Not Detected	Not Detected		0.42	15	mg/m ³
	Respirable Dust		Not Detected	Not Detected		Not Detected	5	mg/m ³
Assembly: Chassis Assembly	Copper Fume		Not Detected	Not Detected		<0.007	0.1	mg/m ³
	Total dust		Not Detected	Not Detected		<0.20	15	mg/m ³
Assembly: Workshop	Copper Fume		Not Detected	Not Detected		Not Detected	0.1	mg/m ³
	Iron Fume		Not Detected	<0.007		Not Detected	10	mg/m ³
	Carbon Monoxide		Not Detected	1		Not Detected	50	ppm
Assembly: Wood Cutting Room	Total dust		Not Detected	<0.20		0.51	15	mg/m ³
	Respirable dust		Not Detected	Not Detected		0.17	5	mg/m ³
Installation: Spray Booth	Total dust		Not Detected	Not Detected		0.34	15	mg/m ³
	Xylene		Not Detected	7.73		0.40	100	ppm
	Toluene		Not Detected	12.4		0.44	200	ppm
Transformer Repair	Total dust		Not Detected	Not Detected		<0.20	15	mg/m ³
	Oil Mist		0.25	Not Detected		0.15	5	mg/m ³
Chassis: Welding & Assembly, Factory 4	Total dust		Not Detected	Not Detected		0.77	15	mg/m ³
	Carbon Monoxide		1	1		Not Detected	50	ppm
	Iron Fume		0.038	<0.007		0.011	10	mg/m ³
Chassis: Plasma Cutting Machine, Factory 4	Carbon Monoxide		1	1		Not Detected	50	ppm
	Iron Fume		0.008	<0.007		<0.007	10	mg/m ³
	Total dust		Not Detected	Not Detected		<0.20	15	mg/m ⁴
Amorphous	Total Hydrocarbon		23.9			10.4	N/A	ppm
	Total dust		Not Detected			<0.20	15	mg/m ³
	Bis-phenal A		Not Detected			Not Detected	5	mg/m ³
Factory 5 Chassis: Welding & Assembly	Carbon Monoxide	Not Detected		1		Not Detected	50	ppm
	Iron Fume	Not Detected		0.041		0.052	10	mg/m ³
	Total dust	0.25		<0.20		0.51	15	mg/m ³
Factory 5 Chassis: Robot Assembly	Carbon Monoxide			1		Not Detected	50	ppm
	Iron Fume			<0.007		<0.007	10	mg/m ³
	Total dust			Not Detected		0.51	15	mg/m ³
Factory 6 Chassis: Spray Booth	Toluene	4.26		1.11		3.12	200	ppm
	Xylene	6.89		Not Detected		8.09	100	ppm
	Total Dust	0.42		Not Detected		<0.20	15	mg/m ³
Factory 6 Chassis: Spray Booth (large)	Toluene	2.63		17.2		5.08	200	ppm
	Xylene	1.73		22.8		4.27	100	ppm
	Total Dust	< 0.25		20	6.07	0.34	15	mg/m ³
Factory 6 Chassis: Painting	Toluene	Not Detected		1.44		9.93	200	ppm
	Xylene	Not Detected		Not Detected		9.63	100	ppm
	Total Dust	0.680		Not Detected		<0.20	15	mg/m ³

*Remarks: Environmental tests and measurements have been reduced to once per year pursuant to the Department of Labor Protection & Welfare Notification on Criteria, Test Methods and Analysis of Results from Tests of Hazardous Chemical Concentrations of B.E. 2559 (A.D. 2016).

Statistics on Accidents

In 2021, the Company had a goal to reduce the number of accidents to be less than 2020 by 80 percent. However, the Company was able to reduce the number of accidents to only 11 accidents or 30.6 percent. In 2021, the Safety Committee (SC) made plans to reduce accidents with a goal to reduce likelihood of accidents. However, some activities such as building awareness by using completely check completely find out activities (CCCCF) cannot be carried out because of the COVID-19 pandemic, causing a necessary pause of plans for gatherings to create safety for employees. However, the Board of Directors continues to place importance on and maintain the goal of having zero accidents.

Table Comparing Work Accident Statistics (2013-2020) only QTC

Severity/Damage	No. of Accidents/Year								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Property Damage	8	6	10	10	12	11	7	17	18
Minor Injury – No Work Interruption (time)	8	7	21	7	9	12	11	18	4
Severe Injury Resulting in Interruptions (time)	1	0	0	0	2	0	1	1	3
Total Injuries (time)	17	13	31	17	23	23	19	36	25
Total Number of Work Days Lost due to Work Accident (day)	2	0	0	0	4	0	1	19	10

Remarks: In 2021, Q Solar 1 had no accidents from work.

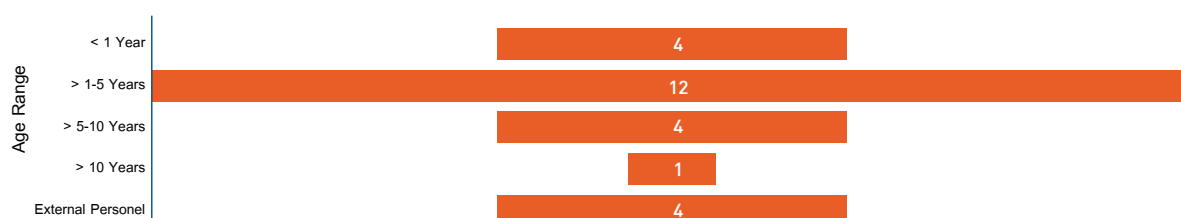
Graph of Accidents by Characteristics of Danger: 2021



Graph of Accidents by Cause: 2021



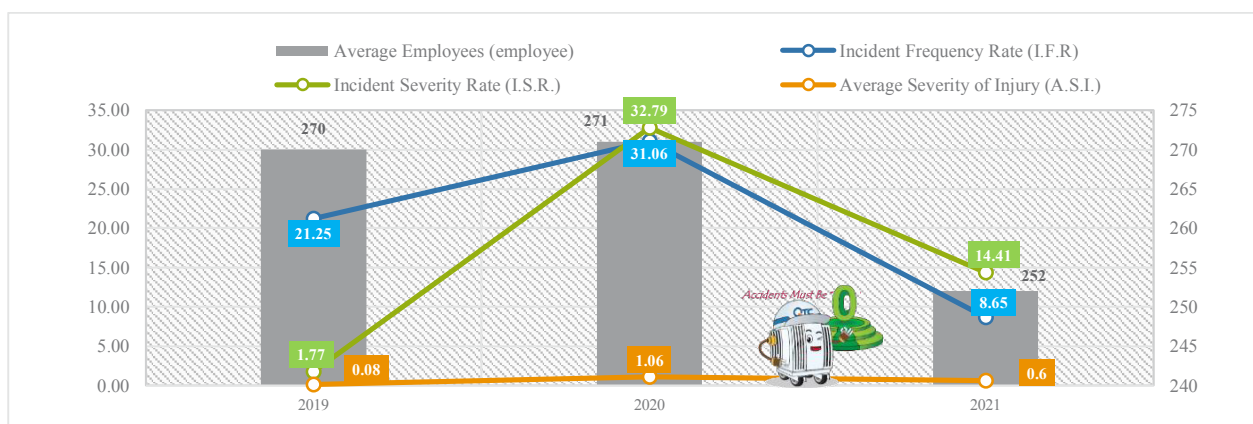
Graph of Accidents by Work Life of Employees Who Had An Accident: 2021



According to investigations of accidents and based on the graph of accidents by causes, accidents in 2021 are caused by unsafe employee actions (52%), unsafe work conditions (12%) and unsafe actions in areas with unsafe work conditions (36%). Furthermore, from the graph of accidents by characteristics of danger, 17 accidents can be seen to have occurred 12 times with property damage for the Company valued at 74,103 baht. In addition, accidents which caused danger to vital organs such as eyes and fingers were less than in 2020. Overall, the number of accidents, damage and severity of accidents in 2021 improved from 2020.

The work life of employees who had an accident was mostly 1-5 years. On this issue, the Safety Committee (SC) will make appropriate plans to retrain employees and prepare control plans to reduce risks, support operations, organize retraining and build awareness of safety by using Completely Check Completely Find Out Activities (CCCF) in 2022.

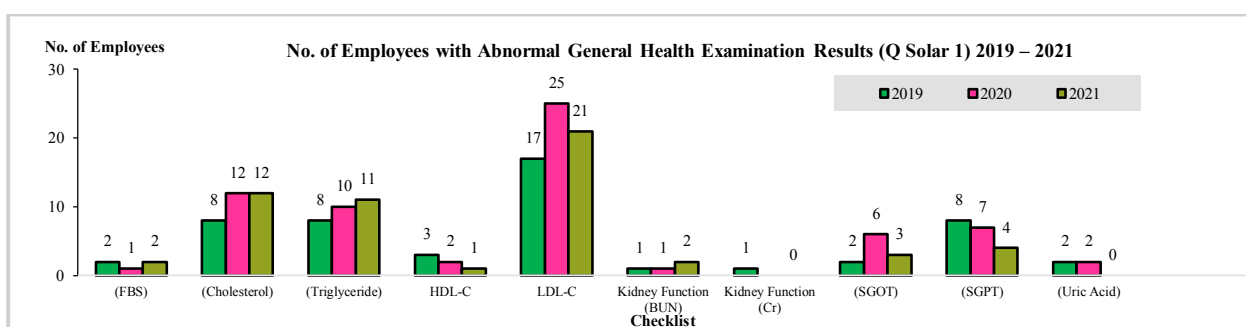
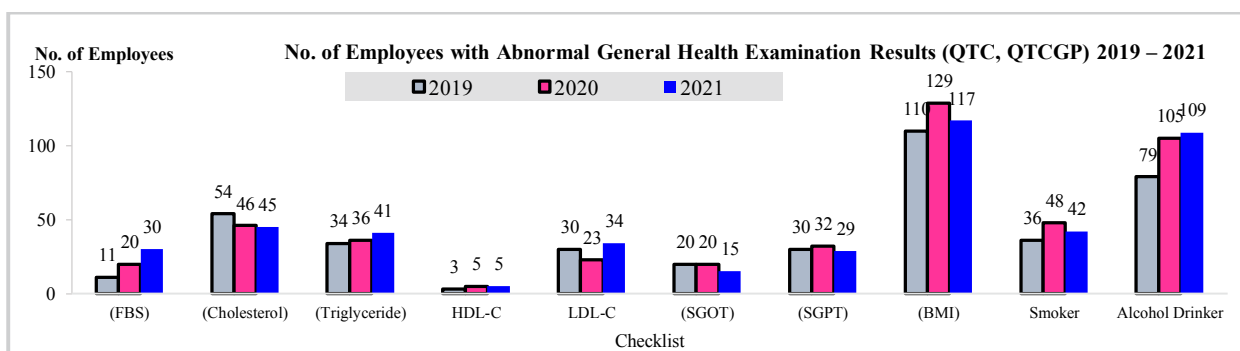
Graph Showing Comparison of Statistical Data on Safety According to ANSI Standards in 2018 – 2021



Employees' good health is an important factor enabling employees to perform duties and responsibilities effectively. The Company announced policies to promote health and organization happiness <http://qtc-energy.com/th/hpe-policy> in addition to organizing work areas to have an attractive and clean environment covering issues in the areas of lights, sounds, heat, chemicals, consumption and quitting alcohol, smoking and substance abuse, etc. Furthermore, the Company organizes annual health examinations and continually monitors results.

