



รายงานความยั่งยืน 2563





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

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# Message from the Chief Executive Officer

#### To all stakeholders,

Since early 2020, the new coronavirus of 2019 or the new COVID-19 pandemic has affected lifestyles. Everyone has had to adapt to live in the New Normal. For their own safety and the people around them, organizations or business facilities have had to change business plans and internal management for survival and the government had to enforce strict quarantine control measures to limit outbreaks. This situation has certainly caused inevitable impact on the economy of Thailand and every country around the world. According to a summary of Thailand's economic figures in 2020 by the NESDC, Thailand's economy receded by more than six percent while the IMF concluded that global economic numbers contracted by more than three percent from 2019.

QTC is another Thai private organization affected by the COVID-19 crisis, which has had effects on the organization's business plans and growth targets. However, with awareness of the pandemic situation and thorough risk management, a special management committee has been appointed immediately to assess risks in the COVID-19 crisis with coverage of business activities along with specifying measures for preventing the spread of the disease and other measures to appropriately mitigate economic and social impacts while creating safety for employees, customers, trade partners and other stakeholders involved in business operations of the Company and companies in the group. The Company continually reviews and modifies business plans for consistency with situations and uses opportunities in crises to create the most benefit for the organization and stakeholders. This has caused performance at the end of 2020 for specific businesses to show an increase in revenue by six percent from 2019 with revenue gains from solar product sales and service income increasing from 2019 by more than 300 percent, compensating for a 5-percent reduction in transformer sales income due to investment slowdowns in infrastructure and construction projects caused by COVID-19, which had effects on QTC customers for domestic and foreign transformer products. At the end of 2020, the Company's net profit for specific businesses increased from 2019 by more than 14 percent. Performance of Q Solar 1 Company Limited in 2020 showed income and net profit slightly less than 2019 because government holidays increased from 2019 in 2020, resulting in less electricity income per unit while electricity generation capacity did not drop significance.

Management in the organization in 2020 was cautious with many changes in procedures to provide safety for personnel and enable business to continue without stopping, causing many new innovations to be created in work processes. Changes to management processes in the COVID-19 crisis cause some of the Company's measures to have effects on customers' rights in performing acceptance inspection of good in test laboratories or potential impact on supplier raw material delivery processes, rights and freedoms or reductions to some employee benefit rights. The Company built understanding with every group affected and received good cooperation from the people involved. However, the Company continues to recognize the importance of personnel development and promotion of practices with environmental, social and governance (ESG) excellence under limitations from the COVID-19 pandemic. The Company modified the anti-corruption policy to be consistent with changes in practice, studied and developed environment management processes to reduce impacts and promote activities to continually create happiness in the organization.

In the area of workplace safety management, an important risk for the Company, the Company had more work-related accidents in 2020 than in 2019. Most accidents were caused by work without caution by employees. Company executives and the Board of Directors continue to place importance on this issue and make policies including guidelines to make safety management processes more effective and better in 2021 while maintaining its goal for zero accidents.

In the area of participation in community development in 2020, some of the projects planned by the Company had to be canceled or delayed for the health safety of every person. However, the Company is aware that the COVID-19 pandemic has effects on the daily lives of people in the country, causing unemployment, loss of income, foot shortages and lack of necessary infection prevention items. Therefore, the Company organized projects to help persons affected by the COVID-19 crisis by distributing 300 sets of bags filled with dry foods, beverages, alcohol gel and facial masks in three communities in the area where the Company and its subsidiaries are located. Furthermore, the Company prepared 4,000 facial masks to give to students at five schools in the area where the Rayong factory is located along with setting up a sharing transformer in front of the factory to allow employees or ordinary people who are able to put food or necessary items in the transformer and allow people who were impacted to take items as necessary. This allows people to help each other according to their ability to allow our business, our society and our country to survive.

In closing, on behalf of the Board of Directors, executives and all employees, I would like to thank shareholders, customers, trade partners, ordinary people in communities and all stakeholders for having always provided support and encouragement for the Company. We promise to work according to the Company's given vision, mission and development framework and to commit and dedicate to developing processes, tools, machines and human capital to be able to stand amidst economic and social changes with security and sustainability.



Many



# รางวัลแห่งความภาคภูมิใจ



Carbon Footprint Certificate
Certificate No: TGO CFO FY19-4-029 from
The Thailand Greenhouse Gas Management Organization
(Public Organization)



Happy Family Award Trophy







Outstanding Happy Family Award Trophy Of 2020

### **About QTC**

Business Information (Disclosure 102-1) : 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 Transformers

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.







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#### **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.



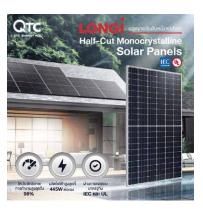


#### Solar Inverter

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.



#### **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

Repair and Maintenance

Scheduled Transf Maintenance Ren

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. produces 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.





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 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.

#### Membership in Organizations (Disclosure 102-13):













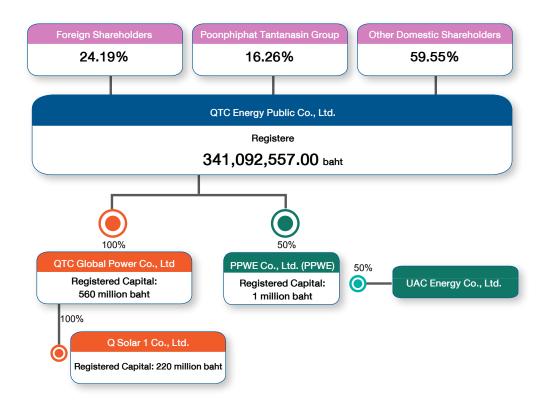






# Shareholding Structure (Disclosure 102-5)

Summary of Shareholding Structure as of 30 December 2020



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 Global Power Company Limited (Main Office)

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

1.1 Q Solar 1 Co., Ltd. (Q Solar 1) is a subsidiary of QTC Global Power Co., Ltd. and 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.

Q Solar 1 Company Limited (Branch 00001)

102 Moo 5, Bo Thong, Kabin Buri, Prachin Buri, 25110

Tel. 02-107-0015

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 49.98% of shares, and UAC Energy Co., Ltd. holds 49.98% of shares.

PPWE Company Limited (Main Office)

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

# The Board of Directors (Disclosure 102-18)



1. Mr. Krirkkrai Jirapaet Chairman, Board of Director



2. Mr.Natthaphon Lilawatthananun Director



3. Mr. Norachit Sinhaseni Directorn



4. Dr. Kamol Takabut Director



5. Mrs. Wasara Chotithammarat Director



6. Mr. Suroj Lamsam Director



7. Mr. Preedee Ngamsantikul Director



8. Mr. Piroj Boonpan Director



9. Dr. Apichart Sramoon Director

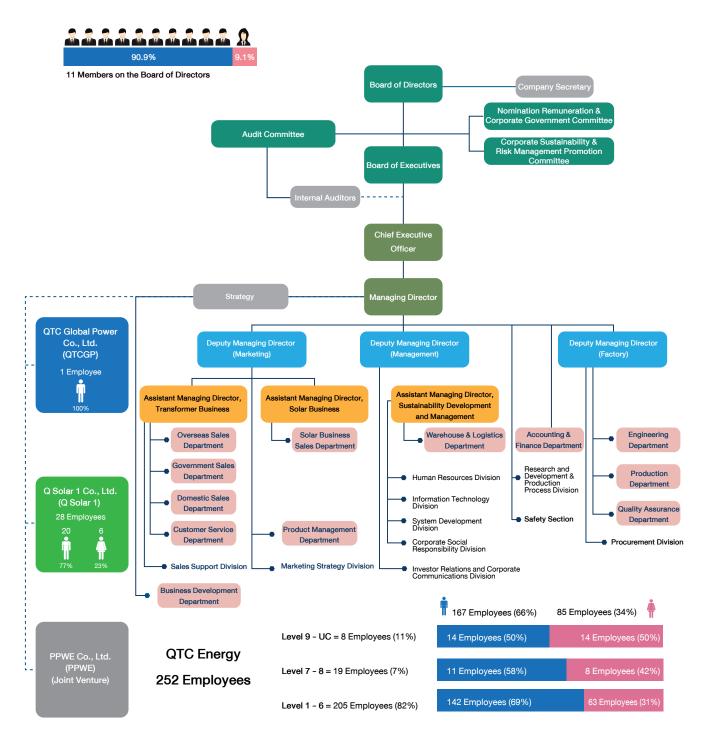


10. Mr. Poonphiphat Tantanasin Director



11. Mr. Ruangchai Kritsnakriengkrai Director

# Governance Structure (Disclosure 102-18)



Data on Employees as of 31 December 2020

Remarks: The organization structure shown was approved by Board of Directors Meeting No. 12/2563 on 17 December 2020 and became effective on 1 January 2021 without effects on the number of employees, level of work and the number and ratio of male-female employees.

#### 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.

#### Go Far with Determination and Vision



#### Quality of DETAILS

Detail is the heart of our work and permeates in everything that is QTC from people, thinking methods, work methods, technology, factories, products including society and the environment.



#### Vision

"We will be a producer, distributor and provider of world-class one-stop technology services in the power industry with good governance and responsibility to society and the environment"



#### Mission

- To become a leader in manufacturing, distribution and provision of quality and integrated technology in the power industry.
- To develop products, processes and provide services to create added value in the value chain.
- To develop human resources in order to create good and talented people.
- To operate the business using governance principles along with corporate social responsibility.
- To build long-term sustainable growth in order to create confidence and trust among stakeholders in all areas.



#### Work Philosophy

QTC is determined to engage in business by adhering to the following three principles:

- 1. Ethical, just and transparent management.
- Product and service provision meeting international quality standards.
- Focus on corporate social and environmental responsibility in strict compliance with human rights principles.

The Company reviews visions and missions annually. Visions and missions were reviewed and approved by the Board of Directors on 17 December 2020 in order for visions and missions to be consistent with current economic conditions.

# **QTC Values for Sustainability**



Remarks: The corporate value of Quality of Details received approval from the Board of Directors to add a definition for "S" as "Society" at Board of Directors Meeting No. 6/2563 on 7 May 2020.

# **QTC & Sustainability**

The Board of Directors approved to modify the QTC Sustainability Framework at Board of Directors Meeting No. 6/2563 on 7 May 2020 as proposed by the Board of Executives by using 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, accuracy 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





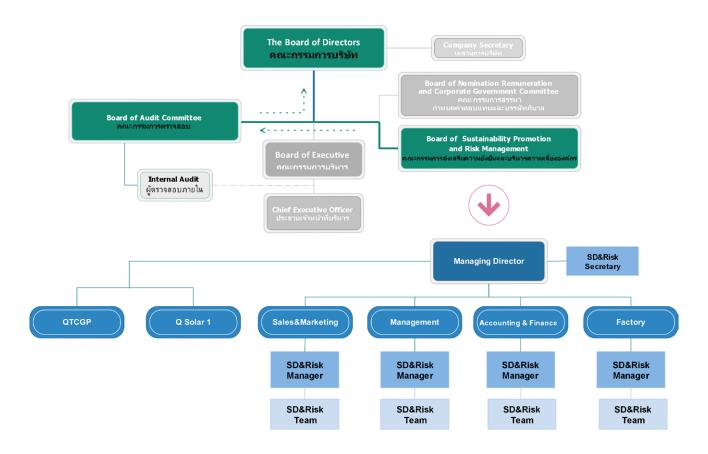


Quality and Responsible

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 Risk Management: Specify strategies.

#### 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 that prioritizes creating quality in three aspects to establish balance, namely, economic, social and environmental balance based on international practices. 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 with awareness about the human dignity, rights, freedom and equality of individuals as protected by the Constitution of the Kingdom of Thailand and related international laws. In addition, respect the local traditions 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.
- Encourage effective utilization of resources, which includes reduction and control of social and environmental 4. impacts resulting from the Company's operations, the operations of other companies in the group and related trade partners.
- 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.
- Manage personnel fairly and give importance to labor skill development in addition to promoting work 6. 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. 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.
- 9. Maintain firm commitment to managing risks in all areas in line with international standards to increase opportunities for success and to minimize the chances of failure and loss.

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.

This policy can be downloaded at https://qtc-energy.com/?page\_id=736

### **Stakeholders**

### Identification of Stakeholders and Impacts

The Corporate Sustainability Promotion Committee reviews impacts in the process throughout the entire value chain once in each year to identify stakeholders and significant issues through processes to identify work hazards and environmental impact assessment from work and products in a life cycle manner using participatory evaluation methods involving employees at all levels.

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 2020, the Company gained stakeholders because the Company added the solar product distribution business by becoming a distribution representative in the business' value chain.

#### Identification of Stakeholders in the Value Chain and Impacts

#### **Supply Chain for Business** Raw Material&Product Management & Delivery Maintenance Service Waste Management &Procurement Manufacturing Stakeholder Comunities, Society Employees Employees Employees Employees Customers Employees Transport Contractors Supplier Board of Directors Customers Product users Product users Waste disposal Vendor Customer Broker Shipping Comunities, Society Comunities, Society Product users - Government Dealer Shareholders Mass Media - Domestic Carrier - Foreign Competitors Shareholders Banks Government agency Dealer Manufacturer Banks Comunities, Society Government agency Competitors Comunities, Society Investors **Impact Issues** Fair Trade Human Rights ▶Human Rights Human Rights Safety in Procut Human Rights Health and Saafety Energy Usage Customer confidentiality Fair operating practices ◆Health and Saafety Labor Practices Responsibility for Products Labor Practices Disposal Methods and Services Responsibility for products Supplier development Good Corporate Pollution ▶ Responsibility for Products ▶ Compliance Governance and Services Pollution Resource Use Climate Change Compliance Pollution Corruption ▶ Pollution Climate Change . ▶Fair Trade Waste Management Compliance Transparency Corruption Compliance Risk Management

## **Stakeholder Connection**

The results yielded by 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.