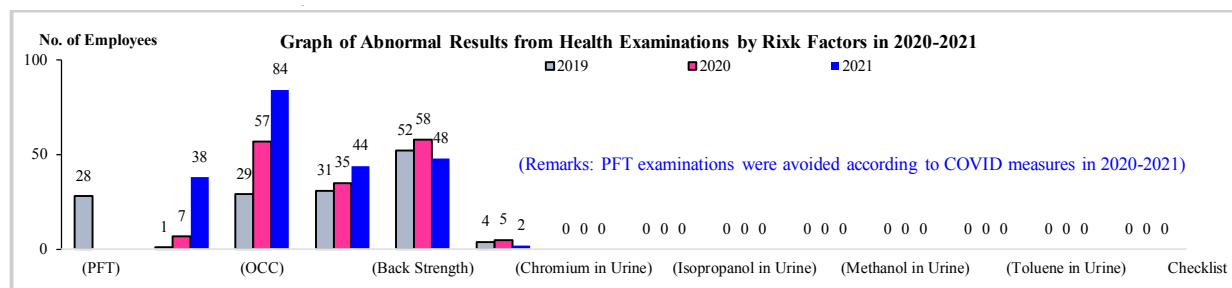
Annual Health Examinations

The Company arranges for employees to receive health examinations once a year at the Bangkok office including QTCGP and the factory in Rayong. In 2020, the Company used two medical facilities, namely, Phayathai Sriracha Hospital and Samitvej Srinagarindra Hospital. Examinations at Q Solar 1 were performed by Chularat 304 Inter Hospital. The Company arranged for doctors of vocational medicine to survey work environments in order to determine health examination programs according to risk factors. The health examination program's coverage is in compliance with the law and has additional provisions for employees according to age and gender of risk. In 2021, a budget of 643,738.40 baht was spent for the three companies under strict COVID-19 prevention measures. Lung capacity tests were canceled because the Association of Occupational and Environmental Diseases of Thailand asked for cooperation the hospitals in not checking lung capacity by spirometry, which creates aerosols from the respiratory system and significant risk of infection.



From the graphs, employees of QTC, QTCGP and Q Solar 1 with abnormal general health examination results were found to have decreased slightly from 2020 because employees participated in QTC Fit & Fit Seasons 2, 3 activities by running to exercise and save mileage for prizes. In addition, the Company contributed to donations for charity and will continue to support every employee to participate in healthy activities for employees' health.

Health Examinations by Risk Factor



Health examinations according to work risk factors in 2021 found more risks from abnormal hearing than in 2020 because results from hearing assessment at a frequency of 25 dB HL in 2021 referred to guidelines on examination and interpretation of occupational hearing capability of B.E. 2558 (A.D. 2015) of Bangkok, Association of Occupational and Environmental Diseases of Thailand and the Occupational Medicine Center. Previously, criteria and references from the Bureau of Occupational and Environmental Diseases were used. Abnormal hearing means hearing at an average frequency of 500, 1,000, 2,000 and 3,000 Hz at more than 25 dB or average hearing at frequencies of 4,000 to 6,000 Hz at more than 45 dB. This causes employees with hearing risks to be at greater risk. Therefore, the Company arranged for the hospital to provide consultation, recommendations and long-term prevention.



Images of Annual Health Examinations in 2020 under COVID-19 Prevention Measures

Work-related Illnesses

In 2021, one employee had a work-related illness. The employee had irritated eyes and pain and was sent to the hospital. From an X-ray of the eye, the employee was found to have conjunctivitis and keratitis without any foreign matter found in the eye. The employee was medicated and instructed to close eyes and rest for four days. This illness was caused by dust entering the employee's left eye when working. The employee rubbed the employee's eyes without immediately notifying an SO and allowed symptoms to worsen for more than one day. On this issue, the SC explained for every employee to be aware of personal safety and to report health anomalies to the SC in order to take immediate action and maintain the highest level of safety for employees' health.

Statistics on Work-related Illnesses in 2013 – 2021

Item	No. of Illnesses/Year								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Work-related Illnesses (employees)	0	0	3	0	0	0	0	2	1
No. of Work Days Lost Due to Work-related Illnesses (days)	0	0	0	0	0	0	0	3	4

Health Consultation

The Company arranged doctors of vocational medicine at Phayathai Hospital to provide recommendations and consultation regarding employee health on 16 August 2021. The 38 employees found with abnormal hearing were divided into two groups as follows:

1. A group of 24 employees who did not come into contact with loud noise was advised to consult an otolaryngologist by using social security rights.
2. A group of 14 employees who came into contact with loud noise received the following advice:
 - Three employees were retested to confirm results. Results from all three employees were similar to the baseline (results before work entry consistent with new employees' risk factors).
 - Two employees did not need retesting and were monitored for occupational illnesses.
 - Nine employees had abnormal hearing frequencies unrelated to loud noise from working with machines. Employees were advised to consult an otolaryngologist by using social security rights.

24 

Employees Who Did Not Come into Contact with Loud Noises

14 

Employees Who Work with Loud Noises for 8 Hours



Health Promotion Project

*When is a good time to exercise?
Now or when you're sick?*









This project continued from 2015 according to the corporate health promotion policy in order to allow employees to exercise and make good food choices. The Company's support is open to all employees at every level because the Company understands that health is a personal right that requires work from each employee. The Company also allocated a budget to support activities based on employee preferences in sports clubs such as football clubs, badminton clubs and Sepak Tagor clubs, etc. However, due to the COVID-19 pandemic, activities that require large gatherings of members had to be canceled.

In 2021, because of the aforementioned situation, the Company provided a budget to support exercise by individual employees. Exercises can be performed at home, in private areas or under social distancing measures through QTC Season 3: Fun & Fit Freestyle activities as follows:

Summary of Results from QTC Season 3: Fun & Fit Freestyle

Project Duration: 1 March – 5 December 2021

Target Items	Target Value (per person)	Target Value (accumulated)	Results (accumulated)
No. of Members Participating in the Project (person) 	100	84	84
Running Distance (km.) 	200	16,800	7,349
Step-walking (steps) 	1,000,000	84,000,000	27,447,251
Exercise Time (minutes) 	3,600	302,400	87,203
Calories (kilocalories) 	25,000	2,100,000	2,704,013
Amount of Money Saved for Public Benefit Activities (baht) 100 kilocalories = 1 baht 		21,000	27,040



Results from activities may not be consistent with the project's goals because the environment throughout the year was not conducive to field exercises. Most exercises performed were indoors. Not every participant was able to exercise. However, participants build good relationships between members via the Line group at night on every day. Member employees sent information on exercises, made exchanges, gave advice and encouraged each other. The project gave prizes to those who achieved each goal and collected calorie rewards to donate to Ban Huay Prab, a community school, to provide funds for improving the school's fencing.



*"By being kind to each other, we
believe that
true happiness comes from giving."
Happy Heart*



White Factory Project

The Company continues to place importance on actively preventing and suppressing substance abuse due to awareness that threats from substance abuse will have effects on employees' health, relationships with coworkers, families, communities and the Company. The Company continually organizes random tests for narcotic substances without giving notifications in advance in line with policies and strictly enforces rules and regulations. Due to the COVID-19 pandemic, the Company reduced substance abuse inspections to one time in Quarter 4 by having police officers (Pluak Dang Police Station) perform 100 percent inspections. The Company found two employees with narcotic substances. Both employees accepted therapy and to change behaviors. Both employees will retain employee status. The Company had 3,500 baht in expenses in 2021.

Statistics on Narcotic Substance Detections in the White Factory Project in 2016 – 2021



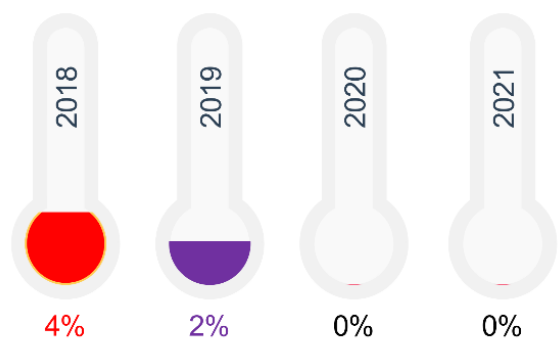
Influenza Vaccination Project

The influenza vaccination project is aimed at promoting employee health and reducing illness caused by health risks. The project was carried out since 2019. Results in the past were unable to prevent influenza at 100 percent according to medical principles. However, some risks were reduced. Therefore, the Company made influenza vaccinations a part of the annual health examination program and requires vaccinations to be by employee consent at no cost. In 2021, vaccinations were carried out by Wiparam Laem Chabang Hospital and Chularat 11 Inter Hospital with a budget of 102,120 percent and 92 percent of employees consented to be vaccinated. In 2021, no employees had influenza. This may be because of COVID-19 prevention measures by wearing face masks at all times and by regularly cleaning hands.



Images of Influenza Vaccinations in 2021

Influenza Rates among Employees for the Year



Employment and Human Rights



Human resources (labor) are an important factor for success in every business operation. Human capital can be continually developed to have improved capacity as organization resources that cannot be owned. Business owners must place importance on labor practices prescribed by law or higher. Business owners must provide care, improve capacity and provide fair and equitable opportunities in addition to respecting labor rights and human rights, etc., in order to possess and maintain good and talented human resources or workers in the organization in order for that organization to be able to continue to benefit from human resources in which the organization invested to improve capabilities with cost-effectiveness and efficiency.

Evolution of modern information technologies has made the world smaller. People in society can communicate with people who they know and who they do not know quickly via many social media. People can learn and self-improve freely on the internet in addition to being able to build career choices based on preference and expertise. These are risks for any organization that does not place importance on human resources or labor, which may create labor dissatisfaction, criticisms on social media or labor disputes, leading to damage to the product brand and the organization's reputation or cause workers to not want to work, resign and change jobs, resulting in losses of the organization's capital.

QTC recognizes that human resources are valuable living resources for the Company as stated in the organization's mission to "improve human capital to create good talented people" and the Company recognizes the importance of fair and equitable treatment of workers. The Company provides care and pays attention to the welfare of all employees along with respecting international human rights by considering human dignity, freedom and equality. All of directors, executives and employees of the Company and subsidiaries are required to comply in order to maintain valuable human resources in the Company. Furthermore, the Company recognizes the importance of fair treatment and respect for human rights of members of society because the Company is aware that the Company's sustainability is not dependent on only business talent but also trust and support from all stakeholders gained through good practices without friction while maintaining respect for people's rights as a pillar for building sustainable business growth. The Company's human resources management policy can be seen at <https://qtc-energy.com/th/human-resource-management-policy/>.