# การดำเนินงานกับผู้มีส่วนได้เสีย

Stak	ceholders	Expectation Survey Methods	Expectations	The Organization's Response	
(Disclos	sure 102-42)	(Disclosure 102-43)	(Disclosure 102-44)	(Disclosure 102-43)	
Employees	Regular Employees Temporary Employees	<ul> <li>Monthly meeting of executives and employees.</li> <li>Suggestion activities, KAIZEN, QCC.</li> <li>Listening to employee opinions and complaints.</li> <li>Monthly Welfare Committee meetings.</li> <li>Monthly Safety Committee meetings.</li> <li>Annual employee happiness surveys.</li> <li>Annual corporate affection and attachment surveys.</li> <li>Quarterly corporate risk assessments.</li> <li>Annual safety risk assessments</li> <li>Annual environmental impact assessments.</li> </ul>	<ul> <li>Appropriate salary raises.</li> <li>Appropriate welfare.</li> <li>Work safety.</li> <li>Pleasant work environment.</li> <li>Equality and opportunities for advancements.</li> <li>Plans for skill and knowledge training.</li> <li>Good living conditions.</li> </ul>	<ul> <li>Safety management pursuant to OHSAS18001.</li> <li>Environmental management pursuant to ISO14001.</li> <li>Provident Fund.</li> <li>Strictly adhere to rights policies and employment policies.</li> <li>Health promoting workplace project.</li> <li>Organizational health for sustainable happiness project.</li> <li>Modify wage payment and performance assessment systems.</li> <li>Modify career path development system.</li> <li>Knowledge Management</li> </ul>	
Board of Directors	Company Directors	<ul> <li>Board of Directors' meetings.</li> <li>Board of Audit meetings.</li> <li>Nomination Committee meetings.</li> </ul>	<ul> <li>Correct compliance to laws and ethical principles.</li> <li>Transparency and accountability.</li> <li>Business success.</li> </ul>	<ul> <li>Good business governance in compliance with policies and strict enforcement.</li> <li>Report performance.</li> </ul>	
Shareholders/ Investors	Shareholders Investors Analysts	<ul> <li>Annual meetings of shareholders.</li> <li>Quarterly performance announcements.</li> <li>Financial analysts' meetings.</li> <li>Registered companies meet investors.</li> <li>Invitations for investors to visit factories.</li> </ul>	<ul> <li>Good wages.</li> <li>Good governance over activities.</li> <li>Stable business and continuous growth.</li> <li>Correct, complete, upto-date and transparent company information.</li> <li>Good risk management system.</li> <li>Good audit and control system.</li> </ul>	<ul> <li>Transparent, fair and accountable business governance.</li> <li>Appropriate dividend payment.</li> <li>Transparent disclosure of information.</li> <li>Strategic business plan preparation.</li> <li>Thorough risk management.</li> </ul>	

Stakeholders		Expectation Survey Methods	Expectations	The Organization's Response
(Disclosure 102-42)		(Disclosure 102-43)	(Disclosure 102-44)	(Disclosure 102-43)
Customers	Government Customers  Private Customers  Foreign Customers  Domestic Retailers  Foreign Retailers	<ul> <li>Meet-ups with customers/ retailers.</li> <li>Product exhibitions.</li> <li>Customer/retailer satisfaction surveys.</li> <li>Technical knowledge provision to customers/ retailers.</li> <li>Opportunities for customers/retailers to observe production processes.</li> <li>Joint activities with customers/retailers.</li> </ul>	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.	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
	PEA (Power Purchaser)	Contract terms.     Inquiries	<ul> <li>Full electricity distribution according to contract terms.</li> <li>Energy technology knowledge sharing.</li> </ul>	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	Meet-up and communicate with customers.     Product exhibitions.     Customer satisfaction surveys.     Technical knowledge provision to customers.     Visits of the production process	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 preservation.	<ul> <li>Prepare product catalogs, operation manuals and other documents with accurate technical information.</li> <li>Plan effective work process management/control to minimize costs.</li> <li>Plan vendor management/ control to be consistent with agreements.</li> <li>Create the Technical Support Team.</li> <li>Prepare media related to the product without exaggerating in advertisements.</li> <li>Manage deliveries, customer service and warranties under ISO9001 standards.</li> <li>Comply with the Personal Data Protection Act.</li> </ul>
Trade Competitors	Competitors	<ul> <li>Meetings and conversations.</li> <li>News and information.</li> <li>Group member meetings.</li> <li>Marketing activities.</li> </ul>	<ul> <li>Fair and transparent trade competition.</li> <li>Exchanges of information about products, raw material sources and tools and machinery used in production.</li> </ul>	Compliance to ethics principles to operate business fairly and transparently.

Stakeholders		Expectation Survey Methods	Expectations	The Organization's Response	
(Disclos	sure 102-42)	(Disclosure 102-43)	(Disclosure 102-44)	(Disclosure 102-43)	
Trade Partners	Deliverers Contractors Raw Material Suppliers	Annual deliverer and contractor evaluations.     Production process and raw material quality inspections and discussions for improvement.	<ul> <li>Receive accurate information quickly and according to time conditions.</li> <li>Fair compliance with agreements and payment terms.</li> <li>Fair and transparent price competition.</li> <li>Knowledge provision and raw material production process improvement.</li> </ul>	<ul> <li>Specify clear procurement policies without preferential treatment.</li> <li>Development of trade partners through recommendations, knowledge provision, understanding about developing raw materials to be better than standard specifications.</li> <li>Have anti-corruption policies and promote practice.</li> <li>Prepare the Code of Conduct for QTC's Supplier.</li> </ul>	
	Vendor	<ul> <li>Inquire about goals of brand owners/product manufacturers.</li> <li>Attend meetings.</li> <li>Participate in activities organized by the brand owner/product manufacturer.</li> <li>Participate in trainings and testing according to the product owner's criteria.</li> </ul>	<ul> <li>Achieve goals of the brand owner/product manufacturer.</li> <li>Create brand awareness in Thailand.</li> <li>Build good relationships between the brand owner/product manufacturer and sales representatives.</li> </ul>	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.	
ผู้รับกำจัด ของเสีย О	Waste Disposers Waste Processors	Exchanges of knowledge about legal specifications and correct practices.	<ul> <li>Strict compliance to agreements.</li> <li>Correct actions pursuant to the law.</li> </ul>	<ul> <li>Monitor and inspect actions of disposers.</li> <li>Evaluate waste disposers' performance.</li> </ul>	
Creditors	Financial Institutes Deliverers of Goods, Raw Materials and Other Services	<ul> <li>Meetings and discussions.</li> <li>Quarterly performance announcements.</li> <li>Shareholder meetings.</li> </ul>	<ul> <li>Ability to comply with contract terms and agreements.</li> <li>Transparency in operations.</li> </ul>	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	Meetings and discussions.	Compromise and leniency.	<ul> <li>Negotiations.</li> <li>Trade account management policies.</li> <li>Legal action.</li> </ul>	
Mass Media	Newspaper Television Radio Magazine Online Media	Meetings with mass media at different occasions.	Accurate and fast news and information on business progress.	<ul> <li>Meet and visit with mass media at least once a year.</li> <li>Invite mass media to visit the business.</li> </ul>	

Stakeholders (Disclosure 102-42)	Expectation Survey Methods (Disclosure 102-43)	Expectations (Disclosure 102-44)	The Organization's Response (Disclosure 102-43)	
Government Agencies - 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> <li>Meetings and explanations of government agencies.</li> <li>Business inspections and visits.</li> <li>Conditions pursuant to the law.</li> <li>News and information.</li> </ul>	<ul> <li>Ability to comply with related laws.</li> <li>No social and environmental effects.</li> <li>Development of the organization's ability to participate in modifying environmentally-friendly production processes to reduce impacts.</li> <li>Cooperate with the government sector to provide information for use in development.</li> <li>Support government sector projects with benefit for the greater good.</li> </ul>	<ul> <li>Comply with rules and regulations prescribed by the law in every area.</li> <li>Complete and punctual tax payments of every type.</li> <li>Develop processes to seek opportunities for improvement and reduce environmental impacts.</li> <li>Transparent disclosure of information.</li> <li>Report information according to legal specifications.</li> <li>Annual reports.</li> </ul>	
Community and Society  Around the Factory  Communities  Around the Power Plant  General Society	<ul> <li>Organizing activities with communities/society.</li> <li>Participation on community and social development.</li> <li>Annual public hearing activities where communities meet with QTC.</li> <li>Annual public hearing activities where communities meet with the power plant.</li> <li>News and information.</li> </ul>	<ul> <li>Friendliness to one another.</li> <li>Support for community activities.</li> <li>Support for products made by disabled persons in the community.</li> <li>Support for activities in social businesses.</li> <li>No negative safety and environmental impacts on communities and society.</li> <li>Transparency in operations.</li> <li>Compliance with human rights and anti-corruption principles.</li> </ul>	<ul> <li>Support public activities.</li> <li>Create volunteer employees to participate in public activities.</li> <li>Environmental management with ISO14001 standards.</li> <li>Energy management with ISO 50001 standards.</li> <li>Safety management with OHSAS18001 standards.</li> <li>Human rights policies and support for practice.</li> <li>Anti-corruption policies and support for practices.</li> <li>Suitable procurement of products from disabled persons in the community for the Company's operations.</li> <li>Indirect investment in social businesses.</li> <li>Annual performance reports at association activities and other media.</li> </ul>	

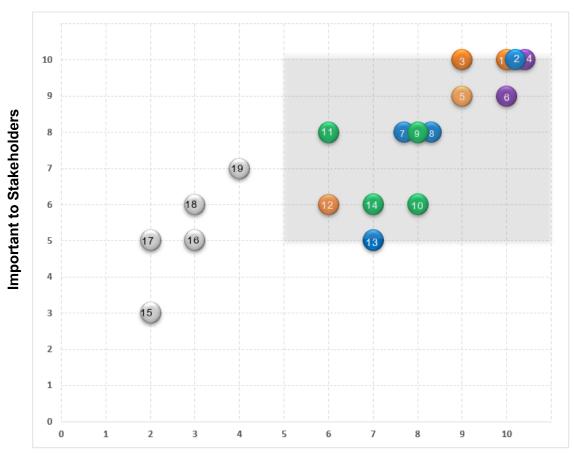
# **Key Sustainability Issues**

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. In addition, the Company uses materiality selection processes based on GRI Sustainability Reporting Standards (Disclosure 102 – 40).

#### 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.
  - 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 of the country's development to designate issues.
- 2. Prioritization of Issues: Once issues that are significant to the organization and stakeholders have been specified, they are to be given weighted scores covering impacts to stakeholders inside and outside the organization. The Company has specified scoring criteria pursuant to the practice guidelines in ISO14001, ISO18001, ISO50001, ISO26000 and consistent to the context of the organization when compared to the indicators in GRI standards. Consideration of prioritization led to the specification of significant issues in the Materiality Matrix.
- 3. Reasoning: In 2020, significant issues considered by the Corporate Sustainability Promotion Committee had an additional issue concerning risk management in the COVID-19 crisis. This issue was given importance by the Company and stakeholders due to effects on the business' survival. Consideration was given to increase the significance of risk management and climate change issues because stakeholders from government agencies some customers, which led to modifications of sustainable development strategies. Furthermore, the Company combined the issues of employee development and care for employees. Key sustainability issues in 2020 were as follows:

### **Materiality Matrix**



Important to QTC



# Sustainable Development Issues (Disclosure 102-47)

Key Sustainability Issues	Content Reported		cope of Impacts	QTC	Pages
Koy Corporato Goyora	papaa laguaa	Internal	External	SD-Framework	
Key Corporate Govern	iance issues	i	i i		
Corporate Governance	Good Corporate Governance     Anti-corruption	QTC	Shareholders, Investors, Trading Partners, Government Agencies	Ethics Anti-Corru	29-38
Risk Management	<ul><li>Corporate Risk Management</li><li>Risk Management during the COVID-19 Crisis</li></ul>	QTC QTC	Shareholders, Society	Risk Management	39-48
Quality Economic Issu	les				
Business Growth	<ul><li>Economic Results</li><li>Investment in Other Businesses</li><li>Distribution of Value to Stakeholders</li></ul>	QTC	Shareholders, Investors, Competitors	Business Growth & Value Chain	49-55
Innovation Promotion	<ul> <li>Innovation Promotion Processes in the Organization</li> <li>Innovation at the Process Level</li> <li>Innovation at the Personal Level</li> </ul>	QTC	Customers, Competitors, Trading Partners	Business Innovation	56-61
Responsibility to Goods & Services	Q Work Standards Q Product Standards Q Electrical Testing Standards Q Customer Care	QTC	Customers, Competitors	Business Growth & Value Chain	62-69
Trade Partner Development	Q Trade Partner Development	QTC	Trading Partners, Customers	Value Chain	70-72
Quality Environment Is	ssues				
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	73-79
Environmentally-friendly Production Processes	Green Procurement     Pollution Control	QTC	Communities, Customers, Trading Partners, Government Agencies	Pollution Reduction	80-86
Climate Change	<ul><li>Corporate Carbon Footprint</li><li>Greenhouse Gas Emission Reduction</li><li>Environmentally-friendly Products</li></ul>	QTC	Communities	`1	87-98
Sustainable Use of Resource Utilization	Q Energy Q Water	QTC	Communities	Resource Use	99-105
Quality Society Issues	) 		i i		
Employee Safety and Health	Safety     Employee Health	QTC	Communities, Trading Partners, Government Agencies	Health, Safety & Well-being	106-121
Employment and Human Rights	Employment     Human Rights	QTC	Communities, Government Agencies	Human Rights	122-129
Human Capital Development and Employee Care	Human Capital     Employee Care	QTC	Government Agencies	Employee Development & Well-being	130-141
Social Responsibilities	<ul><li>Participation in Community Development</li><li>Social Investment</li><li>Social Activities</li></ul>	QTC	Communities	Community Involvement	142-151
	About This Repo	ort			152
	GRI Content Ind				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**

### Q

#### Increase Competitive Potential with "Quality" + "Responsible" Products and Services

This is a main strategy carried out by the Company on a continual basis. The Company sets business growth goals under risk management, seeking business opportunities via other channels to increase income, innovating processes and products to create competitive advantages and developing major trading partners for quality and punctual delivery in order to create sustainable value for stakeholders. The Company uses the following instruments and processes:

- Internal procedure development by using Total Quality Management (TQM) was carried out for the seventh consecutive year.
- Support of innovations to improve goods, services and internal processes through research and development and KAIZEN proposals at the employee level.
- Develop major trading partners and SMEs by recommending technical work methods and compliance with
  the Code of Conduct for QTC's Suppliers in order to enable delivery of materials on time with quality meeting
  the Company's specifications and to enable trading partners to improve capabilities, grow and gain security.
   The Company's goal is one trading partner per year.
- The Company became a distributor of equipment related to electricity and energy consisting of BUSDUCT from Dynamic Electrical SDN BHD, Malaysia, under the DE BUSDUCT brand, solar inverters from Huawei Technologies (Thailand) under the Huawei brand and from Hitachi Hi-Rel Power Electronics Pvt. Ltd. under the Hitachi brand, and PV panels from LONGI Solar Technology Co., Ltd. under the LONGI brand.

### Q

#### Expand the Business to Other Investments to Increase Income and Build Financial Strength

The Company has strategic plans to build security or the organization by expanding investments in energy businesses or other businesses with responsibility to society and the environment with a focus on cost-effective long-term returns for the organization and stakeholders in order to increase income and build financial strength. The Company specified risk analysis processes and prepared risk management plans according to standards.

In 2020, the management team and QTC Global Power Co., Ltd. studied projects to invest in hydroelectric power plants, solar power plants and biomass power plants but no project was found to have returns meeting the Company's standards.



### **Environmental Strategies**

### Q

#### Create a Sustainable Green Culture

This is another major strategy which has driven the organization continually for a long time with awareness of the importance of the environment influencing living conditions of generations after generations. Therefore, the Company recognizes the opportunity to modify procedures and products to improve the levels of employees' thoughts and actions in yielding the results most capable of reducing environmental impacts. The Company performed the following actions to build sustainability:

- ISO14001 environmental management standards, ISO50001 energy management standards and ISO14003
  greenhouse gas management standards were applied to be consistent with the organization's contexts and
  continual development.
- The Company manages waste and disused materials from production by not sending 100 percent of waste to landfills (Zero to Landfill).
- Modify processes and machines for high efficiency and reduce energy loss as much as possible.
- Develop products that reduce greenhouse gas emissions.
- Organize activities to raise awareness of energy conservation and manage climate change for employees.











Let's Make the World Brighter -No More Plastic Bags

# Social Strategies CSR in Process



#### Strengthen Safety Culture in the Organization

Safety for the lives and property of employees and the Company are significant risks for the Company and stakeholders. The Company continually promotes creating safety culture by applying ISO450001 standards. In addition, the Company spends a large budget to procure personal protective equipment, modify instruments, machines, work processes, work environments, provide training, education and improve KAIZEN safety skills including organizing work safety promoting activities for employees to create awareness and avoid situations which may create accidents. The Company's goal is to have zero accidents.



Start Safe

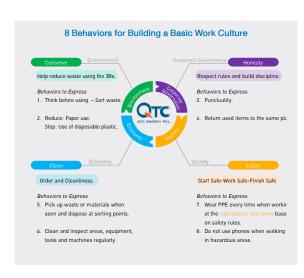
Work Safe

Finish Safe



#### Make Good People, Develop Smart People

The Company has set the organization's core competency based on corporate developmental guidelines and vision for use in setting the qualifications required for all people inside the organization as a foundation. Furthermore, capabilities for each work position have been set clearly to provide guidelines for developing employee work skills. Additionally, courses have been created for emotional and behavioral development in addition to strict enforcement of rules, regulations requirements and relevant laws to turn these people into capable workers and good people in society to create valuable work and coexist happily. And because the Company recognizes people as the most important resource in driving the organization toward the goal of becoming a world class company, the Company specified behaviors that should be expressed by all QTC employees to create the same basic work culture in four areas and eight behaviors:



#### **Creating Work Life Balance**



The Company is well aware that happy employees in work and personal lives promote good living and good health, which influence and play a part in achieving success, security and career advancement for employees, the organization and society. Therefore, the Company has created work mechanisms to achieve work – life balance for people within the organization with the main objective of creating sustainable happiness and sharing happiness with society in general. Examples of projects and activities that promote work – life balance are the Happy Money Project, the Happy Body Project, the Quit Drinking, Smoking, Get Healthy and Save Project and the Build Warm and Happy Families for Corporate Workers Project.

### Q

#### **Building Trust in Stakeholders**

The Company treats stakeholders fairly and adheres to good governance principles while paying attention to potential impacts from its processes by adhering to the following practices:

- Listening to the opinions of stakeholders via various channels
- Promoting indirect social investments with allies operating in businesses for society.
- Supporting community products (in the Company's interests).
- Participating with communities in different areas of development according to the organization's expertise and ability.
- Disclosing information about practices, business activities, environmental management, human resources development, etc. transparently and verifiably through its annual reports, sustainability reports, discussion forums, websites, etc.





# Key Corporate Leadership Issues



# **Corporate Governance**

Corporate governance is importance 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.



## **Q** Good Governance



Mr. Norachit Sinhaseni Director



Mr. Kamol Takabut Director



Mr. Poonphiphat Tantanasin
Director

Nomination, Remuneration and Corporate Governance Committee

#### Performance in 2020

• Laws and practices related to good governance principles have been changed on many issues. 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 the decision to modify and announce corrections from Board of Directors Meeting No. 12/2563 on 17 December 2020. The good governance policy and business ethics was officially disseminated on the Company's website. In 2020, the Nomination, Remuneration and Corporate Governance Committee met twice 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/en/corporate-governance/corporate-governance-policy

#### **Business Ethics**

https://investor.qtc-energy.com/storage/download/corporate-governance/20210105-qtc-codeofconduct-th.pdf

• The Company disseminated the No Gift Policy during the New Year festival of 2021 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 2020.







• The Company supported directors and high ranking executives to have skills, knowledge and abilities to benefit effective corporate governance.

	First Name – Last Name	หลักสูตร	สถาบัน
1.	Mr. Norachit Singhaseni	Role of the Chairman Program (RCP),	IOD
	Company Director	Course No. 46/2563	
	Nomination, Remuneration	2. Board of Nomination and Compensation	
	and Corporate Governance	Program, Course of 10/2563	
	Director		
2.	Mr. Ruangchai	1. 6 <sup>th</sup> Course on Economic Mechanisms for	TGO
	Kritsnakriengkrai	Greenhouse Gas Emission Reduction	
	Company Director	2. Leadex Boost Camp 2020	SE Asia Leadavation Center
	Managing Director	3. Al & lot Summit 2022	Co., Ltd.
			Thai Digital Technology User
			Group Association (DUGA)

• The Company conveyed the Company's knowledge and experience in corporate governance to 80 executives and officials from Nong Wang Tambon Administrative Organization, Muang, Roi Et, at the Faraday Room, Rayong Factory, on 24 November 2020, while strictly adhering to COVID-19 prevention measures.







### 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 2020, the following specifications and laws related to business operations are as follows:

- Specifications and laws directly related to business operations and compliance: 292 specifications and laws.
- Specifications and laws used for reference: 139 specifications and laws.
- Specifications, directives and laws from the COVID-19 crisis: 23 specifications, directives and laws.
- The Personal Data Protection Act of B.E. 2562 (A.D. 2019). The Company is currently planning work systems to be consistent with legal requirements and ready for use before the effective date on 31 May 2021.

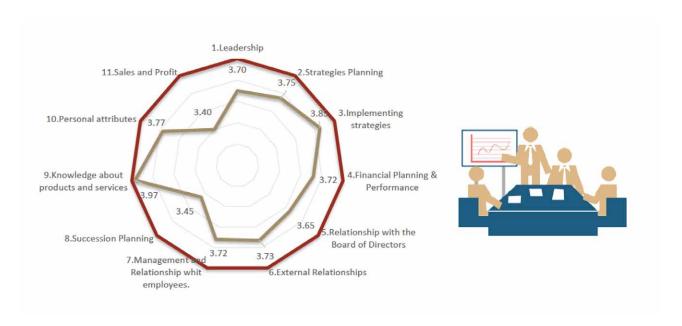
#### **Performance Assessment**

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 2020, assessments had the following results:

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. Ten directors performed independent assessments of
the Chief Executive Officer's performance in 2020. Scores were averaged from a full score of 4 points.

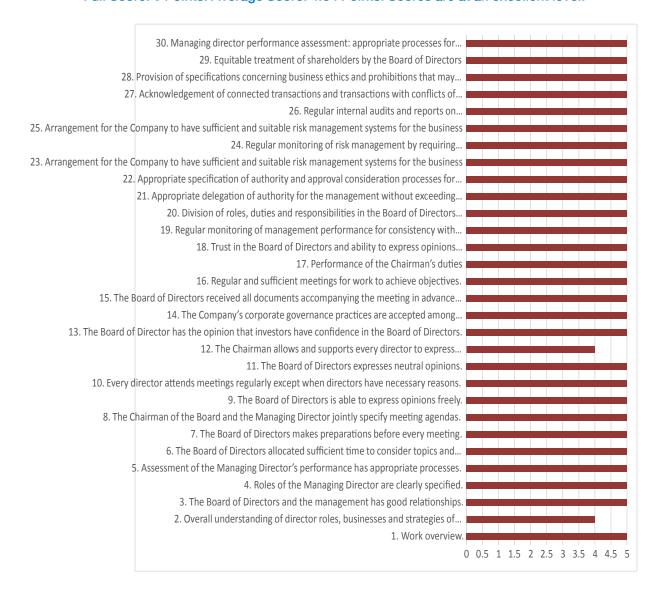
Graph of Self-assessment Results of the Board of Directors of 2020

Full Score: 4 Points. Average Score: 3.70 Points. Scores are at an excellent level.

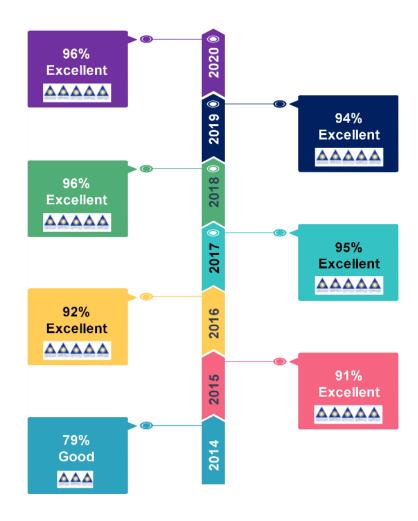


2. The Board of Directors was assessed with reference to the self-assessment forms for boards of directors of the Corporate Governance Center, Stock Exchange of Thailand, of 2015, to appropriately modify 30 questions. All 11 directors completed self-assessments of performance in 2020 and scores from each question were averaged from a full score of five points.

# Graph of Self-assessment Results of the Board of Directors of 2020 Full Score: 5 Points. Average Score: 4.64 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)



## Anti-Corruption (Disclosure 102-16)



Mr. Nattharphon Lilawattahanun Director



Mr. Kamol Takabut Director



Mrs. Wasara Chotithammarat Director

#### **Board of Audit**

## Performance in 2020

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 2020, five 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 anti-corruption policy was modified to be consistent with Version 4.0 of the self-assessment form to improve the anti-corruption system in the organization along with modifying other related policies and practice guidelines such as policies and guidelines concerning conflicts of interest, policies and guidelines concerning hiring of government employees and policies and guidelines concerning facilitation fees. The Company received approval to modify and announce policies and guidelines for use from the Board of Directors Meeting No. 12/2563 on 17 December 2020. The Company officially disseminated the anti-corruption policy on the Company's website.

Anti-corruption Policy: https://investor.qtc-energy.com/storage/download/corporate-governance/20210122-qtc-anti-corruption-policy-th.pdf





## **Training and Education** (Disclosure 205-2)

Training for employees and explanations about anti-corruption policies and guidelines on revised issues were provided by an internal lecturer, Miss Sureeporn Mittammana, Assistant Managing Director of Sustainable Development and General Management, on 26 December 2020, which was the last work day of 2020.







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 2020, performance was as follows:

Items	No. of Employees	Percent	
No. of Trained Employees			
New Employees: Male	21	100	
New Employees: Females	4	100	
Test Results for Knowledge and Understanding			
> 80 %	21	84	
< 80 %	4	16	



An anti-corruption booth was organized to educate employees about Thailand's corruption situation at the Company's 5S Safety & Happy Workplace 2020 internal activity on 18-20 August 2020 at the Faraday Room, Rayong Factory.







### **Campaigning Against Corruption**

Due to the COVID-19 pandemic and measures canceling gatherings and enacting social distancing in 2020, the Company participated in the International Anti-corruption Day (Thailand) event of 2020 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 2020





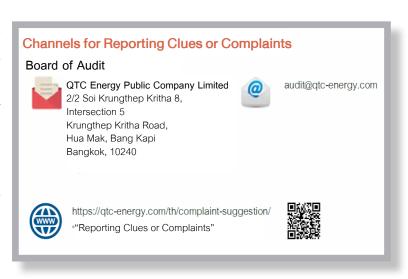
### **Methods for Communicating Stakeholders**

The Company has specified the following channels for communicating anti-corruption policies and related practice guidelines:

	Communication Channels								
Stakeholders	Portable Handbooks	Training	Explanatory Meetings	Annual Meetings	Stages of Association	E-mail	Mail	Shareholder Meetings	www.qtc-energy.com
Inside the Organization	<b>✓</b>	<b>✓</b>	✓	✓	-	✓	-	-	✓
Outside the Organization	<b>✓</b>	1	-	✓	✓	✓	✓	✓	<b>✓</b>

#### Channels for Reporting Clues or Complaints

In 2020, channels were increased for reporting clues or complaints via the Company's website in cases where there are doubts or witnesses of activities causing suspicion that employees, executives or directors of the Company violated or refused to comply with the law and QTC's rules, regulations, ethics or corporate governance policies. Stakeholders can inquire or report clues or complaints and send information and evidence via the following channels:



## **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 2020, no training and education was provided to expand the number of individuals with skills at the operating level.

Goal: 2. Significant risks have appropriate and successful plans according to objectives.

Result: Significant safety risks were not successful according to goals.