Objective:	1. To have human rights operations in the organizations in compliance with legal requirements. 2. To gain acceptance and trust from stakeholders for human rights practices.
Management:	Announcement of human resource management policies, human rights policies, preparation of company regulations on work rules and regulations (employee manuals), strict compliance with laws concerning labor and human rights and provision of channels for complaints and audit processes.
Goal 1:	Zero complaints from employees regarding unfair payment of wages.
Result:	In 2021, the Company had no complaints.
Goal 2:	Zero complaints from employees concerning violation of personal rights by supervisors or colleagues.
Result:	In 2021, the Company had no complaints
Goal 3:	Zero suppliers who failed to meet human rights assessment criteria in the QTC Supplier Code of Conduct
Result:	In 2021, assessment of 236 suppliers found all suppliers who have met human rights assessment criteria without meeting quality criteria (data of work is under the topic of Trade Partner Development).

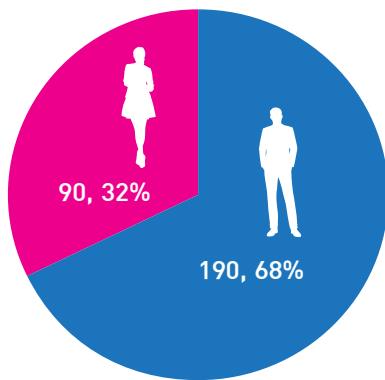
The Company gives importance to fair employment with wages no less than the minimum wage prescribed by law. In addition, the Company provides appropriate and necessary benefits for employees in addition to providing equal recruitment opportunities with no discrimination against ethnicity, religion and gender in line with the human resource management policy: <https://qtc-energy.com/th/human-resource-management-policy/>. In 2021, the number of employees at the end of the year was 1.98 percent more than 2020. Ratios of employment and wages were as follows:

Employment Proportion Table

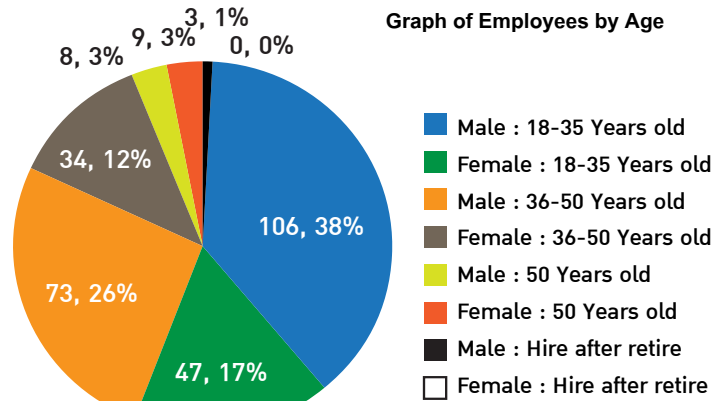
Employment Conditions as of 31 December	QTC Energy						QTCGP & Q Solar 1					
	2019		2020		2021		2019		2020		2021	
	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent
By Gender												
Male	180	67.92	167	66.27	176	67.95	22	73.33	20	74.07	14	66.67
Female	85	32.08	85	33.73	83	32.05	8	26.67	7	25.93	7	33.33
By Level												
L9 – UC	27	10.19	28	11.11	26	10.04					3	14.29
Male	14	-	14	-	13	50					2	66.67
Female	13	-	14	-	13	50					1	33.33
L7 – L8	21	7.92	19	7.54	19	7.34					-	-
Male	13	-	11	-	11	57.89					-	-
Female	8	-	8	-	8	42.11					-	-
L1 – L6	217	81.89	205	81.35	212	82.63					18	85.71
Male	153	-	142	-	152	71.03					12	66.67
Female	64	-	63	-	60	28.97					6	33.33
By Age												
18-35 years old	178	67.17	167	66.27	148	57.14	11	36.67	6	22.22	5	23.81
Male					104	70.27					2	40
Female					44	29.73					3	60
36-50 years old	77	29.06	75	29.76	95	36.68	12	40.00	12	44.44	12	57.14
Male					64	67.37					9	75
Female					31	32.63					3	25
50-60 years old	10	3.77	8	3.17	13	5.02	7	23.33	9	33.33	4	19.05
Male					5	38.46					3	75
Female					8	61.54					1	25
> 60 years old, Hired After Retirement					3	1.16					-	-
Male					3	100					-	-
Female					-	0					-	-
By Area												
Bangkok Office												
Male	29	10.94	31	12.30	32	12.36	1	3.33	1	3.70	1	4.76
Female	29	10.94	31	12.30	32	12.36	2	6.67	1	3.70	2	9.52
Rayong/Prachinburi Factory												
Male	151	56.98	54	21.43	144	55.60	21	70.00	5	18.52	13	61.90
Female	56	21.13	136	53.97	51	19.69	6	20.0	20	74.07	5	23.81
Total Employees at End of Year (employees)	245		252		259		30		27		21	

Graph of Employment Ratios in 2021

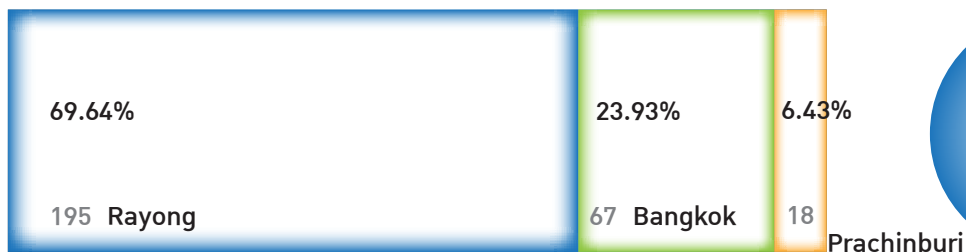
Graph of Employment Ratios in 2021



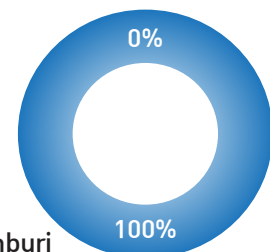
Graph of Employees by Age



Graph of Employee Ratios by Area



Ratio of High Ranking Executives in the Country



Entry-level Wages and Benefits

Items	L1 - L6	L7 - L8	L9 - UC	
			Section	Department
Starting Wages (Not Including Experience): Baht	10,050 – 25,000		According to Wage Structure	
Traveling Costs	☉	☉	☉	-
Cost of Living	☉	☉	-	-
Controlled Engineering Profession Certificate Cost	Only Certified Engineers		-	-
Risk Cost	Only High Risk Positions		-	-
Diligence Allowance	☉	☉	-	-
Accident Insurance	☉	☉	☉	☉
Telephone Fees	-	Some Positions	☉	☉
Office Car	-	-	-	☉
Children's Scholarship (if any) According to Terms	☉	☉	-	-
Provident Fund (15% from employees at most. The Company contributes 3-6% according to terms)	☉	☉	☉	☉
Funeral Assistance for Employee Relatives	☉	☉	☉	☉
Funeral Assistance for Employees	☉	☉	☉	☉
Wedding Assistance (One-time Payment)	☉	☉	☉	☉
Assistance for Childbirth Expenses	☉	☉	☉	☉
Medical Expenses at No More Than One Times Salary/Person/Year	☉	☉	☉	☉
Dental Procedure Cost (1,000 Baht/Year)	☉	☉	☉	☉
Skill Fee	☉	☉	-	-
Food Cost for Overtime Work	☉	☉	-	-
Reward for Not Taking Leave	☉	☉	-	-
Transportation Cost	☉	☉	☉	-
Dormitory	☉	☉	☉	☉
Annual Vacation	☉	☉	☉	☉
Reward for Work Life at 10 Years and 20 Years	☉	☉	☉	☉
Uniform Cost	☉	☉	☉	☉
Cost of Maternity Clothes (only pregnant employees)	☉	☉	☉	☉
System Maintenance Cost	Only Test Laboratory Workers		-	-
Daily Food Cost	Only L1 Employees	-	-	-
Type 2 Driver's License	Only Drivers	-	-	-
Provident Fund	☉	☉	☉	☉

Table Showing Ratios of Wages and Remuneration

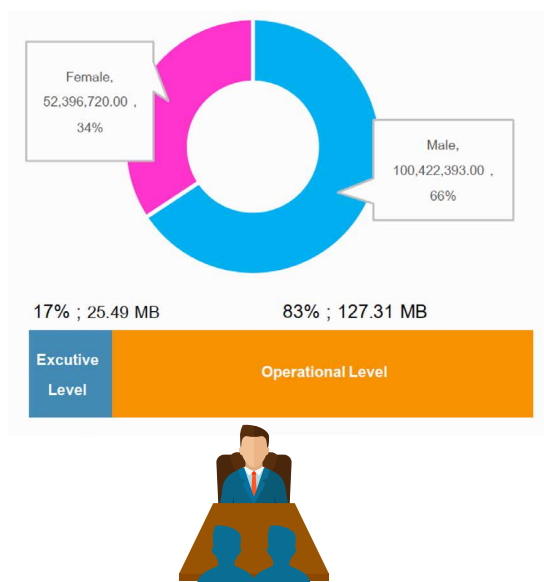
Employment Conditions as of 31 December	QTC Energy						QTCGP & Q Solar 1					
	2019		2020		2021		2019		2020		2021	
	Amount (million baht)	Percent	Amount (million baht)	Percent	Amount (million baht)	Percent	Amount (million baht)	Percent	Amount (million baht)	Percent	Amount (million baht)	Percent
By Gender												
Male	83.79	65.38	90.49	65.34	93.57	65.67	7.48	75.69	6.92	81.58	6.85	66.24
Female	44.36	34.62	48.01	34.66	48.91	34.33	2.41	24.4	1.56	18.42	3.49	33.76
By Level												
Level 9 – UC	43.25	33.75	48.87	35.29	53.37	37.46	-	-	-	-	-	-
Levels 7 – 8	15.73	12.27	13.37	9.65	12.77	8.96	-	-	-	-	-	-
Levels 1 – 6	69.18	53.98	76.26	55.06	76.34	53.58	-	-	-	-	-	-
Total Employees at End of Year (employees)	128.16		138.50		142.48		9.89		8.48		10.34	

Table of Wages for Executives and Employees

Year of Payment	Executives and Managing Directors in Subsidiaries		Employees	
	Amount (million)	Percent	Amount (million)	Percent
2019	17,971,960.00	13.02	120,078,354.00	86.98
2020	20,574,754.00	14.00	126,402,882.00	86.00
2021	25,499,952.00	16.69	127,319,161.00	83.31

Remarks: These wages and remunerations do not include other privileges provided by the Company such as training and development costs, support for activities or recreation, etc., and other expenses paid by the Company to employees in compliance with the law.

Graph of Wage Ratios in 2021



Payment of Wages: Wages are paid once per month on the last work day of the month by making transfers into employee bank accounts.