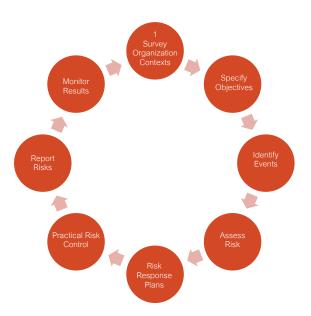
Corporate Risk Management Policy

https://qtc-energy.com/risk-management-policy-2/

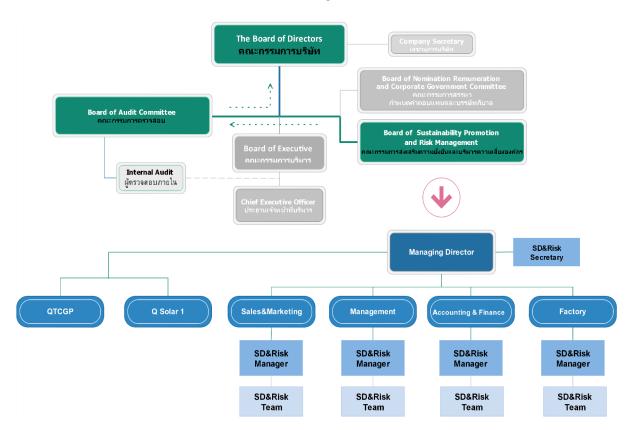


## **Corporate Risk Management Process**

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 2020

- The Company combined the Risk Management Committee and the Sustainability Promotion Committee under the name of the "Corporate Sustainability Promotion and Risk Management Committee" in order for work in both areas to be coordinated and connected in all areas, effective from 1 January 2021.
- The Risk Management Committee studied risk management processes according to ERM-COSO 2017 standards to develop the risk management process to become more strict and comprehensive with a goal for the new system to in place in 2021.
- The Risk Management Committee organized four risk management processes in 2020 at specified times and added special agendas due to the COVID-19 pandemic.
- The Company has 11 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. Economic Risks

Risk Topics	Measures & Performance
Dependence on Major Customers in the Transformer Business	Most of the Company's income comes 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 mitigate risks:  • 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 to reduce costs under international quality standards with responsibility.  • The Company applied to be accredited for Green Label transformers 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.  • In 2020, the Company sold 277 Green Label transformers valued at 35,040,500 baht.  • The Company expanded foreign markets with OEM manufacturing. Currently, the Company is in Australia and Japan (brand name cannot be disclosed) as a trade secret.  • The Company appointed foreign sales representatives under the QTC brand to increase sales channels.  • The Company developed super low loss transformers and smart transformers to create differences and new choices for customers.  • In 2020, the Company generated income from:  • 23 super low loss transformers valued at 16,705,000 baht.  • 13 smart transformers valued at 1,015,000 baht.  • 16 Company expanded the transformer maintenance service customer base.  • In 2020, service income exceeded 46 million baht, an increase from 2019 by 32 percent.  • 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. and PV panels from LONGI Solar Technology Co., Ltd. under the LONGI brand.
	products.

Risk Topics	Measures & Performance
Foreign Currency Exchange Rate and Raw Material Price Fluctuations	Because transformer manufacturing requires 60 percent of main raw material values used per year to be imported from abroad and transformer exports make up 20 – 30 percent of sales and because exchange rates and prices of raw materials such as copper and silicon fluctuate according to the global economy and significant world situations, the Company has the following risk prevention measures:  The policy to trade foreign currency in advance in forward contracts.  Closely monitor changes in prices of raw materials such as copper, silicon and transformer oil. In addition, the Company reserves raw materials in
Investment in Other Businesses	advance if the Company recognizes opportunities for trade advantages.  In 2020, the Company's exchange rate profits were 3,204,087 baht.  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:
	<ul> <li>The Company hires more executives and teams with special knowledge to manage QTCGP.</li> <li>The Company hires outside specialist consultants to study information of projects in which the Company will invest by covering economic, social and environmental aspects.</li> <li>Any investments in other businesses must be approved by the Board of Directors and shareholders' decisions.</li> <li>In 2020, the Company studied investments in four projects in the business of electricity generation from solar energy. However, results from the study showed the projects to be unable to provide returns for the organization according to conditions. Thus, the Company did not consider investing.</li> </ul>
Debtor Management Risks	<ul> <li>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:</li> <li>The Company sets allowances for bad debts (accounting expenses) if debts were unpaid for more than one year.</li> <li>The Company adjusts the policy on offering credit to customer by clearly specifying criteria in assessing credit offers to customers.</li> <li>In cases where customers fail to meet the criteria for credit, the Company sells in cash.</li> <li>In 2020, the Company was able to control the payment acceptance period at 66 days, a reduction from 2019, and trade accounts receivable rose from 2019 by 45.90 percent. However, debts are "not due for payment". Debtors in the range from 1-3 months decline from 2019 for every range and the Company has no debts unpaid for 4-6 months.</li> </ul>

## Social Risk

Risk Topics	Measures & Performance				
Employee Health & Safety	<ul> <li>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: <ul> <li>Safety management with ISO 45001 standards.</li> <li>Appropriate work safety and PPE standard specifications and periodic machine maintenance.</li> <li>Electrical system and building examination and certification by outside experts.</li> <li>Automatic fire alarm system installation.</li> <li>Fire suppression and fire evacuation drills.</li> <li>Safety awareness building with KYT activities.</li> <li>Safety week activities to provide knowledge and raise awareness among employees and communities.</li> <li>Safety committees (SCs) elected by employee representatives consider work safety guidelines.</li> <li>Health promotion projects to reduce, abstain and quit smoking and drinking along with vaccination benefits based on epidemic situations.</li> <li>In 2020, performance did not achieve objectives. More accidents occurred in the Rayong Factory than in 2019. Details, preventive and corrective measures can be followed up on in the sustainability report under "Employee Health and Safety".</li> </ul> </li> </ul>				
Departures of Engineers and Skilled Technicians in Significant Positions	<ul> <li>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:</li> <li>Appropriate employee wage and benefit restructuring by comparing with the same industry.</li> <li>Modify assessment systems and pay fair wages.</li> <li>Individual personnel development along IDP career paths.</li> <li>Prepare key KM of the Company and create an online center of learning.</li> <li>Create organization happiness following the Happy 8 guideline.</li> <li>In 2020, the employee resignation rate was 1.22%, a reduction from 0.98% in 2019.</li> </ul>				

Risk Topics	Measures & Performance
Compliance with the Law	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:  • 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.  In 2020, the Company had no issues of non-compliance with the law. With regard to the Personal Data Protection Act, the Company created a work group to plan systems and regulations in compliance with the law to be notified for use within Quarter 1 of 2021 before the law becomes effective in May 2021.
Corruption	<ul> <li>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:</li> <li>The Company specified anti-corruption policies and related guidelines to be used in the Company and every subsidiary.</li> <li>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%.</li> <li>The Company became a member of the Thailand Collective Action against Corruption (CAC).</li> <li>In 2020, the Company modified the anti-corruption policy and guidelines including other related policies to have preventive and control processes consistent with Version 4.0 of the self-assessment form. In 2020, no corruption issues were in the Company and subsidiaries.</li> </ul>

#### 3. **Environmental Risks**

Risk Topics	Measures & Performance
Hazardous Waste and Scrap Material Management	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:  • 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.  • In 2020, 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 2020 under "Waste and Leftover Materials from Production (Garbage)".

#### **Business Interruption Risks** 4.

Risk Topics	Measures & Performance
Emergencies	<ul> <li>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:</li> <li>The Company prepares fire prevention and suppression plans and holds drills every year.</li> <li>The Company prepares data recovery plans and practices plans on an annual basis.</li> <li>The Company purchases insurance policies with coverage of risks.</li> <li>In 2020, the Company had no emergencies with effects causing business interruptions in the Company and subsidiaries. Furthermore, the Company followed measures strictly and consistently.</li> </ul>
Dependence on Main Executives in Business Operations	<ul> <li>The Company's management is performed mostly by leaders with special experience in transformers, which is part of the product's brand that creates confidence among stakeholders. Any changes in the future may have effects on confidence of key stakeholders such as shareholders and employees. Therefore, the Company has the following preventive measures:         <ul> <li>Succession plan preparations and successor selection.</li> <li>Promotion of leadership and successor skill development along the career path.</li> </ul> </li> <li>Marketing promotion using product brands and factory standards to lead.         <ul> <li>In 2020, the Company selected personnel to succeed to key positions. However, the Company delayed development of leadership skills and other skills temporarily due to the COVID-19 pandemic for employee safety and health.</li> </ul> </li> </ul>

## **New Risks**



## Risks from the Coronavirus 2019 or the COVID-19 Pandemic

Organization Contexts:	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 be residents in the country and individuals who travel from abroad. In coordinating with government agencies for legal compliance or when each employee comes to work, some employees use private vehicles, public transportation and employees meet people in daily life at various places such as markets, department stores and restaurants, etc.
Risk Situation:	<ul> <li>The spread of COVID-19 in Thailand, trading partners' countries and almost every country in the world.</li> <li>COVID-19 prevention measures have been specified at the Central COVID-19 Operation Center in Bangkok and in the province where the factory is located.</li> <li>COVID-19 prevention measures in foreign countries.</li> <li>Likelihood of personnel in the Company and subsidiaries being infected with COVID-19.</li> </ul>
Risk Issues:	<ul> <li>Domestic and foreign suppliers are unable to deliver raw materials as specified, causing effects on schedules for delivering products to customers.</li> <li>Customers may cancel orders or reschedule deliveries or the Company may be unable to reserve ships to export to foreign customers due to effects on COVID-19 on the Company's income.</li> <li>COVID-19 infections among personnel in the Company and subsidiaries including potential government directives to temporarily close the business to disinfect, which may interrupt the Company's business operations.</li> </ul>
Prevention and Control Measures	<ul> <li>The Company created the COVID-19 Crisis Management Committee with the Managing Director as the Chairman and specified necessary crisis management roles and duties.</li> <li>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.</li> <li>The Company communicated and created understanding among employees along with providing knowledge about COVID-19 and communicating risks and potential impacts if employees do not have good prevention and if the Company does not have cooperation from every employee.</li> <li>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.</li> <li>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.</li> <li>The Company added more marketing communication content in online media to reach every customer group rather than holding face-to-face meetings.</li> <li>The Company prepared social support measures such as sharing cabinets and projects to provide food, beverage and infection prevention suits for community members who were impacted.</li> <li>The Company prepared emergency plans to cover every work process if the Company needs to stop the business temporarily.&lt;</li></ul>

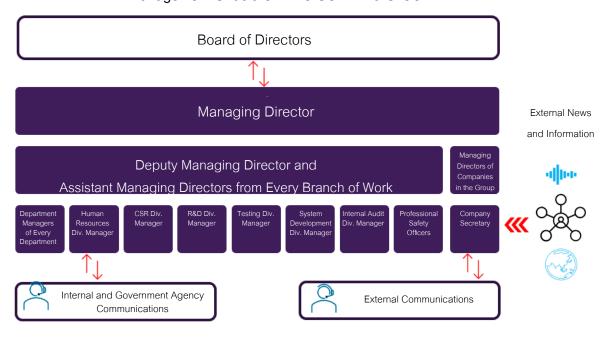
### Management in the COVID-19 Crisis

The Company appointed the COVID-19 Crisis Management Committee to assess risks in the COVID-19 crisis with coverage of business activities and specify infection prevention measures and other measures to reduce economic and social impacts and create safety for employees, customers, trade partners and other stakeholders involved in the business of the Company and companies in the group along with reporting performance to the Board of Directors at appropriate times. The Committee consists of individuals in the following positions:

1.	Mr. Ruangchai Kritsnakriengkrai	Chairman of the Committee
2.	Deputy Managing Directors of Every Branch	Committee Member
3.	Assistant Managing Directors of Every Branch	Committee Member
4.	Managing Directors of Companies in the Group	Committee Member
5.	Department Managers of Every Department	Committee Member
6.	Manager, CSR Division	Committee Member
7.	Manager, System Development Division	Committee Member
8.	Manager, Production Process R & D Division	Committee Member
9.	Manager, Testing Division	Committee Member
10.	Manager, Internal Audit Division	Committee Member
11.	Professional Safety Officers	Committee Member
12.	Company Secretary, IR & PR	Committee Member/External Communication
13.	Manager, Human Resources Division	Committee Member/Internal and Government Agency Communication

This Committee will be dissolved when risk assessments are in a normal condition and the COVID-19 crisis has been officially canceled with approval from the Board of Directors.

## Management Structure in the COVID-19 Crisis



### Example of the Operations Manual in the COVID-19 Crisis







Documents can be downloaded at https://qtc-energy.com/th/risk-management/



# **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. The total sales and services growth goal of at least ten percent per year was reduced to five percent in 2020 due to the COVID-19 pandemic.

Result: Total organization income grew from 2019 by 5.63 percent according to goals.

Goal: 2. Income from new energy product sales (with QTC as the distributor) grew by at least 200 percent per year.

Result: Income from new energy product sales grew by 85.38 million baht from 2019, a growth of more than 9,000 percent according to the goal. This growth was due to modification of strategies to increase sales opportunities by adding new products from world class brands to provide the best options for customers.

Goal: 3. Net profit no less than 12 percent.

Result: Net profit in 2020 was 15.45 percent according to goals.



#### Significant Performance in 2020

- The Company modified business plans to be consistent with the COVID-19 pandemic by reducing income growth targets by five percent and modifying strategies to add new energy products from the LongiSolar brnad and use the opportunity in the crisis to move into the transformer maintenance service market.
- The Company was appointed to be a distributor and post-sale service provider for LONGI Solar brand solar panels. Mr. Poonphiphat Tantanasin, Chief Executive Officer, and Mr. Ruangchai Kritsnakriengkrai, Managing Director, represented QTC while Mr. Punnawit Sappanit, the Thailand Manager, and Ms. Fiona Mo, Sales Manager, represented LONGI Solar Technology Co., Ltd. in officially signing the contract to appoint the sales representative in Thailand on 18 March 2020 (LONGI Solar Technology Co., Ltd. (China) is a manufacturer of monocrystalline solar panels with the highest sales in the world).





QTC appointed dealers to drive Longi Solar sales in Thailand and created good cooperation with trade allies.





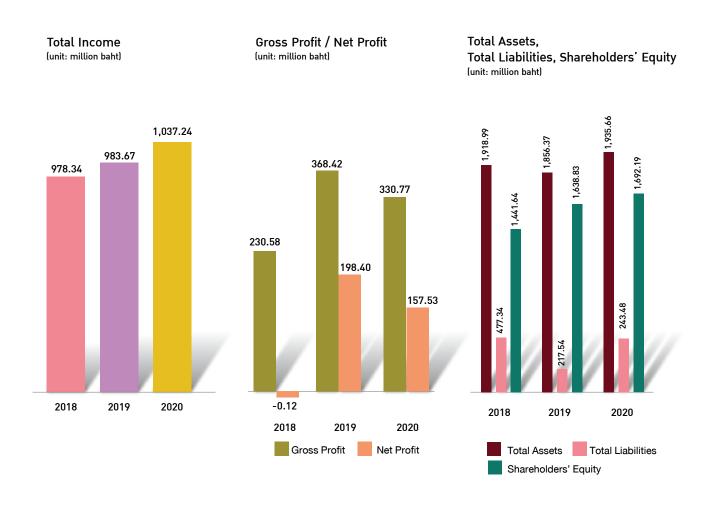


## **Q** Economic Results

(unit: million baht)

			(driit. Triiiiori barit)	
Financial	2018	2019	2020	
Sales & Service Income	958.05	965.17	1,019.49	
Total Income	978.34	983.67	1,037.24	
Sales & Service Cost	(747.76)	(615.25)	(706.47)	
Gross Profit	230.58	368.42	330.77	
Sales & Management Expenses	(193.89)	(153.17)	(146.50)	
Profit Before Interest and Income Tax	35.66	187.48		
Net Profit	(0.12)	198.40	157.53	
Profit for the Year	(0.48)	197.18	157.68	
Net Profit Per Share	0.001	0.578	0.462	
Dividends Per Share	Canceled	0.15	0.40*	
	(341,092,557)	(341,092,557)	(341,092,557)	
Total Assets	1,918.99	1,856.37	1,935.66	
Total Liabilities	477.34	217.54	243.48	
Shareholders' Equity	1,441.64	1,638.83	1,692.19	

Note: \*Pending approval from the Annual General Meeting of 2021.



	2	018	2	019	2020		
Item	Separate	Consolidated	Separate	Consolidated	Separate	Consolidated	
	Statement	Statement	Statement	Statement	Statement	Statement	
Income from Sales and Services	(million baht)	815.57	958.05	816.48	965.17	872.82	1,019.49
EBITDA	(million baht)	38.83	71.77	166.64	275.22	212.35	213.29
Net Profit (Loss)	(million baht)	4.10	(0.12)	122.18	198.40	178.13	157.53
Accrued Profit (Loss)	(million baht)	(64.69)	(98.93)	54.61	96.84	120.05	141.72
Net Profit per Share	(baht)	0.01	0.00	0.38	0.58	0.52	0.46
Rate of Asset Returns	(%)	0.22	(0.01)	6.87	10.51	9.87	8.31
Rate of Shareholder Returns	(%)	0.29	(0.01)	8.18	12.88	11.19	9.46

Remarks: See more details in the 56-1 One Report 2020 under "Financial Report".

ล้านบาท 1,400 สัดส่วนรายได้จากการขายปี 2563 1,200 46.58.5% 86.31, 10% 207.15 , 24% 1,000 872 82 ยภาครัฐและรัฐวิสาหกิจ 815.57 816.48 าวดเดกซาเป็นปร≃เทศ 800 272.09, 31% ยผลิตภัณฑ์ใหม่ 600 ชายงานบริการและชายวัตถดิบ 327.33268.22 400 277.78 272.09 260.69 240.62 207.15 200 86 31 28.87 35.20 46.58 0.93 ขายงานบริการและ ขายภาคเอกชน ขายผลิตภัณฑ์ใหม่ รายได้จากการขายและ ขายภาครัฐและรัฐวิสาหกิจ ขายภาคเอกชน ต่างประเทศ วัตถุดิบ ในประเทศ ■ 1 2561 ■ 1 2562 ■ 1 2563

Sales & Service Income Graph (Only QTC Energy) Comparing 2018-2020

The Sales and Service Income Graph (only QTC Energy) shows the Company's effective risk management with modifications of business plans to manage risks from situations thoroughly and in a timely manner and the Company's ability to successfully turn a crisis into a business opportunity. In 2020, the Company increase income from 2019 slightly at 7 percent. Income increased from providing transformer maintenance services in customer areas under strict COVID-19 prevention measures and expanding the customer base in the renewable energy group, which has a definite shutdown time with no impact on other customer groups. This enabled the service team to accept more work. In addition, income from sales of new products for which the Company was appointed as a distributor in Thailand grew by 9,000 percent and exceeded goals. This was a result from the strategy of increasing sales opportunities by adding new products from world-class brands to provide the best options for customers. In 2021, the Company maintains a growth target of 200 percent.



Graph of Economic Performance (Only Q Solar 1) Comparing 2018-2019

According to the graph, in 2020, Q Solar 1 Co., Ltd. had income from power sales to the Provincial Electricity Authority and other income at a total value of 147.46 million baht, an reduction of 1.17 percent from 2019 because the number of government holidays increased from 2019, causing electricity cost per unit to decrease while electricity generation capacity did not decline significantly. The Company had a net profit of 77.59 million baht.

In 2020, Q Solar 1 Co., Ltd. received a BOI investment in 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.

## nvestment in Other Businesses

Concerning investments in other businesses, in 2020, the Company studied investments in four projects in
the business of electricity generation from solar energy. However, results from the study showed the projects
to be unable to provide returns for the organization according to conditions. Thus, the Company did not
consider investing.



## Q Distribution of Value to Stakeholders

Distribution of Value to Shareholders	QTC Energy (Baht)	QTCGP & Q Solar 1 (Baht)
Dividends to Shareholders		0.00
Dividends Per Share		0.00
Personnel Investment		
Employees	128,52	29,490.00
Executives and Managing Directors in Subsidiaries	21,28	3,810.00
Board of Directors (only independent directors)	9,25	51,190.00
Social Investment		
Donations and Financial Support	786,625.80	209,021.99
Support for Social Enterprises (SE) (Indirect)	3,000.00	-
Activities for Society	373,218.10	-
Funds for Promoting and Improving Quality of Life	337,260.00	-
among Disabled Persons		
Environmental Investment		
Internal Environmental Management Cost	439,800	61,500.00
Waste and Other Management Cost	392,817.40	9,000.00
Sharing of Value with Business Partners		
Domestic Procurement (Raw Materials)	285,821,442.81	-
Overseas Procurement (Raw Materials)	98,038,557.13	-
Power Plant Equipment Procurement and Maintenance	-	6,969,344.23
Product Procurement from Disabled Persons in	66,650.00	-
Communities	,	
Other Economic Value		
Financial Cost (Interest)	2,028,966.00	266,631.00
Taxes Paid to the Government**	18,650,521.00	17,952,519.82

Table Showing Comparison of Sharing of Value to Stakeholders

		(Only QTC Energy)			Consolidated	
Stakeholder Groups	Unit				Statement	
		2016	2017	2018	2019	2020
Business Partners	(Million Baht)	426.7	564.79	545.62	426.17	390.90
Directors, Executive Directors and Employees*	(Million Baht)	88.63	116.95	123.74	156.63	159.06
Shareholders	(Baht)	0.03	0	0	0	0.00
Financial Institutes (Interest)	(Million Baht)	7.76	11.27	9.41	5.98	2.32
Community & Society	(Million Baht)	0.31	0.49	0.60	1.69	1.37
Environment	(Million Baht)	-	0.59	0.85	0.87	0.90
Quality of Life Promotion and Improvement for	(Baht)	219,000	219,000	219,000	219,000	337,260
Disabled Persons.						
Government Sector (Taxes)**	(Million Baht)	0.39	0.38	0.37	9.45	36.60

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, building tax, signage tax, local taxes.

## **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 2020, the Company had four research and development projects on processes.

The Company spent a budget of 6.7 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 2020: Smart monitoring box sales grew from 2019 by 126 percent.

Super low loss transformer sales declined from 2019 by 24 percent. See results under

"Climate Change" on the topic of Super Low Loss.

(In 2021, the marketing-sales team and the R&D team made proactive plans to create

customer awareness and promote sales of both products).

Goal: 3. Three KAIZEN articles on personal improvement per person per year.

Result: Employees made modifications to work on > 3 issues or 99 percent of employees in the

target group.

Employees made modifications to work on < 3 issues or 1 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 2021)

## **Q** Innovation Promotion Process in the Organization

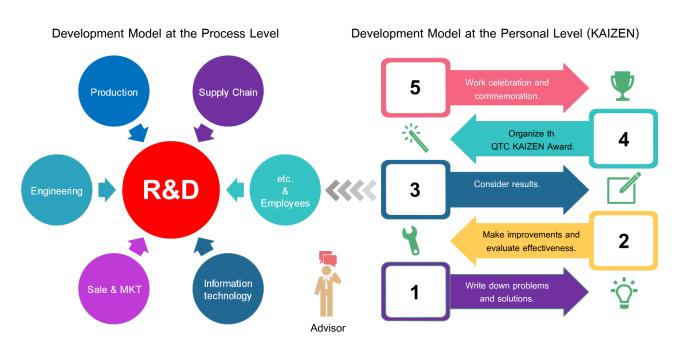


Image of the Innovation Promotion Process in the Organization

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 2020, the Company had four research and development projects to create innovation in the organization and spent 6.7 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 2020, the research team designed three transformer body welding robot programs for transformers with a capacity of 160 kVA [PEA], 300 kVA [MEA] and 160 kVA [Standard]. This enabled the Company to reduce time in manufacturing transformer bodies in all three sizes while having consistent welding quality and saving labor and time, which can be calculated into the following financial values:

Table of Modification Results

Transformer Size	Cycle Tim	e [min]	Amount Manufactured	Value Saved
	Welded by Skilled Technicians	Welded by Robots	[transformers]	[baht]
160 kVA [PEA]	60	30	278	156,375
300 kVA [MEA]	100	50	260	243,750
160 kVA [Standard]	60	60 30		28,125
	Total		588	428,250













#### Smart Transformer Monitoring Product or Smart Monitoring Box Development

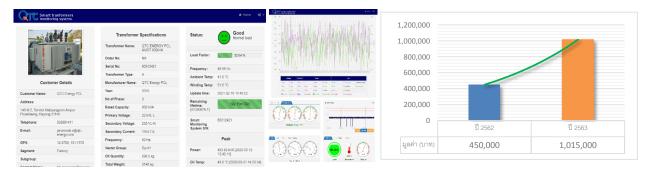


This development is a continuation from 2017. A smart transformer monitoring device is a smart system that monitors transformer functions with sensors that monitor key variables such as electricity in wire coils, voltage, body temperature, transformer oil level, oil temperature, particularly imbalances that may have negative effects on transformers. Data is sent via 3G and 4G systems, 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 2020, the Company used data on customer problems and needs to modify Smart Transformer Monitoring System V3.1. This version was developed for simpler use by users on a website even though users have no basic knowledge of transformers because all variables are summarized as an emoticon to show status on the dashboard.

The special feature in Version 3.1 is that this version increases the ability to calculate the transformer's remaining useful life by using current and oil temperature variables to calculate according to an equation which refers to IEC60076-7 standards to allow users to make maintenance plans or future transformer replacement plans systematically along with increasing capacity to install transformers with capacity up to 22 MVA and a voltage of 33 kV (from 3,00 kVA and a voltage of 400V).



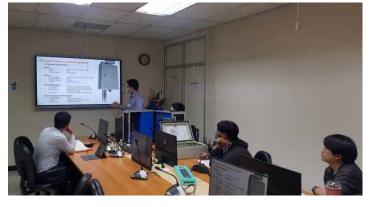
Example of Values Shown in Smart Transformer Monitoring System V3.1 (Super

Low Loss Transformer in the Rayong QTC Factory)

Graph of Sales Growth

Smart transformer monitoring devices or smart monitoring boxes became more known and in demand by customers. In 2020, sales growth exceeded 2019 by 126 percent with 13 boxes valued at 1,015,000 baht sold to private sector customers as options with transformers.

Government sector customers such as the PEA have the Transformer Load Monitoring Project. QTC's Smart Transformer Monitoring System V3.1 can significantly meet the needs of this project and QTC was invited to present the project. There is high probability of PEA using the aforementioned system with transformers throughout the country and the Company may have another important opportunity in future projects with readiness to tender a bid immediately.



QTC Presented the Smart Monitoring System at the PEA

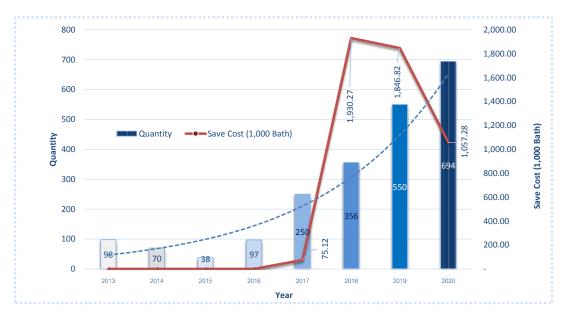
## Innovation at the Personal Level

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' work.

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 - 2020



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 2020, employees had 694 KAIZEN results and employees received financial support as indirect income in the amount of 56,380 baht and 14 KAIZENs from 16 employees competed at QTC KAIZEN Award 2020, causing changes in work processes within the work units responsible, added value for the organization and creating customer satisfaction. All 14 KAIZENs received a total of 27,000 baht as a reward.

#### **QTC KAIZEN AWARD 2020**

The Best KAIZEN 2020

4 Results

7 Participants

Total Reward: 11,000 baht







1. Mr. Nattawut Nintet, 2. Mr. Surat Panomai, Mr. Naka Kamkong, 4. Mr. Nattapon Pimok, 5. Mrs. Pawina Jaidee, 6. Mr. Worachat Mukam, 7. Miss Pattarawadee Kammook (left to right)

Outstanding KAIZEN 2020

6 Results

7 Participants

Total Reward: 12,000 baht







1. Miss Yupawadee Nontapap, 2. Mr. Tanapat Mingsakun, 3. Miss Pattarawadee Kammook, 4. Mr. Nattawut Nintet, 5. Miss Kreenet Piaror, 6. Mr. Ekkachai Seepenwan (left to right)

Recognition KAIZEN 2020

4 Results

7 Participants

Total Reward: 11,000 baht









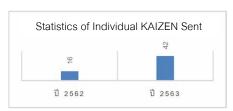
Mr. Jedsada Prateeb,
 Mr. Subanpot Marapan,
 Mr. Pisek Chimnok,
 Miss Yupawadee Nontapap,
 Mr. Nattawut Nintet,
 Mr. Issariyatep Kiaowijit

Star KAIZEN 2020

Sent the most results at 42

**KAIZENs** 

Miss Siriporn Potichai Received rewards valued at 4,200 baht throughout the year.