Table of Minimum Wage by Organization Location

Organization Location	Minimum Starting Wage (not including other benefits)	Minimum Wage Prescribed by Law
Bangkok Office (monthly)	10,050 baht/month	9,930 baht/month
Rayong Factory, Q Solar 1 Power Plant (monthly)	10,050 baht/month 10,050 baht/month	10,050 baht/month 9,720 baht/month
Q Solar 1 Power Plant (monthly)	330 baht/day	324 baht/day

Human Rights

The Company made the human rights policy as a practice guideline and strictly supports human rights practices in the organization through specified principles and activities to give every employee awareness of legal rights and mutual respect. The Company allows employees to express opinions or organize under rules specified by law. Human rights performance in the organization is measured from complaints or disputes concerning violation of employee human rights.

Concerning human rights work in the value chain, the Company made this issue part of ethics and the QTC Supplier Code of Conduct along with assessing suppliers annually. The Company has not performed human rights due diligence (HRDD) under the UN Guiding Principles on Business and Human Rights. In 2021, the Company reviewed the human rights policy for the first time according to Board of Directors Resolution from Meeting No. 9/64 on 16 December 2021 and the Company plans to systematically perform human rights due diligence (HRDD) to meet international standards in 2022.

Human Rights Policy: https://qtc-energy.com/th/human_right-policy/

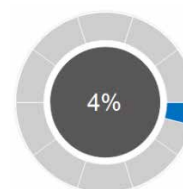
Benefits Committee

The Company created an elected Benefits Committee with the role and duty of representing employees of the Company and all subsidiaries in order to present opinions for improving environments, public utilities and benefits specified by law to the Company. Employee representatives (Human Resources Division) participated in meetings on a quarterly basis. If the work of the Benefits Committee was approved by the Executive Committee and the Board of Directors, effects will cover every subsidiary. The current Benefits Committee has a term of two years (2021 – 2022) and consists of the following persons:

Benefits Committee					
Rayong-Prachinburi Factory			Bangkok Prachinburi Main Office		
First Name – Last Name	Representative of	Position	First Name – Last Name	Representative of	Position
1. Mr. Poonpon Sutacha	Production Dept.	Chairman	6. Miss Emika Suratonkoset	Marketing Strategy Section	Chairwoman
2. Mr. Tinpattara Laiprakone	QA Dept.	Committee Member	7. Miss Oratai Yasan	Sales Support Section	Committee Member
3. Mr. Subanpot Marapan	Production Dept.	Committee Member	8. Miss Pattaranit Makpoonponsrikun	Accounting & Finance Dept.	Committee Member
4. Mr. Watcharin Pansiri	Production Dept.	Committee Member	9. Mr. Poomarin Jongtiratam	Customer Service Div.	Committee Member
5. Mr. Pongkawe Naopotong	Production Dept.	Committee Member/ Secretary	10. Miss Chanisa Boonprasert	Solar Business Dept.	Committee Member
			11. Miss Sawitree Nakjan	Investor Relations Section	Committee Member/ Secretary

Ratio of Benefits Committee to All Employees Including Every Subsidiary

1 : 25 Employees



In 2021, the Benefits Committee surveyed employee opinions and selected significant issues of employees to present to executives via the Employer's representative regarding consideration to adjust travel benefits from 500 baht to 800 baht due to higher fuel costs. On this issue, the Board of Executives accepted to consider and objected to the proposal in addition to explaining to the Committee via the Employer's representative that the travel benefit of 500 baht/month is suitable for current conditions and an additional aid separate from wages not connected to constantly changing oil prices.

“The Mothers’ Corner Project”

The Company continues to support mothers to use “mothers’ corners” to allow mothers to use breast pump services and refrigerate breast milk for infants to allow infants to receive mothers’ milk for as long as possible. This connects infants’ opportunity for good and quality upbringing (mothers can ask supervisors to use services at any time to pump breast milk). Services are provided from 8:30 a.m. – 4:30 p.m. of every business day. In addition, the Company arranges for nurses to provide key information regarding lactogenesis and childcare.

Table of Female Employees Who Took Maternity Leave

Year	2019		2020		2021	
	QTC	QTCGP&Q Solar1	QTC	QTCGP&Q Solar1	QTC	QTCGP&Q Solar1
Employees Who Took Maternity Leave (employees)	8	-	5	-	3	-
Employees Who Returned to Work (employees)	7 (1 employee took leave including in 2020)	-	4 (1 employee took leave including in 2021)	-	4	-

Remarks: The employee who took leave in 2020-2021 returned to work in 2021.



First Time Mothers and Consultation with Factory Nurses

QTC's Nephews & Nieces in 2020



Tiu Tiu, Mother Om's Child



Pop, Father Boom's Son



Tangtang, Took's Daughter

Scholarship Project for Employees’ Children

In 2021, the Benefits Committee considered 65 scholarship applications for employees’ children according to specified conditions. Scholarships are divided into the following three levels:

1 Preschool	12 Scholarships	@1,000 baht	12,000 baht
2 Primary Education:	37 Scholarships	@1,500 baht	55,500 baht
3 Secondary Education	16 Scholarships	@2,000 baht	32,000 baht
Total			99,500 baht



Human Rights Due Diligence (HRDD)

In 2021, the Company did not begin human rights due diligence (HRDD) according to the UN Guiding Principles on Business and Human Rights due to barriers preventing actions in 2021. However, the Company made plans to perform human rights due diligence in 2022. The Company also continues to evaluate suppliers for human rights within QTC's contexts in order to support QTC's suppliers to comply with basic human rights according to the Company's policy.

Complaint Channel

- Every employee can complain or report incidents to the Human Resources Department or high ranking executives when employees have not been treated fairly or were treated unfairly or when personal rights have been violated through complaint channels specified in Section 7 of the Employee Manual on Complaints and Complaint Consideration. If employees have concerns that employees will not receive justice, employees can report complaints to the Audit Committee directly via another channel.
- Outside individuals or stakeholders may make complaints or demands directly to the Board of Audit.

Channels for Reporting Clues or Complaints

Board of Audit

QTC Energy Public Company Limited

2/2 Soi Krungthep Kritha 8,
Intersection 5
Krungthep Kritha Road,
Hua Mak, Bang Kapi
Bangkok, 10240

audit@qtc-energy.com

<https://qtc-energy.com/th/complaint-suggestion/>

"Reporting Clues or Complaints"

Performance Measurement

	2019	2020	2021
Wage and Salary Management Zero employee complaints about unfair wages and returns.	0	0	0
Employee Rights Zero employee complaints about violations of personal rights by supervisors or colleagues.	0	0	0
Human Rights in the Value Chain Zero suppliers who fail to meet human rights and QTC Supplier Code of Conduct assessment criteria.	2	0	0

Human Capital Development & Employee Care



People are the organization's capital that can create added value. People are the organization's intangible assets and an asset for the organization with no depreciation. Therefore, people are a vital factor in pushing the organization to achieve success and goals, depending on the organization's ability to use knowledge, capabilities, skills or expertise including experience of each member in the organization. An organization with people who have diverse abilities that can combine that diversity to create capacity for the organization will have capabilities and advantage over competitors because people are the organization's important human capital.

An organization that has capable and talented people able to create advantage over competitors is difficult to create and takes time to develop. However, it is more difficult to retain talent in the organization because every organization is recruiting talented and capable people in the labor market to drive work and achieve organization goals. This labor competition creates risks for organizations which invested in developing talent but were unable to retain talent. Therefore, in addition to developing talent and ability, providing care, attention, seeing human value and supporting people to be good and generous with others while having a volunteer mind will create talented and good people attachment to the organization considered as the highest profit of that organization.

One of QTC's five main missions is to develop human capital, create good and talented people. This is a challenge for the organization to use human capital with significant capacity for business competition and a risk for the organization from potential loss of human capital due to current labor competition. Therefore, the Company's directors and executives place importance on developing good and talented human capital at the same time, causing every member of the organization to see QTC as a second home and be ready to grow together with sustainability.

Objective: 1. To build the organization's competitive capacity with human capital.
2. To create organization happiness for the organization to become strong and for employees to have good life balance.

Management: Human resource management policy, human rights policy, organization happiness policy and driving the organization with Happy Workplace: Happy 8 + 1.

Goal 1: Increase personal ability and reduce GAP in the entire organization by 50 percent per year.

Result: In 2021, the Company achieved 50.09 percent of the goal. The Company achieved this goal.

Goal 2: Create at least five significant KM issues for the organization with employee participation.

Result: In 2021, the Company achieved eight issues. The Company achieved the goal.

Goal 3: Resignation rate lower than 20 percent.

Result: In 2021, the Company had a resignation rate of 19.69 percent. The Company achieved the goal.

Goal 4: Happiness among organization members is higher than 75 percent.

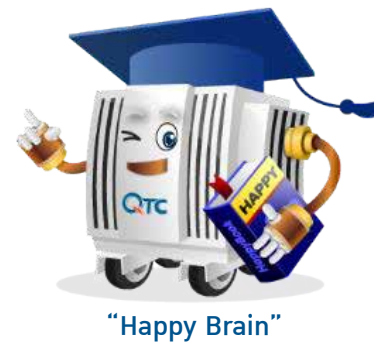
Result: In 2021, employee happiness was at 61.50 percent. The Company did not achieve the goal.

Goal 5: Attachment to the organization higher than 80 percent.

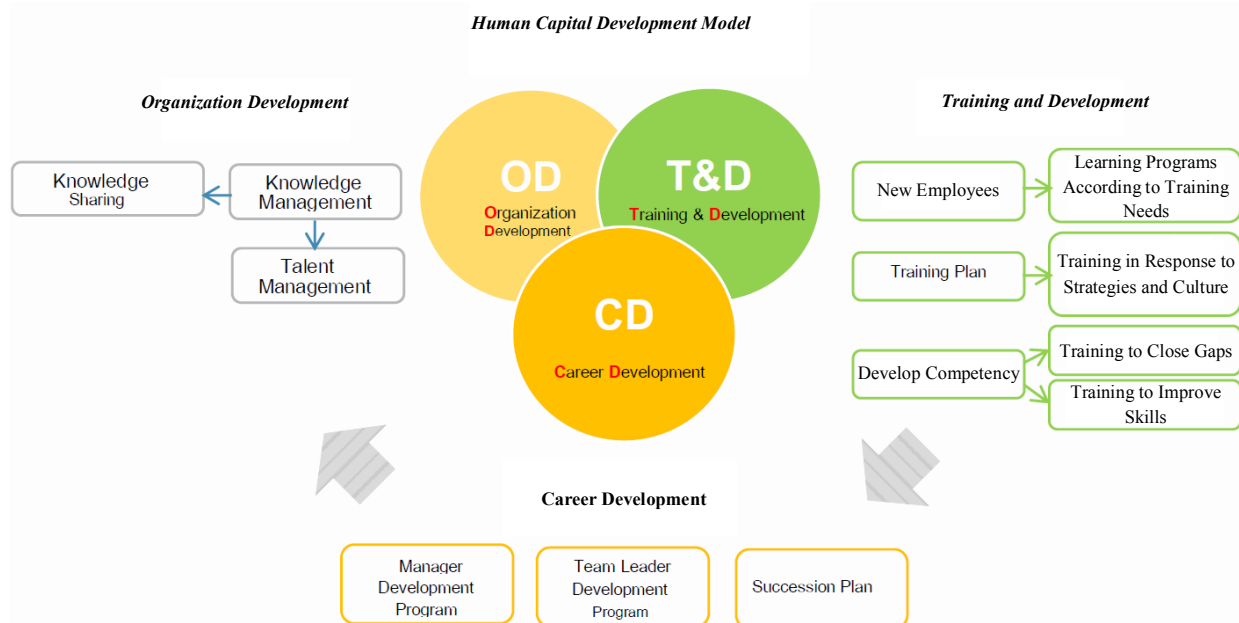
Result: In 2021, scores for attachment to the organization were at 58 percent. The Company did not achieve the goal.