## 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: Zero danger to transformer users due to substandard product quality.

Result: In 2020, no dangerous events occurred to users of QTC transformers.

Goal: 1. Customer satisfaction > 90%.

Result: Customer satisfaction in 2020 was at 90.82 percent.

Goal: 2. Manage 100 percent of customer complaints.

**Result:** In 2020, the Company had 108 customer complaints and was able to successfully respond to 100 percent of complaints.

**Goal:** 3. Provide transformer testing and maintenance services for more than 90 percent of transformers within the warranty period.

Result: In 2020, the Company was able to achieve this at 100 percent.

Goal: 4. Zero complaints from leaks of customers' personal data.

Result In 2020, the Company had no complaints from leaks of customers' personal data.

## Work Standards

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	10044004.0045	Once per	SGS-NAC	TH08/1236
	ISO14001:2015	Year	SGS-UKAS	TH08/1235
2	ISO45001:2018	Once per Year	SGS	TH08/1237
3	1000004 0045	Once per	SGS-NAC	TH00/2729
	ISO9001:2015	Year	SGS-UKAS	TH00/2728
4	ISO/IEC17025	Once per Year	TIS.	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,	Q002/2562
	Q-Mark (Manufacturing Sector)		Thai Bankers' Association, Federation of Thai Industries	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/IEEEE	UL	NEMA	DIN	JIS	AS	อื่น ๆ
IEC 60071-1	IEEE C57.12.90	UL 1561	NEMA Standards Publication No.TR 1-1993 (R2000)	DIN 42530	JIS C 3104	AS 2374	มอก.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 $\leq$ 250kVA 50Hz Voltage $>$ 12kV $\leq$ 24kV		1248-335/384
Oil-type transformer 3Ph > 250kVA < 1000kVA 50Hz Voltage > $12kV \le 24kV$		-
Oil-type transformer 3Ph > $1000 kVA < 2000 kVA 50Hz$ Voltage > $12kV \le 24kV$	TIS 384-2543/TIS84-2000	-
Oil-type transformer 3Ph $\leq$ 250kVA 50Hz Voltage $>$ 24kV $\leq$ 36kV		1249-336/384
Oil-type transformer 3Ph $\leq$ 250kVA 50Hz Voltage $\leq$ 12kV		1250-337/384
Oil-type transformer 3Ph > 250kVA < 1000kVA 50Hz Voltage $\leq$ 12kV		-
Oil-type transformer 3Ph $\leq$ 250kVA 50Hz Voltage 12/24kV	77	-
Oil-type transformer 3Ph > 250kVA $\leq$ 1000kVA 50Hz Voltage 12/14kV		-
Oil-type transformer 1Ph $\leq$ 50kVA 50Hz Voltage $>$ 12kV $\leq$ 24kV	TIS. 384-2543	1251-337/384
Oil-type transformer 1Ph $\leq$ 50kVA 50Hz Voltage 33kV		-
Oil-type transformer 1Ph $\leq$ 50kVA 50Hz Voltage $\leq$ 12kV		1447-373/384
Oil-type transformer 1Ph > $50kVA \le 167kVA 50Hz$ Voltage $\le 12kV$		-
Oil-type transformer 1Ph > $50kVA \le 167kVA$ $50Hz$ Voltage > $12kV \le 24kV$		-
Oil-type transformer 1Ph $\leq$ 50kVA 50Hz Voltage 12/24kV		-
Oil-type transformer 1Ph > $50kVA \le 167kVA 50Hz$ Voltage $12/24kV$		-
Oil-type transformer 3Ph > $1000 \text{kVA} \le 2500 \text{kVA}$ 50Hz Voltage $\le 12 \text{kV}$		1460-373/384
Oil-type transformer 3Ph > $1000 kVA \le 2500 kVA$ 50Hz Voltage > $12kV \le 24kV$		-
Oil-type transformer 3Ph > 250kVA $\leq$ 1000kVA 50Hz Voltage > 24kV $\leq$ 36kV		-
Oil-type transformer 3Ph > $1000 kVA \le 2500 kVA$ 50Hz Voltage > $24kV \le 36kV$		-
Oil-type transformer 3Ph > 2500kVA $\leq$ 7500kVA 50Hz Voltage $\leq$ 12kV		2199-403/384
Oil-type transformer 3Ph > 2500kVA $\leq$ 7500kVA 50Hz Voltage > 24kV $\leq$ 36kV		-
Oil-type transformer 3Ph > 2500kVA $\leq$ 7500kVA 50Hz Voltage > 12kV $\leq$ 24kV		212-405/384
Transformers with a capacity of 500kVA 3Ph 50Hz 24000-240/416 V	Green Label: TGL-117-16	GL2018/036
Transformers with a capacity of 50kVA 3Ph 50Hz 22kV		GL2019/042
Transformers with a capacity of 100kVA 3Ph 50Hz 22kV	amize	-
Transformers with a capacity of 160kVA 3Ph 50Hz 22kV		-
Transformers with a capacity of 250kVA 3Ph 50Hz 22kV	Tart : The	-
Transformers with a capacity of 160kVA 3Ph 50Hz 33kV		-
Transformers with a capacity of 250kVA 3Ph 50Hz 33kV		-











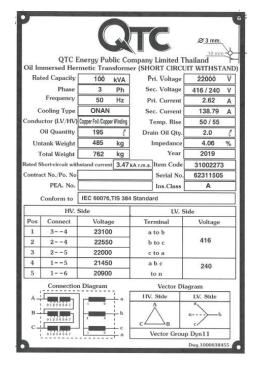
## Catalogs of Products and Services

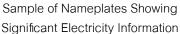
Can be downloaded at https://qtc-energy.com/download/



## **Display of Product Labels and Brands**

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









Symbols Showing Licensed Product Standards

## **Q** 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 0309. 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.

Due to the COVID-19 pandemic and infection prevention measures specified by the Company in 2020, the Company created new innovations in the Factory Acceptance Test (FAT) process by performing FATs via a FAT VDO conference through the MS Team rather than having customers travel to the Rayong Factory. Every step is as through customers are viewing tests at the testing laboratory in person.







## 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 2020

- The Company organizes exhibition booths to introduce transformer products and new solar products for target customers such as:
  - The Company's Booth at the Rayong Industrial Electricity User's Seminar of 2020 (24 November 2020)





The Company's Booth at the Chonburi Industrial Electricity User's Seminar of 2020 (26 November 2020)





Prepare content and articles to educate customers about electric power to customers and the general public who are interested published on Facebook Fanpage https://m.facebook.com/QTCENERGYPCL/?tsid=0.7510739142977152&source=result







Responsibility to Customers in the COVID-19 Pandemic

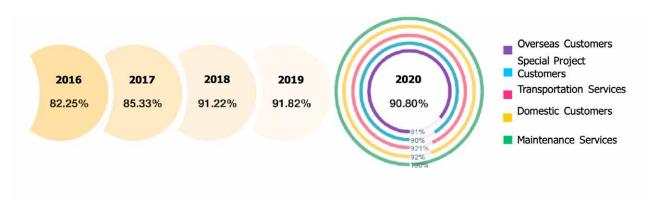
The COVID-19 pandemic caused impacts on the Company's sale processes and transformer acceptance inspections at QTC's testing laboratory. The Company, represented by the COVID-19 Crisis Management Committee, specified clear pandemic infection prevention standards as clear practice guidelines and added transformer acceptance inspection testing channels at the testing laboratory via the FAT VDO conference system to provide virtual viewing of facilities for the safety of customers and the Company's employees along with explaining guidelines to customers. FAT VDO conferences are a new option for viewing transformer acceptance inspection tests at testing laboratories rather than face-to-face viewings. The Company received good cooperation from every customer.



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 2020 was as follows:



Overall customer satisfaction survey results achieved goals, except for foreign customer satisfaction, which increased slightly from 2019 without achieving goals, leaving this issue for the Company to further improve satisfaction.

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

Concerning performance in 2020, the Company had 108 complaints from customers, a significant increase from 2019 because many complaints came from delivery of a large lot of work. Therefore, the Company sorted complaints by the amount delivered. However, the Company was able to manage 100 percent of customer complaints in line with it goals with no complaints concerning leaks of customer personal information.

2016	2017	2018	2019	2020
38 Complaints	28 Complaints	30 Complaints	16 Complaints	108 Complaints
100% Closed				

• Ability to Provide Inspection Services: The Company maintained transformers within the warranty period and achieved more than 90 percent of the goal. Performance in 2020 showed 1,785 transformers with customers confirming operations for 1,508 transformers. The Company prepared plans to work according to the goal of 100 percent. The Company is waiting for confirmation for services for 277 transformers from customers by bringing the amount forward to 2021.



• 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%.

Result: In 2020, the Company achieved 99.51% of the goal.

Goal: 2. > 95% of raw materials are delivered on time.

Result: In 2020, the Company achieved 97.16% of the goal.

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

of suppliers.

Result: In 2020, the Company continued to work with new suppliers and achieved 100% of the goal.

Goal: 4. Improve at least one supplier in Thailand according to Thailand.

Result: In 2020, 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 2020

- The Company assessed 77 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. The Company's performance was as follows:
  - Suppliers/deliverers who met the criteria at Level A 74 suppliers
  - Suppliers/deliverers who met the criteria at Level B 2 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. The Company
  - Suppliers/deliverers at Level D 0 suppliers
- Performance According to Main Goals of the Procurement Process



- The Company communicated and recommended guidelines according to the QTC Supplier Code of Conduct to 100 percent of suppliers. The Company communicated guidelines according to the QTC Supplier Code of Conduct. In 2020, the Company had the following performance:
  - The Company had 73 new suppliers in the country.
  - The Company had 9 new suppliers from abroad.
  - Except for ordinary suppliers who purchase miscellaneous products in the market.



Table Showing Communication Performance in 2018 – 2020

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

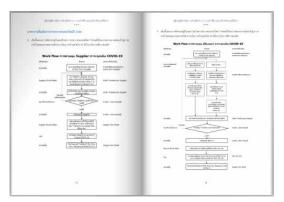
Concerning plans to develop five suppliers in 2020, the Company did not carry out the plan due to the COVID-19
pandemic. However, the Company received good cooperation from all five suppliers in making modifications to
processes according to QTC recommendations in order to be able to deliver raw materials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

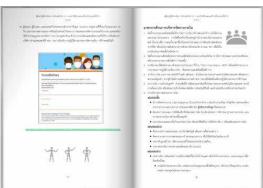
#### Specification of COVID-19 Prevention Measures

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 From 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.







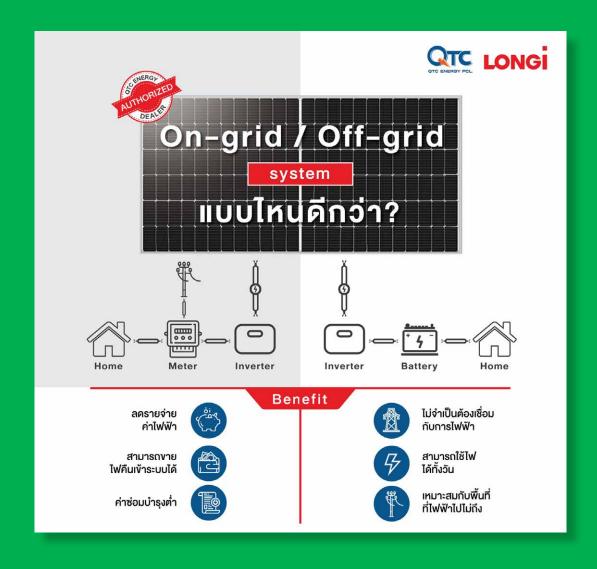


Sample of the COVID-19 Crisis Operations Manual (Measures for Suppliers/Contractors/Ordinary People)

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: 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 2020, the Company did not achieve the goal and had a waste increase per production

unit of 18.18% (0.052 kg/kVA).

Goal: 2. Create a green culture to sort waste toward the goal of having zero waste to landfill.

Result: In 2020, the Company achieved the goal.

Goal: 3. Complaints or negative news about improper disposal or dumping of hazardous waste

from factories.

Result: In 2020, the Company had no environmental complaints or negative news.

### **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) in 2020.

#### List of QTC's Waste or Disused Materials Collection, Transportation, Treatment and Disposal Service Providers in 2020

#### Akkhie Prakarn Public Company Limited

Used silica gel, contaminated garbage, contaminated containers, used printer inkwells, degraded Collected and Disposed of: paint, wastewater from washing paint spraying containers, lead- and copper-contaminated water, used grease, oil-contaminated water, dust and powder from welding/grinding/cutting

work, oil filters, grindstone scraps

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

#### Professional Waste Technology (1999) Public Company Limited

Collected and Contaminated silica gel, fabric scraps and oil-contaminated sawdust, batteries, glass ball scraps

Disposed of: 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 Contaminated containers, ceramic cups, used grease, oil-contaminated water, contaminated Disposed of: 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

Contaminated containers, electric wires, paper scraps (including cardboard), wood scraps Collected and

Disposed of: (including sawdust), plastic scraps, 15-liter plastic barrels, paper cores

Disposal Method: 011 (sort for redistribution)

#### Choksahaphat & Supply Company Limited

Collected and Electric wires, paper scraps, wood scraps, lathing scraps, aluminum scraps, steel scraps,

Disposed of: copper scraps, plastic scraps. Disposal Method: 011 (sort for redistributions)

#### Sapphaisan Factory Company Limited

Collected and Pure copper scraps, contaminated copper scraps, thick steel scraps, silicon steel scraps, gas Disposed of: scraps (from plasma cutting), plastic cores, cardboard scraps, paper scraps, plastic scraps

(raw material insulation)

Disposal Method: 011 (sort for redistribution)

#### N & J Inter Trade (555) Company Limited

Collected and Used hydraulic oil, used oil (used transformer oil with no PCB components), used lubricant oil

Disposed of:

Disposal Method: 041 (as alternative fuel)

#### Lydia Oil (Thailand) Company Limited (newly registered in 2020, License No. DIW-D-170900070)

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

Disposal Method: 042 (used to make mixed fuels)

\*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 2020 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.



Example of Report on Safe Burial of Non-hazardous Waste by Disposal Service Providers



Example of VDO Call to Monitor Transportation and Disposal

#### **Performance**

#### Volume of Disused Materials from Production

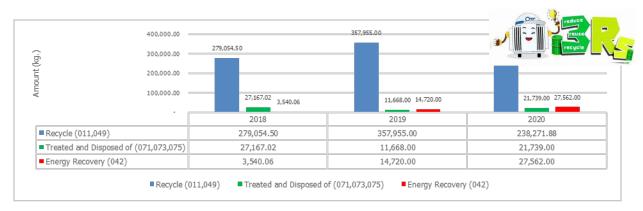
Table E1 - Volume of Disused Materials from Production in 2018 - 2020



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. However, in 2020, the volume of hazardous waste was 595 kg higher than in 2019 or a 0.98% increase. This was because the Company changed paint materials used to coat transformer bodies to increase shininess and durability in order to meet the needs of customers in Japan. When this type of paint was mixed, the leftover paint cannot be used again with containers, causing the volume of hazardous waste to increase. In this case, work sites will control painting processes to maximize use and create minimum waste in the process in 2021

#### Waste Sorting Based on the 3Rs Principle to Create a Green C



Graph E2 Showing a Comparison of Management of Disused Waste (Garbage) from Production Processes in 2018 - 2020

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 increased from 2018 by 10,071 kg or 86.31 percent. In addition, the amount of waste sent to generate electricity increased by 12,842 kg or 87.24 percent, causing disposal and treatment expenses to increase by 30,591.40 baht or 8.79 percent. At the same time, the ratio of recyclable waste under the law and sold as income for the Company dropped by 119,683.12 kg or 33.44 percent, causing income from recyclable waste sales to drop by 153,701.98 baht or 2.12 percent. However, overall waste creation in production processes in 2020 was lower than 2019 by 41,675.12 kg or 12.66 percent.

#### Zero Waste to Landfill



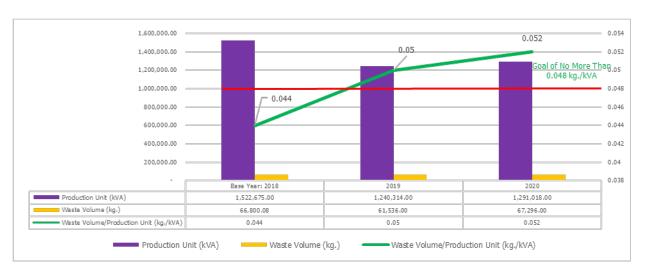
Graph E3 Showing Comparison of Disused Materials (kg) from Production Processes by Type of Disposal in 2018 - 2020

From Table E1 and Graph E3, in 2020, no hazardous waste from production processes were sent for disposal by burial in landfills and 3,537 kg of ordinary waste (non-hazardous) was buried in landfills. Ordinary waste (non-hazardous) is 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 Production Volume (kVA), Volume of Waste from Production Processes Sent for Disposal and Treatment by the 071, 073, 075 and 042 Methods and Volume of Waste per Production Unit (kg./kVA)

h	Year of Work				
ltem	Base Year of 2018	2019	2020		
Production Volume (kVA)	1,522,675.00	1,240,314.00	1,291,018.00		
Waste Volume (kg)	66,800.08	61,536.00	67,296.00		
Waste Volume per Production Unit (kg/kVA)	0.044	0.050	0.052		



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

Table E2 and Graph E4 shows waste volume from production processes sent for disposal and treatment to have continually risen due to changes in materials and raw materials used in production. In 2019 and 2020, the Company experimented with canceling or changing materials to have the best and most appropriate materials and raw materials. Processes for controlling cost-effective use were not sufficiently good. In 2021, this result will be used to make production process plans for cost-effective use of resources and minimize garbage or waste from production processes.

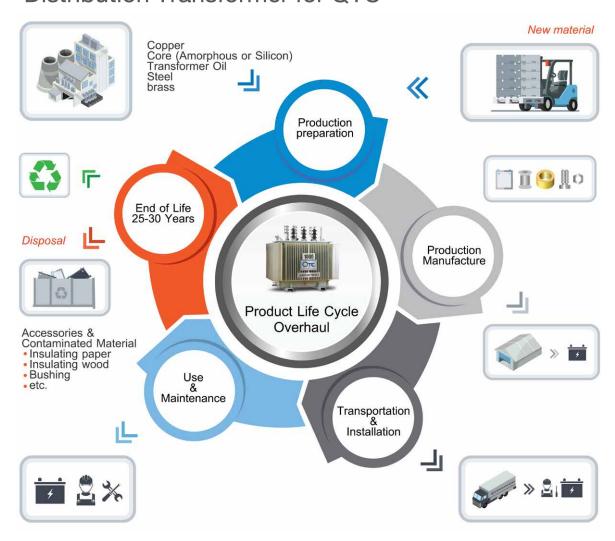


#### **Disposal of Expired Transformer Products**

#### **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."

## Product Life Cycle of Distribution Transformer for QTC



In 2020, no expired transformers were sent for disposal at QTC's Factories in Rayong

#### Management of Disused Solar Panels

In 2020, 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.

## **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 2020, 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 2020, green procurement value was 295,558.06 baht, an increase of 167 percent. The Company achieved the goal.
    - **Goal:** 3. Complaints from the community in case of pollution impacts from activities of the Rayong factory.
  - Result: In 2020, 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/

## **Q** Pollution Control

#### **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 (2017-2020)

				Test F	Results					
พารามิเตอร์ที่ตรวจวัด	1/60	2/60	1/61	2/61	1/62	2/62	1/63	2/63	Standard	Unit
	16/6/17	20/12/17	09/6/18	20/12/18	30/7/19	6/12/19	24/3/20	20/10/20		
BOD <sub>5</sub>	4	7	7	6	7	<2	3	4	20	mg/l
Oil and Grease	4.6	<1.5	Not Detected	<2.5	Not Detected	Not Detected	Not Detected	Not Detected	5	mg/l
PH	7.26	6.61	7.17	7.13	7.94	7.74	7.26	7.23	5.5-9.0	-
Sulfides	<0.5	<0.5	<0.5	<0.5	Not Detected	<0.5	<0.5	<0.5	1	mg/l as H <sub>2</sub> S
Suspended Solids	10	10	15	22	74	31	9	19	50	mg/l
Temperature	31	23	32	28	34	27	32	27	40	°C
Total Dissolved Solids	Not Detected	59	Not Detected	121	316	68	77	<65	3000	mg/l
Total Kjeldahl Nitrogen	<1.0	1.6	1.9	5.4	5.7	10.6	1.7	2.0	100	mg/l as H2S

Table Showing QTC Energy's Bangkok Office Wastewater Quality Test Results at the Final Point (2017-2020)

				Test Results	;				
พารามิเตอร์ที่ตรวจวัด	1/60	2/60	1/61	2/61	1/62	1/63	2/63	Standard	Unit
	14/6/17	22/12/17	19/6/18	19/12/18	6/12/19	17/3/20	25/11/20		
BOD <sub>5</sub>	10	7	16	12	18	8	4	40	mg/l
Oil and Grease	<1.5	<1.5	Not Detected	6.1	3.9	<2.5	Not Detected	20	mg/l
РН	7.8	7.66	8.04	7.64	7.35	7.19	7.16	5.0-9.0	-
Sulfides	0.7	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	3	mg/l as H <sub>2</sub> S
Suspended Solids	19	19	22	21	79	<8	10	50	mg/l
Temperature	29	24	31	29	27	30	30	N/R	°C
Total Dissolved Solids	390	440	272	494	550	272	446	500	mg/l
Total Kjeldahl Nitrogen	21.3	36	43	32.4	9.9	29.3	19.5	40	mg/l as H2S

Q Solar 1 generates solar energy to sell to the Provincial Electricity Authority. Water is used to clean a number of solar panels 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. Results from the first test in 2020 found suspended particles in the office building's cesspool. Therefore, the system was modified, cleaned and tested for the second time. The test results were as follows:

Table Showing Wastewater Quality Test Results of Q Solar 1 in 2019

			Test Results			
Tested Areas	Tested parameters	1/62	1/63	2/63	Standard	Unit
		20/9/19	16/7/20	3/9/20		
	Acidity and Alkalinity (pH)A	7.3	2	-	5.5-9.0	-
	BOD	2	ND.	-	20	mg/l
Wastewater from Water System	DOC	<40	7.1	-	120	mg/l
Gystein	Total Suspended Solids (TSS)A	3	<40	-	50	mg/l
	Oil & Grease	<5	4	-	5	mg/l
	Acidity and Alkalinity (pH)A	7.5	4	-	5.5-9.0	-
	BOD	6	Not Detected	-	20	mg/l
Wastewater from the Lodgings' Cesspool	DOC	<40	7.2	-	120	mg/l
Lougings Cesspool	Total Suspended Solids (TSS)A	4	<40	-	50	mg/l
	Oil & Grease	ND.	7	-	5	mg/l
	Acidity and Alkalinity (pH)A	7.4	6	-	5.5-9.0	-
	BOD	5	<5	-	20	mg/l
Wastewater from the Office Building's Cesspool	DOC	92	7.2	-	120	mg/l
Dunumy a Ocaapoor	Total Suspended Solids (TSS)A	16	213	<40	50	mg/l
	Oil & Grease	ND.	38	-	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 (2017 - 2020)

					T	est Result	s					
Area	Total VOCs	Particulate	2/60	1/61	2/61	1/62	2/62	3/62	1/63	2/63	Standard	Unit
		Total VOCs	20/12	5/6	11/12	23/7	24/9	17/12	23/3	20/10		
Wood Cutting Room Sawdust Vacuuming Duct	Particulate	1.2		8.68	1.01	0.82		1.83	1.30	1.69	400	mg/m³
Spray Booth Stacks	Xylene	4.11	1.97	1.92	11.3		0.97		2.57	6.56	400	mg/m³
MC 139 Factory 6	Volatile Organic Compounds				 						200	ppm
	Particulate	1.77	6.97	2.69	18.5		33.2		23.2	69.0	-	ppm
Spray Booth Stacks MC 199 Factory 6	Oxide of Nitrogen as Nitrogen Dioxide				0.24		6.29		2.54	1.61	400	mg/m³
Spray Booth Stacks (Installation)	Carbon Monoxide				3.85		61.3		28	835	-	ppm
	Oil mist	2.1		94.9	8.12	17.7		111	1.55	3.94	400	mg/m³
	Particulate				! ! ! !				! ! !		200	ppm
	Oil mist	3.69	0.21	3.02	9.46	18.9		643	29.2	101	-	ppm
Plasma Cutting Machine	Carbon Monoxide	22.7	54.1	3.31	10.1			33	29.1	15.2	400	mg/m³
Stacks, Factory 4	Oxide of Nitrogen as Nitrogen Dioxide	12	3	11	1			<1	Not Detected	Not Detected	-	ppm
	Oil mist	3		Not Detected	! ! ! ! !						870	ppm
	Xylene		433	 	1 1 1 1 1 1		1	 	! ! ! ! !		-	mg/m³
Oven Stacks (Vacuum)	Oxide of Nitrogen as Nitrogen Dioxide		23.2		 			 			400	mg/m³
	Oil Mist	278	7.52	107	342	150		78	167.0	46.8	-	mg/m³
	Oxide of Nitrogen as Nitrogen Dioxide				 			 			690	ppm
	Oxide of Nitrogen as Nitrogen Dioxide	<1		Not Detected	Not Detected	3		Not Detected	Not Detected	1	200	ppm
Oven Stacks (Transformer	Oil mist (ละอองน้ำมัน)	12.2	2.08	Not Detected	22.1	4.19		68.8	0.37	29.6	-	mg/m³
Repair)	Xylene		-		 						200	ppm
	Oxide of Nitrogen as Nitrogen Dioxide		<1		i 				Not Detected	Not Detected	200	ppm
Transformer Moisture	Oil mist (ละอองน้ำมัน)				 			949	0.52	0.14	-	mg/m³
Vacuuming Stacks (Power Plant)	Oxide of Nitrogen as Nitrogen Dioxide							<1	Not Detected	Not Detected	-	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

Office Supply Code 0016

Trademark Shih-Tzu

Procurement Value 52,155.60 baht



Eraser Product, Model ZL102-W Item

Office Supply Code 0038

**PENTEL** Trademark

6,786.12 baht Procurement Value



Rents of Green Label Copying Machines in 2020

RICOH

9 machines valued at 227,200 baht



4 machines valued at 190,920 baht

Table with Summary of Green Procurement Value in 2019-2020

		Green Procurement Value			
ltem	Trademark	2019	2020		
70-Gram Copying Paper	Shih-Tzu	66,346.00	52,155.60		
Eraser Product, Model ZL102-W	PENTEL	6,786.12	2,454.58		
Rented Copying Machines	RICOH	104,040	227,200		
Rented Copying Machines	Fuji Xerox	-	190,920		
Total Value		177,172.12	472,730.18		

Green Procurement Value in 2020 increased from 2019 by 167 percent at the value of 295,558.06 baht.