Human Capital Development

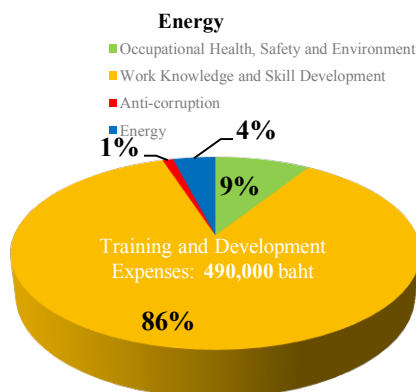
Thinking inside the box without changing ways of thinking and without practicing necessary skills is a barrier to self-improvement.



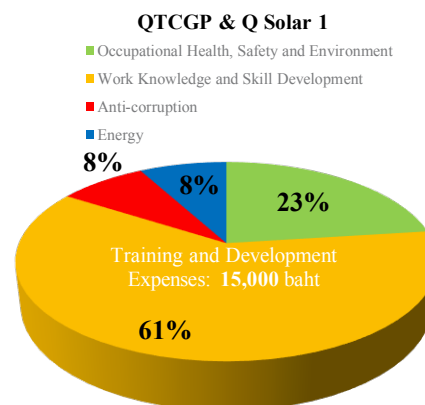
The Company places importance on and is committed to improving employee skills, knowledge and abilities according to the sustainability equation of $Q + R = S$ by applying the strategy of improving people comprehensively to create good and talented people in order to improve employee abilities to be consistent with the organization's core abilities and systematically combine the organization's knowledge in order to learn at all times. In 2021, the Company planned human capital development to drive the organization in the following three areas: training and development/ career development/organization development in the model below:



Graph of QTC Training Topic Ratios



Graph of Training Topic Ratios



Statistics on Training Hours

Employee Status	Hours/Person/Year											
	QTC Energy						QTCGP & Q Solar 1					
	2019		2020		2021		2019		2020		2021	
By Level	Total Training Hours	Average/ Person/Year	Total Training Hours	Average/ Person/Year	Total Training Hours	Average/ Person/Year	Total Training Hours	Average/ Person/Year	Total Training Hours	Average/ Person/Year	Total Training Hours	Average/ Person/Year
L9-UC	2,829.50	104.8	1,260	45.96	647		-	-	-	-	36.00	12
L7-L8	2,628.50	131.43	1,264	63.73	373		-	-	-	-	-	-
L1-L6	9,150.00	36.17	5,606	26.29	2,354		-	-	-	-	642.00	30.57
By Gender												
Male	10,410.50	61.97	5,749.50	32.62	2,233		337	15.32	700	35	444	23.37
Female	4,197.50	49.38	2,380.50	28.26	1,141		87	10.88	120	17.14	234	46.80
Total Training Hours for the Year (hours)	14,608		8,130		3,374		424		820		678	
Average Employees per Year (employees)	253		261		254		30		27		24	

In 2021, the number of training hours And training costs have dropped from every year in the past due to the epidemic situation of Covid-19. Some courses that are planned for development and those that require Face to Face training have to be postponed for safety reasons. Most of the courses developed in 2021 are in-house organized by in-house experts and are online, thus reducing training costs.

Individual Development Plan

From training in the Leadership Development Program in the project to make a succession plan in 2019, HRD prepared a course for improving executive skills at the manager level and up in order to have management skills in the Management Development Program in 2020-2021. HRD remains unable to prepare the aforementioned course due to the ongoing COVID-19 pandemic. In addition, government measures were enacted to reduce gatherings and activities in order to prevent outbreaks of disease. The Company rescheduled the Management Development Program until the situation with the disease has improved. In 2021, the Company carried out training according to the annual training plan via the LINE channel and when face-to-face instruction can be provided for a limited number of trainees. The Company provided training according to strict measures in order to prevent outbreaks. Training courses were provided in the Company and employees were sent to be trained online outside the Company in courses aimed at creating leaders who have vision and strategy, leaders and leadership, HR for non-HR, structured problem-solving, data protection PDPA & Beyond, comprehensive assessment of human risks and manpower planning, etc.



Training & Development

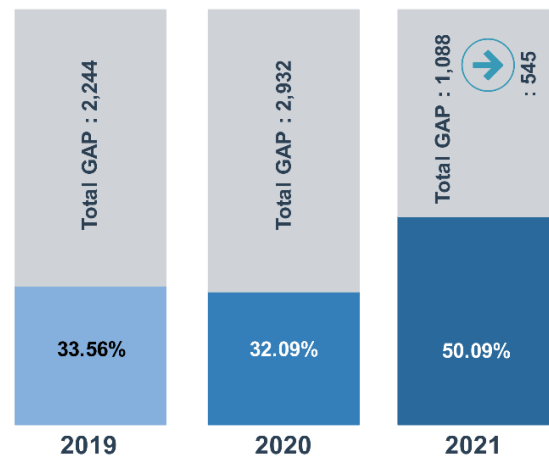
Improve Knowledge & ^ Skills to Reduce GAP

The Company is committed to developing personnel in the area of hard and soft skills (Knowledge, Attitude, Behavior) by having supervisors and HRD assess with the Skill Matrix Chart and using GAP to provide knowledge, training and develop employees to increase competency, product quality, punctual delivery and employee quality of life.

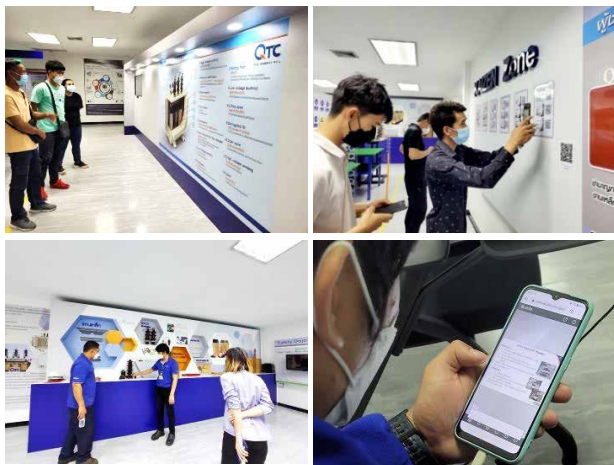
The COVID-19 situation affected the Company's personnel development, causing the Human Resources Department to develop employee learning systems from technology in the organization, the Company prepared online courses for new employees and stores data on conveniently accessible share points. Content and knowledge remain consistent with training needs and employees are tested for understanding after learning.

To improve access to production information, the organization's knowledge in the areas of quality, safety, environment, KAIZEN improves employee knowledge in production, driving the organization and being a source of information for interested visitors. Therefore, the Company created the knowledge room to make the aforementioned activities have the highest effectiveness. In 2021, employee skill development results to reduce gaps from 2020 had differences in gap ability according to goals at 50.09 percent.

The Skill Matrix Chart is a grid used for assessing employee performance. It lists various skills and competencies on the vertical axis and individual employees on the horizontal axis. Each cell in the grid contains a colored dot representing the employee's proficiency level in that specific skill. A legend at the bottom explains the color coding: Green for 'Sangat Baik' (Very Good), Yellow for 'Baik' (Good), Orange for 'Cukup' (Fair), and Red for 'Kurang' (Poor).



New Employee Learning According to Training Needs



Online & Class Room In-house Training



Leadership Skill Development (Talent Management)

The Company selects personnel with knowledge, capabilities and good performance to enter the personnel development process. The Company aims to create good talented people to support career path growth. In 2021, the following two employees met the criteria and accepted self-improvements to become group leaders in order to replace personnel in important positions in the future:

1. Mr. Wichain Tawongjai, an L3 employee, Acting Head of Transportation with a work life of 17 years.
2. Miss Nipaporn Sookjarern, an L6 senior officer, Acting Warehouse and Transportation Manager with a work life of seven years.



Images of Specific Leaders Skill Training of Selected Individuals

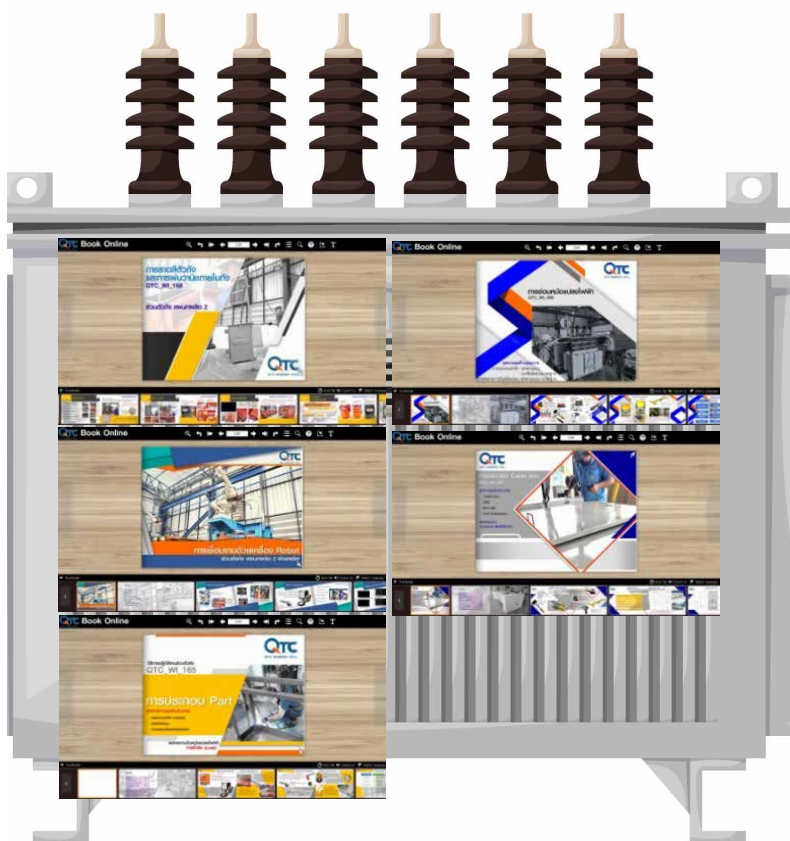
Knowledge Sharing (Labor development in the education sector)

The Company places importance on developing the Company's personnel and stakeholders by accepting vocational students to train with the Company in order to gain experience, improve skills and knowledge of work systems, tools, machines, equipment and technology in the Company in order practice industrial discipline, make preparations and boost capabilities of skilled workers. In 2021, the Company accepted four students to train in work consistent with courses in various subjects under the care of the Company. Mentors advise students about work knowledge, techniques and provide safety in the organization throughout training and every student receives 200 baht/day as wages. The subjects accepted by the Company for job training consist of:

- Industrial and Logistics Business Administration
- Measuring and Controlled Engineering
- Accounting
- Mechanical Technique



Students in Job Training in the Company



QTC KM

Knowledge Management

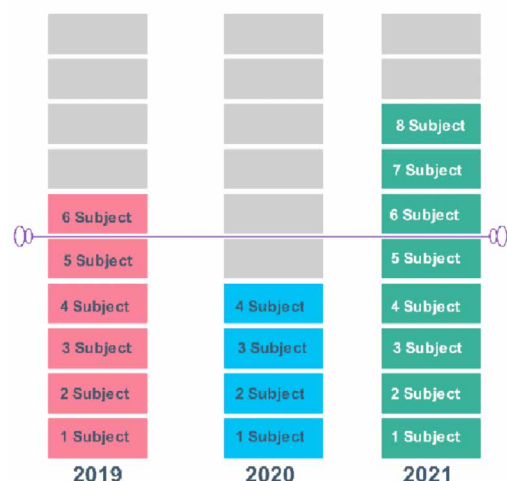


To transfer personnel's tacit knowledge from experience, talent or instinct to understand topics including work skills to a new generation of personnel and employee learning. Therefore, HRD collected, created and spread the organization's knowledge throughout the organization to build knowledge and use knowledge along with creating a culture of learning in the organization by collecting knowledge in personnel or documents to develop systems in order to provide every person in the organization with access to knowledge and self-improvement by using knowledge in work to create efficiency.

In 2021, QTC's KM was gathered on the Cloud and access is granted to only the Company's employees. QTC's KM can be learned in any place at any time. However, that data cannot be downloaded or shared. The Company has prepared five more KMs on production techniques and three more KMs in the area of management system standards.

Prepare and Compile the Organizations KM

Goal: 5 Topics per Year



Employee Care

The Company is aware that employees are an important resource in driving the organization toward goals, paying attention to work and creating happiness in employees' lives. The Company has an important mission to provide support in the area of personnel, time and necessary resources under the happy workplace policy at <https://qtc-energy.com/th/happy-workplace-policy/>. The Company moves projects to provide knowledge and understanding through supporting activities as appropriate choices for each person. The Company's goal is to create sustainable happiness and work-life balance including attachment to the organization and lower resignation rates.

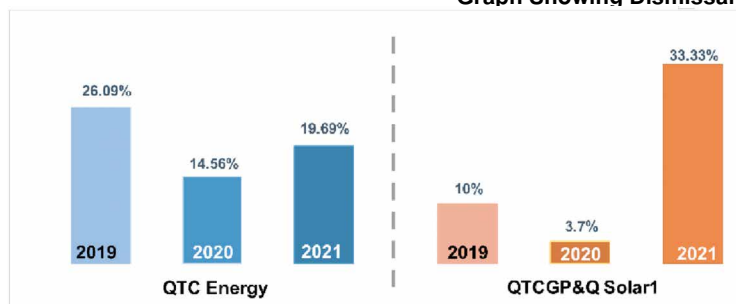


"Happy Work Life"

Table Showing Ratios of New Entries and Dismissals

Item	QTC Energy						QTCGP & Q Solar 1					
	2019		2020		2021		2019		2020		2021	
	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent
No. of Employees at End of Year	253		261		254		30		27		24	
New Employees												
Male	81	92.05	21	84	45	79	4	80	-	-	-	-
Female	7	7.95	4	16	12	21	1	20	-	-	1	100
New Employees												
18-35 years old	79	89.77	21	84	52	91	3	60	-	-	1	100
36-50 years old	9	10.23	4	16	5	9	1	20	-	-	-	-
50-60 years old	-	-	-	-	-	-	1	20	-	-	-	-
> 60 years old (Retired)	-	-	-	-	-	-	1	20	-	-	-	-
Dismissed Employees by Gender												
Male	59	89.39	34	89.47	36	72	2	66.67	1	100	6	75
Female	7	10.61	4	10.53	14	28	1	33.33	-	-	2	25
Dismissed Employees by Age												
18-35 years old	60	90.91	32	84.21	42	84	2	66.67	1	100	3	37.50
36-50 years old	6	9.09	6	15.79	8	16	1	33.33	-	-	1	12.50
50-60 years old	-	-	-	-	-	-	-	-	-	-	4	50
> 60 years old (Retired)	-	-	-	-	-	-	-	-	-	-	-	-
Average Dismissed Employees per Year (employees)	26.09		14.56		19.69		10.00		3.70		33.33	

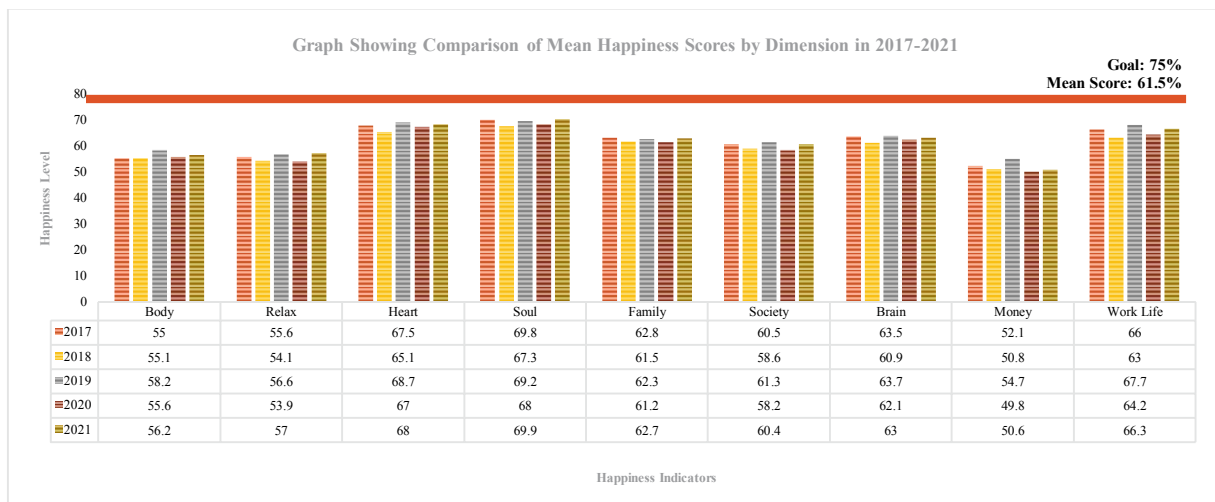
Graph Showing Dismissal Ratio



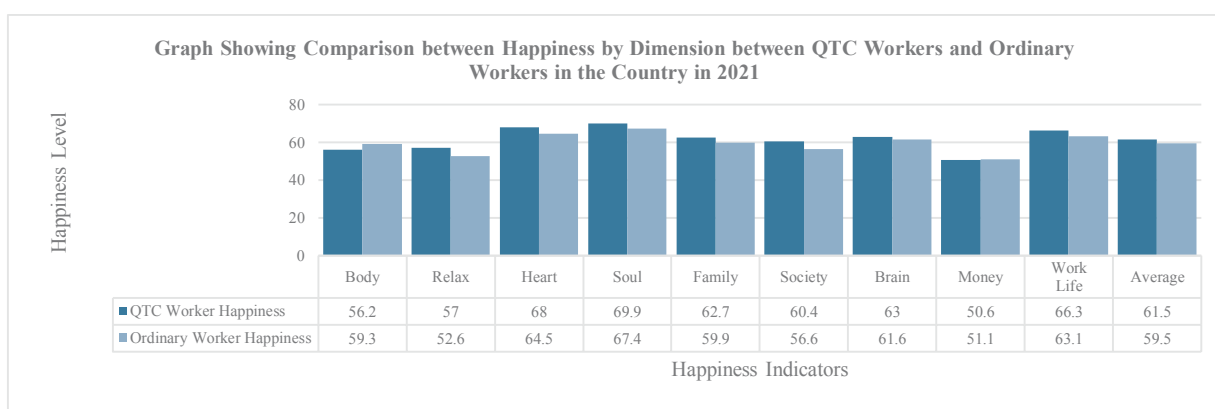
In 2021, old resignation rates were modified to be an average per year according to international principles and resignation goals were changed to be no more than 20 percent per year. In 2021, Q Solar 1 did not achieve the goal due to restructuring to be suitable for economic conditions. Employees consented to resign and asked to receive a settlement from the Company

Happiness in the Organization

The Company measured happiness of QTC Energy employees continually since 2016 by using the Happinometer. In 2021, a survey was conducted in February 2021 with 137 respondents out of 254 employees and data was sent to the Thailand Centre for Happy Worker Studies, the Institute for Population and Social Research, Mahidol University, in order to study and determine happiness in various dimensions with preparing detailed summary reports as follows:



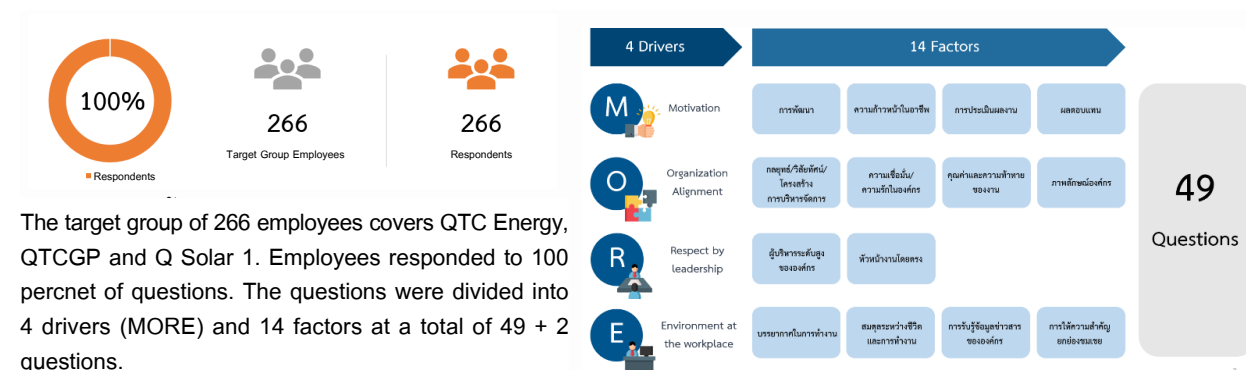
Results from surveying overall employee happiness among 253 employees (only QTC Energy) showed employee happiness to be at an average of 61.5 percent, which met the criteria for Happy. This was a slight improvement from 2020 without achieving the goal of 75 percent. In 2021, the Company asked a worker's happiness research center to compare QTC happiness levels with the national average in order to learn about statuses and chances for improvement in various areas. Comparison results are as follows:



From the graph, average happiness among QTC workers represented by 137 employees was slightly higher than the national average by 3.36 percent. In different dimensions, Happy Body among QTC workers was lower than the national average by 5.23 percent. The Company is supporting the QTC Fun & Fit project to improve employee health by quitting drinking, smoking and supporting exercise. However, on this matter, the Company understands that this is a personal right for employees to follow advice.

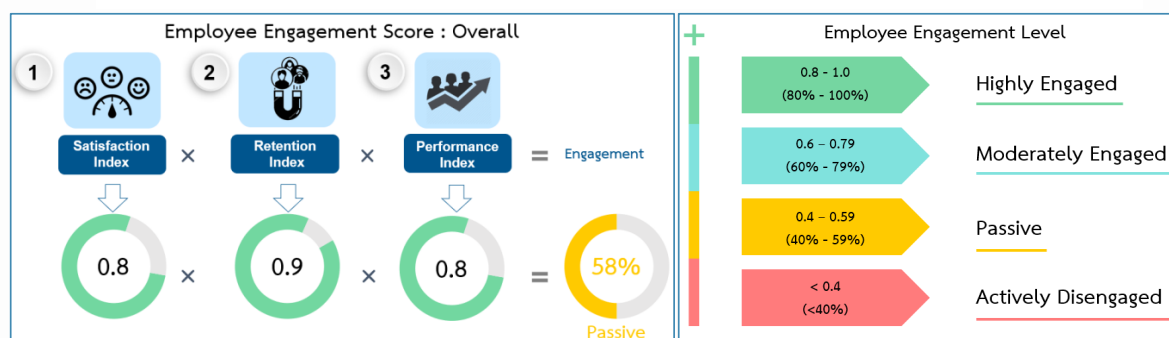
Employee Attachment to the Organization

In 2021, the Company changed the method for surveying employee attachment to the organization. In the past, the Company used extended instruments of the Happinometer and sent data to be analyzed by the Thailand Centre for Happy Worker Studies, the Institute for Population and Social Research, Mahidol University. The Company has hired Human Achievement Services Co., Ltd. to design applications and survey employee attachment to the organization by comparing international questions in similar business group. The aforementioned application will be the copyright QTC. Operating expenses were at 300,000 baht. Results from surveying employee attachment to the organization in 2021 were as follows:



The target group of 266 employees covers QTC Energy, QTCGP and Q Solar 1. Employees responded to 100 percent of questions. The questions were divided into 4 drivers (MORE) and 14 factors at a total of 49 + 2 questions.

Summary of Results from Assessing Overall Attachment in the Organization



From the images summarizing results from assessing overall attachment, overall attachment in all three areas was satisfactory. However, when all three numbers were calculated to determine attachment, an attachment score of 0.5 points or 58 percent was acquired or passive attachment **did not achieve the goal of 80 percent**. From the assessment, the Company found five issues that are opportunities for correction.

1. Remuneration
2. Career Progress
3. Importance and Praise
4. Assessment
5. Factors directly connected to supervisors.

The Company will use the issues found to make improvements according to appropriate guidelines at the personal level and the leader level including management systems in order to improve and develop the organization's management to be at an international level accepted by employees and stakeholders.

Organization Happiness Support Activities

The Company continues to promote activities to support employees in having positive attitude toward employees, colleagues, the organization and society. Most activities were activities in projects continuing from the previous year for consistency and sustainability.

“Happy Money, Good Living, No Debts, No Poverty” Project

The Company continues to support the Company’s employees to eat with sufficiency and spend free time usefully to create value. In 2021, gatherings to perform any activity were difficult. Therefore, the Company’s employees who lived in factory dormitories used personal time to plant vegetables and shared or sold vegetables to fellow employees. This helped to reduce expenses and market trips to buy food. In addition, this is a good option for reducing COVID-19 infection risks in dormitory communities from meeting people in fresh markets.

Images of Vegetable Gardens Planted by Employees at QTC Dormitories



Morals & Ethics Promotion Activities in 2021

The Company continues to place importance on and promote moral and ethical actions among employees in order for employees to be good, responsible to themselves and surrounding persons through the following activities:

*“Be good, think well, do well.
Concentrate at work and manage
the problems that come your way.”*
Happy Soul



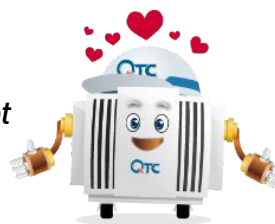
Images of Dry Offerings in the New Normal Involving
Monks and Employees in 2021

29 December 2021

Photograph Competition to Support the Family 2021

*“Don’t care for others more than family.
Don’t indulge yourself to the point that you forget
the importance of family.”*

“Happy Family”



Award Winner of 2021



**Happy Family in the New Normal”
Ms. Sawitree Nakjan**



**“I Love My Mother the Most Because
My Mother is the Most of My Love”
Mr. Ekkachai Siphewan**



**“I Love My Father the Most Because My
Father is the Most of My Love”
Mr. Ekkachai Siphewan**

Employee Value Promotion 2021

In 2021, the Company awarded certificates to employees who worked for twenty years and employees who worked for ten years. Certificates were awarded to employees without a formal ceremony due to the COVID-19 pandemic. The following persons received awards:

No	First Last Name	Position	Level	Award	No	First-Last Name	Position	Level	Award
1	Miss Nitiya Kreemuenwai	Production Support Officer	4	20 years	9	Mr. Pinit Tongbo	Head of Service	7	10 years
2	Mr. Kanchit Soyong	Coiling Employee	3	20 years	10	Miss Patcharaporn Waewneramit	Senior Head of Design	8	10 years
3	Mr. Manat Panpama	Steel Core Employee	2	20 years	11	Miss Pakanat Tangtrakoon	Company Secretary	11	10 years
4	Miss Waorot Wongprajim	Steel Core Employee	2	10 years	12	Mr. Chatchai Sang-apai	Steel Core Employee	2	10 years
5	Miss Kwanyuen Imsa-ad	Assembly Employee	1	10 years	13	Mr. Wichai Homchai	Senior Service Department Manager	10	10 years
6	Mr. Pongkawe Naopotong	Transformer Repair Employee	3	10 years	14	Mr. Kong Suta Matrasing	Q Solar 1 Senior Technician	3	10 years
7	Miss Warattaya Cawianghong	Planner	5	10 years	15	Mr. Pituckchai Jantasit	Q Solar 1 Engineering Department Engineer	9	10 years
8	Mr. Prawit Lertsri	Service Technician	3	10 years	16	Mr. Naka Kamkong	Senior Head of Testing	8	20 years

Recreation Activities in 2020

Annual Vacation

Due to the COVID-19 pandemic in 2021, the Company canceled activities with gatherings of many people and offsite activities to prevent COVID-19 infections among employees. The activities impacted were annual tours, vacations, New Year’s Eve and New Year’s Day activities.

*The quantity of happiness is not dependent on the
good things we get but on how we see those things.*

“Happy Relax”



Corporate Social Responsibility



Having love and unity, following rules and being generous with colleagues, community and society starts with us.



"Happy Society"

In the past, most capitalist businesses were understood to work for profit without concern for social and environmental impacts with larger businesses causing greater impacts such as use of natural resources for production without concern for impacts on community members who share resources, causing community members to not accept and resist businesses, which may ultimately cause businesses to close. Currently, corporate social responsibility (CSR) plays major role in determining short-term and long-term business strategies in order to create sustainability for organizations, people in society and the environment as an expression of responsibility for direct or indirect impacts from business operations on society, communities and the environment. Corporate social responsibility may require investments in the short term and may give returns to the organization in other forms such as acceptance and support from communities, resulting in a license to operate. If an organization can cooperate with the community to develop the organization and communities, including the environment, to grow with responsibility, the organization will gain a license to grow. Therefore, CSR or corporate social responsibility is important in creating sustainability for the organization.

QTC recognizes the importance of corporate social responsibility because the Company believes corporate social responsibility is not only an expression to create a good image for product brands or the Company, but a real effort beginning with CSR in process and expanding into CSR after process by appropriately applying ISO26000 standard practice guidelines to the contexts of QTC and every subsidiary. The Company prepared corporate social responsibility personnel and allocated operating budgets with appropriate approval from the Board of Directors. The Company uses the strategy to build trust from stakeholders to ensure that every business process of the Company that causes social and environmental impacts is controlled and modified to reduce impacts as much as possible along with building participation in developing communities and the environment in every area based on capabilities of the organization and personnel by prioritizing participation in community development and social investment to create sustainability.

Objective:	To gain trust and support from stakeholders in communities where the Company or subsidiaries are located.
Management:	ISO26000 corporate social responsibility standards, ISO14001 environment management standards, sustainable development policy, the Corporate Sustainability and Risk Management Committee and "Communities Meet QTC" activities.
Goal 1:	Zero complaints from communities due to impacts from business operations of the Company or subsidiaries.
Result:	In 2021, the Company had no complaints from communities or society.
Goal 2:	At least one community development project for public benefit per year.
Result:	In 2021, no community development projects for public benefit were launched. The Company did not achieve the goal.
Goal 3:	Approval in public hearings from stakeholders in communities in cases with need for transparent public hearings in compliance with the law.
Result:	In 2021, the Company and every subsidiary had no need to hold public hearings.

QTC Meets Communities

In 2021, the Company canceled the Communities Meet QTC activity because of the COVID-19 pandemic and to prevent COVID-19 outbreaks. Therefore, the Company canceled activities with large gatherings in the Company and every subsidiary. Activities in projects discussed with stakeholders in the community were not carried out. The projects consisted of:

1. The project to build organic vegetable cultivation structures in schools.
2. The project to organize science camp activities to create learning and access to scientific technology for students in communities.

The first project was carried out in one school in 2020. In 2021, neither project was carried out. However, the Company will return to carry out the project once the situation returns to normal.



Participation in Community Development

Quality of Life Promotion and Development Project for Thai Disabled Persons

In 2021, the Company participated in the Quality of Life Promotion and Development Project for Thai Disabled Persons by providing vocational training in the animal husbandry course (egg chickens) and providing egg chickens and structures for three disabled persons. The Company spent 342,735 baht to provide vocational education. Project operations were under the responsibility of the Thai Chamber of Commerce. Financial support was allocated to two parts consisting of: (1) financial support for disabled persons: 94 percent for practical training allowances, theory training fees and capital for raising egg chickens; (2) financial support for the project operator: 6 percent for activity expenses such as coordination costs, follow-up costs and meeting costs, etc. Project performance in 2021 was as follows:

In June 2021, lecturers from educational institutes and the Provincial Livestock Office imparted knowledge and skills in raising egg chickens to disabled persons in July and September 2021. Disabled persons trained with expert lecturers in Sa Kaeo from the Office of Social Development and Human Security, the Office of Labor Protection and Welfare, the Cooperatives Auditing Office, on the following topics:

1. Rights, benefits and access to services for disabled persons.
2. Work safety.
3. Civil registration.

Items Received by Disabled Persons from Occupational Capital per Person (not including allowances for practical and theory training fees)

Item	Unit	Qty.	Price/Unit	Total
Egg Chickens Aged 18 Weeks	Chickens	50	250	12,500
Chicken Feed	Sacks	25	500	12,500
Chicken House Material and Equipment Costs				12,000
Total				37,000

Summary of Disabled Persons under the Responsibility of QTC Energy Public Company Limited:

Disabled Persons in Sa Kaeo

No	First-Last Name	Age	Disability	Income before the Project (per month)	Extra Income from Egg Sales (per month)
1	Mr. Chansin Palahan 	53	Mobility	Disabled Person's Allowance: 800	Month 1 – Chickens begin to lay eggs to be picked every day. Month 2 – The chicken farmer has approximately 1,500 baht of income from selling eggs.
2	Mrs. Piang Lomriang 	69	Psychological or behavioral disability.	Disabled Person's Allowance: 800 baht Senior Citizen's Allowance: 600 baht	Months 3-18 – The chicken farmer will have approximately 3,000 baht from selling eggs in each month. Month 19 – Chicken farmers begin to sell chickens because the amount of eggs laid is not worth the cost of fee. Chickens are sold at a price of 70 baht per chicken.
3	Mr. Chaianuchid Donyasit 	44	Psychological or behavioral disability.	Disabled Person's Allowance: 800 baht	Disabled persons can improve knowledge for future occupations.

The Company visited the project and met with disabled persons who joined the project on 9 December 2021 at Ban Tap Mai Tambon Health Promotion Hospital, Non Mak Seng, Sa Kaeo.



Image of Visits to the Project on 9 December 2021

Procurement Projects to Support Disabled Persons

- **Wheelchair Home (A Disabled Person's Business)**

This project is an ongoing project from discussions in 2017. The Company continued to support goods from disabled persons in the Wheelchair Home community by purchasing products from the group such as cleaning fabrics. In 2021, the Company purchased goods weighing 2,600 kg. and valued at 46,800 baht.



- **Minburi Rehabilitation Center for Special Children**

The Company coordinated with the Ku Pai Rom Sai Foundation to order salted egg products from parents of children with autism at the Minburi Rehabilitation for Special Children by directing deliveries to be made throughout the year. Friends gave salted eggs as gifts for employees in the birth month. In 2021, 283 sets were purchased for a total value of 28,300 baht.



The Project Delivers Transformers for Public Benefit

Transformers that are the main product of the Company are delivered for public benefit. The target organizations consisted of schools, hospitals and temples close to the Company's location and in remote areas. In each year, organizations submit requests for transformers and the agency responsible for society would check facts in the area based on necessity according to criteria specified by the Company and present to the Board of Executives for consideration of approval. The Company's goal is to deliver no more than one transformer per year. In 2021, Ban Huay Prab School was selected as a community school with a new building and more education technology to support students from the population in the area, which had insufficient electricity. The Company gave a 250 kVA 3Ph 50 Hz Dyn11,22000-416/240V S/N 64310493 transformer valued at 184,347.43 baht to Ban Huay Prab School on 2 April 2021 to benefit education in the future.



Image of Transformer Delivery on 2 April 2021

Project to Build a Playground for a School

Q Solar 1 allocated a budget to support promotion of quality of life in childhood among preschool and primary education students in communities where power plants are located by building playgrounds with instruments that meet safety standards and are necessary for development under a budget of 100,000 baht per year. In 2021, a playground was delivered to Bo Thong Wittaya School as the second school in the project on 22 December 2021.



Delivery of a Second Playground on 22 December 2021

Social Investment

Regarding investments for society, in 2021, no actions were taken due to the COVID-19 pandemic.

Activities for Society Wheelchair Donations

The Company donated five wheelchairs valued at 30,000 baht to the Thai Disabled Person's Foundation, which was founded with the objective to promote and support activities beneficial to disabled persons throughout the country on 2 April 2021.



Wheelchair Donation on 2 April 2021

Transformer Donation

The Company donated one 30 kVA 3Phase 22kv transformer valued at 57,312.05 baht on 20 December 2021 to the Faculty of Electrical Engineering, Bangkok University of Technology, to be used as an educational media and to allow students to learn about and come into contact with transformers outside theory in order to improve students who will become an importance force in the country's future development.



Activities to Support COVID-19 Transmission Prevention in Communities

- The Company supplied 20 gallons of disinfectant valued at 16,000 baht to the Map Yang Porn Tambon Administrative Organization to disinfect communities, temples, schools and fresh markets on 11 January 2021.



- The Company gave 600 bottles of QTC water and 144 bottles of alcohol spray valued at 8,160 baht to Bangkokpi District Office for use in providing COVID-19 vaccination services for the public on 14 May 2021.



- The Company gave 20 gallons of alcohol spray and 240 bottles of water valued at 6,960 baht to Pluak Dang Hospital for use in serving COVID-19 patients on 20 July 2021.



- The Company delivered 400 bottles of water valued at 1,630 baht to Map Yang Porn Tambon Health Promotion Hospital to serve the public who came to be vaccinated against COVID-19 on 2 August 2021.



- The Company delivered 37 fans valued at 10,000 baht to Map Yang Porn Tambon Health Promotion Hospital to be installed at the field hospital in Map Yang Porn to serve people infected with COVID-19 who came to the field hospital on 22 July 2021.



Image of Aid Deliveries via Local Government Agencies

- The Company supplied drinking water and bedding for high-risk COVID-19 contacts at a community quarantine facility to prevent COVID-19 via Bo Thong Tambon Administrative Organization by using a budget of 8,263 baht.



Image of Aid Deliveries via Local Government Agencies

Echoes from Community Representatives



"QTC has always provided good assistance and support for the Mab Yang Ponn Tambon Health Promotion Hospital and the community in every matter, like support for the budget, medicine, pharmaceutical supplies and clean drinking water for people. I would like to thank QTC for this."

*Mr. Anusorn Kiatchananukoon
Director, Mab Yang Ponn Tambon Health Promotion
Hospital*

"QTC was behind the success of the Pratom Indie Band from Ban Huay Prab School in Pluak Dang, Rayong. Our music band became famous and known to the country. Whenever, our Ban Huay Prab School needs support, QTC is always one of the first to give us a hand. Thank you for always supporting the Pratom Indie Band from Ban Huay Prab School for all this time."

*Mr. Anucha Nakmangsang
Teacher, Head of General Administration
Ban Huay Prab School*



About This Report

QTC has been preparing the sustainability report since 2014. This report has been prepared in accordance with the GRI Standards (Core Option), by specifying organization content and data, management guidelines and key sustainability issues in 2021 with coverage of economic, social and environmental performance along with considering association to every stakeholder group under these criteria and reporting scope:

Period of Report	: 1 January 2021 to 31 December 2021
Report Cycle	: Annual
Names of Companies and Subsidiaries:	QTC Energy Public Co., Ltd. QTC Global Power Co., Ltd. Q Solar 1 Co., Ltd.
Report Quality Assurance	: This report's significant contents were reviewed by a team responsible for each issue consisting of high-ranking executives and the report was presented to the Board of Directors for consideration of approval to present information to the public. The Company has no policy for the report and key performance indicators to be certified by external agencies.
Previous Report	: Sustainability Report 2020, QTC Energy Public Co., Ltd. https://qtc-energy.com/wp-content/uploads/2021/04/QTC_SD_Report_2020.pdf
Inquiry	: To inquire for more information or make proposals, contact the Corporate Sustainability Development Department, QTC Energy Public Co., Ltd. Email: sustainability@qtc-energy.com Tel: 038-891-1411-3 ext. 101 or 084-362-8633

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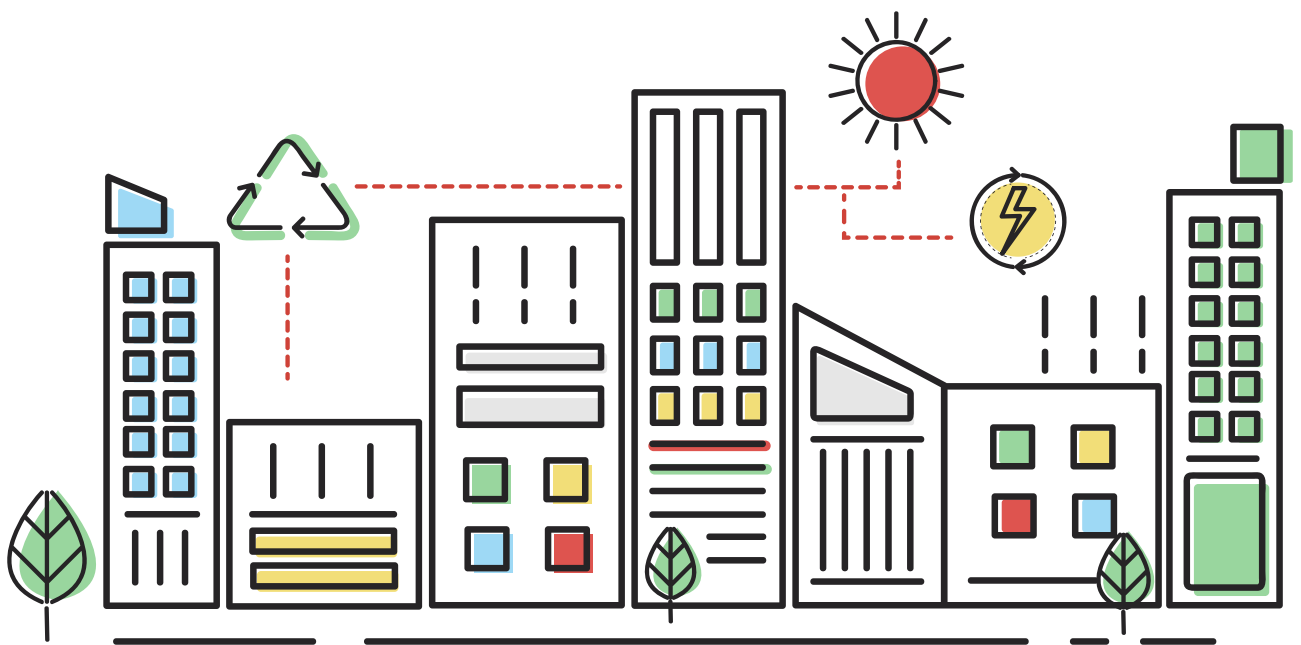
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QUALITY OF DETAILS >>
D - DYNAMICS E - ENVIRONMENT
T - TEAMWORK A - ACHIEVEMENT
I - INNOVATION L - LEADERSHIP S - SERVICE

QTC Energy Public Company Limited

2/2 Soi Krungthep Kritha 8 (5),
Krungthep Kritha Rd., Huamark,
Bangkapi, Bangkok 10240
Tel : 0-2379-3089-92 Fax : 02-379-3097



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