में यह मान्द०द/ जलते



ที่ทำการองค์การบริหารส่วนตำบลมาบยางพร ถนนปลวกแตง-หัวยปราบ รย ๒๑๑๕๐

อรี มกราคม ๒๕๖๔

เรื่อง ข้อร้องเรียนด้านสิ่งแวดล้อม

เรียน กรรมการ/ผู้จัดการบริษัท คิวทีซี เอนเนอร์ยี่ จำกัด (มหาชน)

อ้างถึง หนังสือบริษัท คิวทีซี เอนเนอร์ยี่ จำกัด (มหาชน) ที่ CSR ๒๑๐๐๑ สงวันที่ ๑๑ มกราคม ๒๕๖๔

ตามที่อ้างถึง บริษัท คิวทีซี เอนเนอร์ยี่ จำกัด (มหาชน) ใบอนุญาตประกอบกิจการเลขที่ จ ๓-๗๑-๑/๔๐ รย โรงงานตั้งอยู่เลขที่ ๑๔๙ หมู่ที่ ๒ ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง ดำเนินกิจการเกี่ยวกับการผลิตหม้อแปลงไฟฟ้า ได้สอบถามข้อมูลเกี่ยวกับข้อร้องเรียนด้านสิ่งแวดล้อมที่เกิด จากการดำเนินงานของบริษัทฯ ในระหว่างวันที่ ๑ มกราคม ๒๕๖๓ ถึง ๓๑ ธันวาคม ๒๕๖๓ นั้น

ในการนี้ องค์การบริหารส่วนตำบลมาบยางพร ได้ตรวจสอบข้อมูลแล้วพบว่าในระหว่างวันที่ ๑ มกราคม ๒๕๖๓ ถึง ๓๑ ธันวาคม ๒๕๖๓ บริษัท ศิวทีซี เอนเนอร์ยี่ จำกัด (มหาชน) ไม่มีข้อร้องเรียนด้าน สิ่งแวดล้อมจากชุมชนรอบข้างแต่อย่างใด

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ/

(นายชาตรี เงินท้วม) นายกองค์การบริหารส่วนตำบลมาบยางพร

กองสาธารณสุขและสิ่งแวดล้อม โทร. (๐๓๘) ๐๒๖ ๘๒๘ ต่อ ๑๑๕ โทรสาร (๐๓๘) ๐๒๙ ๐๐๐

"ยึดมั่นธรรมาภิบาล บริการเพื่อประชาชน"

## **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 drop from the base year by five percent.

Result: In 2020, greenhouse gas emissions declined by 3.41 percent. The Company did not achieve

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

Result: In 2020, emissions declined by 7.86 percent from the base year. The Company achieved the goal.

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

Result: In 2020, sales for super low loss transformers declined by 24 percent from 2019. The Company did not achieve the goal. Green Label product sales declined by 90 percent from 2019. The Company did not achieve 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 - 2020

	Volume of Greenhouse Gas Emissions (Ton CO2 eq.)						
Year	Scope 1 (ton CO2 eq.)	Scope 2 (ton CO2 eq.)	Scope 3 (ton CO2 eq.)	Total Emission Scope 1+ 2 (ton CO2 eq.)	Total Emission Scope 1+2+3 (ton CO2 eq.)		
2015 (First Base Year)	426	899	63	1,325	1,388		
2016	401	672	68	1,073	1,141		
2017	391	907	57	1,298	1,355		
2018 (Second Base Year)	328	909	64	1,237	1,301		
2019	282	908	50	1190	1240		
2019 (Current Base Year) Re-calculation of Base Year (AR5)	284	780	50	1,064	1,113		
2020	276	745	55	1,020	1,075		
% of Changes between Base Year 2019 Re-cal. & 2020	-2.82%	-4.49%	10.00%	-4.14%	-3.41%		
Type of GHGs Included	CO٫, CH٫, N٫O, HFCs, PFCs, SF٫, NF٫						

1600 1400 1200 eq. 1000 002 800 Eg. 600 400 200 Scope 1 Scope 2 Scope 3 Total Emission Scope 1+2 Total Emission Scope

Graph C1 Showing Volume of Greenhouse Gas Emissions in 2015 - 2020

Table C1 and Graph C1 showed the Company to have changed base years again from 2018 to 2020. Recalculations were made in 2020 because the TGO announced a change in EF factors (AR5) of several greenhouse gases. If base year data was used without changing EF values to be the same as changes in 2020, statistical comparisons will lack credibility. Because the years of 2020 and 2019 had the most similar work processes, the carbon footprint work group selected 2019 as the new base year for calculations.

In 2020, Type 1 greenhouse gas emissions can be seen to have dropped by 2.82 percent while Type 2 greenhouse gas emissions dropped by 4.49 percent and Type 3 greenhouse gas emissions rose by 10 percent. Overall, greenhouse gas emissions of all three types declined by 3.41 percent from the recalculated base year of 2019 (AR5). The Company did not achieve the specified goal of five percent from the base year.

Table C2 Showing Greenhouse Gas Emissions per Production Unit

Year	Total Emission Scope 1+ 2 (ton CO2 eq.)	Capacity (Unit)	ton CO2 eq./Unit	Capacity (MVA)	ton CO2 eq./MVA
2015 (First Base Year)	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 (Second Base Year)	1,237	3,602	0.3434	1,522.68	0.8124
2019	1190	1,693	0.7029	1,240.31	0.9594
2019 (Current Base Year) Re-calculation of Base Year (AR5)	1,064	1,693	0.6285	1,240.31	0.8578
2020	1,020	1,686	0.6050	1,291.02	0.7901
% of Changes between Base Year 2019 Re-cal. & 2020	-4.14%	-0.41%	-3.74%	4.09%	-7.90%

1,800 1,400 Capacity (MVA) 0.7901 0.8000 1,200 1,000 ton CO2 800 600 400 0.2000 200 2558 (ปีฐานเดิมครั้งที่ 1) 2561 (ปีฐานเดิมครั้งที่ 2 2562 (ปีฐานปัจจุบัน)Recalculation of Base year(AR5) Capacity (MVA)

Graph C2 Showing Volume of Greenhouse Gas Emissions per MVA Production Unit



Graph C3 Showing Volume of Greenhouse Gas Emissions per Production Unit

Table C2 and Graph C2 showed Type 1 and Type 2 greenhouse gas emissions per MVA production unit to have been reduced by 7.90 percent from the recalculated Base Year of 2019 (AR5). The Company achieved the goal of five percent from the base year. In addition, Table C2 and Graph C3 showed Type 1 and Type 2 greenhouse gas emissions per production unit to have been reduced by 3.74 percent. Significant causes of the decline in greenhouse gases from 2020 were work from home (WFH) measures, which reduced greenhouse gas emissions from using benzene and reduced factory electricity use.

Certificate of Corporate Greenhouse Gas Emissions in 2020 from 1 January 2020 to 31 December 2020, 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 2019, the Company asked to be accredited by the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) in 2020, Accreditation No. TGO CFO FY20-05-029 (Verification Period: 01/01/2019 – 31/12/2019). Mr. Ruangchai Kritsnakriengkrai, Managing Director, accepted the certificate and registration from Mr. Jatuporn Burutpat, Permanent Secretary of the Ministry of Natural Resources and Environment, on behalf of the Company at the Hundred Hearts Unite to Reduce Global Warming event of 2020 hosted by the Thailand Greenhouse Gas Management Organization (Public Organization) or the TGO for passing consideration for verification as a Carbon Footprint Organization (CFO) at the Mayfair Grand Ballroom, 11th Floor, The Berkeley Hotel, on 16 September 2020.











## 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 2020, activities for reducing greenhouse gas emissions had the following main issues:

#### "You Take Care of the Forest and We Take Care of You" Project

This project is a cooperation between the government sector and the private sector in Thailand's capital market to move according to the national strategy and the 1st and 2nd National Reform Plan as an integration of work performed by the government sector, the private sector, the civil society sector and communities in order to develop sustainable carbon dioxide absorption mechanisms in community forest areas.

Project Goal: Create model carbon dioxide absorption communities with income for livelihoods and no

damage to forests that can be expanded throughout the country.

Target Areas: Pilot forest communities in Chiang Rai, Chiang Mai, Mae Hong Son and Phayao, a total of

12 forest communities with a total forest area of 20,925 rai with 6,588 villagers who benefited.

As a member of the Thailand Responsible Business Network (TRBN), QTC supported the aforementioned project by contributing funds in the amount of 100,000 baht and visiting target areas at Ban Ton Pheung Forest Community in Doi Saket, Chiang Mai, on 30 August 2020.













Mr. Poonphiphat Tantanasin, Chief Executive Officer, QTC Energy PCL, participated in the opening ceremony and planted trees in the "You Take Care of the Forest and We Take Care of You" Project at Ban Ton Pheung Forest Community, Doi Saket, Chiang Mai, on 30 August 2020.

#### Solar Energy Tuk-Tuk Project

Solar energy tuk-tuks are an invention by the engineering team and technicians of Q Solar 1 in Prachinburi, a subsidiary of QTC with a solar panel installation area for electricity generation of more than 200 rai. Daily inspections of solar panels or control boxes or emergencies when abnormalities were reported by control centers created a need to urgently check and make corrections. Access to each area needed transportation due to long distance, hot weather or rain. In the past, the Company used motorcycles or automobiles or bicycles in operations, which created waste of fuel, automobiles, old bicycles and air pollution. Therefore, Q Solar 1's team had the idea to change to new vehicles that can save fueling expenses and reduce environmental impacts, resulting in the invention of solar energy tuk-tuks to replace old vehicles.

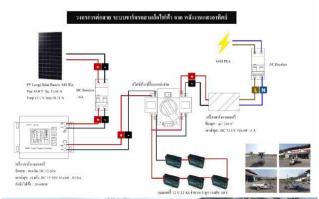
Solar energy tuk-tuks do not need fuel and use 100% of electricity from solar panels attached to the roof that provide cover for sunlight and rain in addition to having batteries to store energy for use at night or charge from 220V household current when necessary. This prototype invention was completed in late 2020 and fuel conservation results cannot be measured significantly. However, this achievement created good environmental value according to corporate social and environmental responsibility guidelines including corporate sustainability

Currently, five solar energy tuk-tuks have been built to replace automobiles and motorcycles in the Q Solar 1 work area at a cost of 56,113 baht per tuk-tuk.













Blue for Landscapers, Grass Cutting and Panel Cleaning



Green for Agricultural Work at the Sufficiency Economy Philosophy Center



2V 10A Batteries Store Energy for Nighttime Use White for Technicians

#### 12kW Solar Rooftop Installation Project at the Bangkok Office

Because the Company expanded the energy business and was appointed to distribute Logi-brand solar panels, the Company has a concept to install a 12-kW solar rooftop at the Bangkok office as a center of learning for engineers, sales employees and service technicians about maintenance techniques. To create the most benefit from installation, the Company installed the system on grid in the MDB for use in the office during daytime to replace 40kWh of electricity from the Metropolitan Electricity Authority per day. In one month, the solar rooftop replaces 1,200 kWh of electricity from the MEA and can reduce greenhouse gas emissions from electricity use by 0.60 ton CO2 eq. This project was executed in December 2020. Thus, the results in 2020 cannot be measured.

The Company plans to install a 427-kW solar rooftop at the Rayong factory in 2021 and the Company has applied for investment support from BOI in December 2020. The solar rooftop will be ready for operation in Quarter 2 of 2021.



Solar Rooftop Installation at the Bangkok Office in December 2020



#### 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.

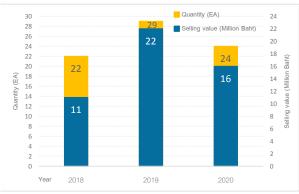
Super low loss transformers received funding from the National Innovation Agency (NIA) to install production lines at the Rayong factory and marketing for commercial distribution officially began in 2018. For over ten years in the product's development, QTC continued to push for super low loss transformers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

In 2020, super low loss (SLL) transformer sales were lower than 2019 due to impacts from the COVID-19 pandemic.



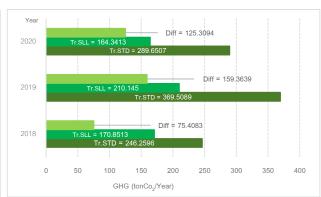
#### Value for QTC

Extra income, different products.



#### 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

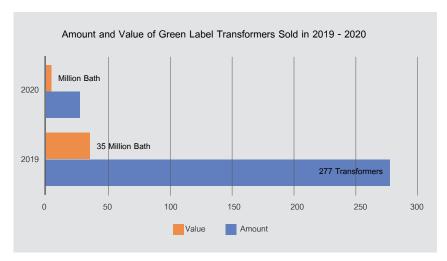
#### Value for Customers

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.



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 2020, the distribution of electric transformers certified "Green Label" has decreased by more than 90% from 2019 because in 2020 it is production for sale to private customers in the country. There is no auction amount from the Provincial Electricity Authority.





The domestic private Green Label transformer market may not be of interest to users because Green Label standards are no different from QTC's standard transformers. Therefore, customers show more interest in standard models or upgraded to purchase super low loss transformers which save more energy despite having a higher price and will reach maximum cost-efficiency more quickly.





In 2021, the Company will proactively market super low loss transformers and Green Label transformers to build customer awareness and provide access to high quality products that reduce environmental impacts.



## 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 2020, the Company achieved the goal with a reduction of 8.23 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 2020, the Company achieved the goal with a reduction of 0.01 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 2020, the Company had the following performance:

Use of water from the Metropolitan Waterworks Authority by the Bangkok office increased

by 3.41 percent in 2020. The Company did not achieve the goal.

Use of groundwater by the Rayong Factory declined by 8.79 percent. The Company achieved

the goal.

Use of groundwater by the Q Solar 1 power plant declined by 4.19 percent in 2020. The

Company did not achieve the goal.

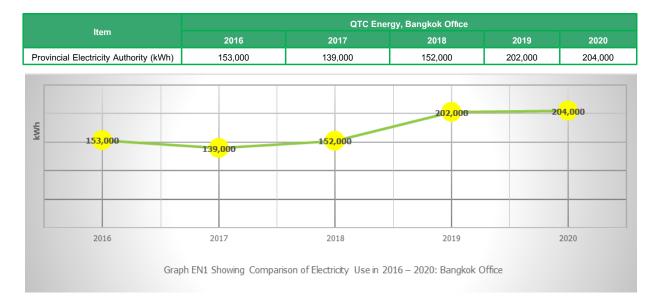
## Compared to the compared to

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. Non-renewable Energy

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.

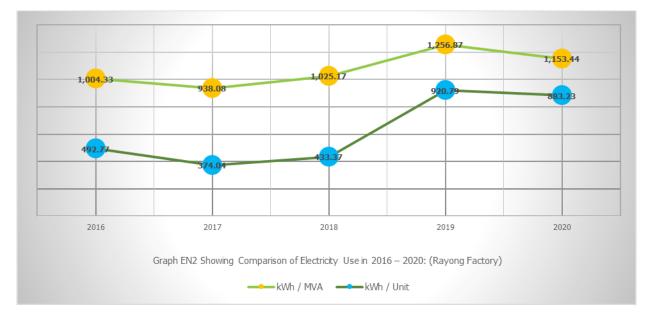
Table EN1 Showing Amount of Electricity Used in the Bangkok Office



From Table EN1 and Graph EN1, electricity use by the Bangkok office increased annually because office personnel increased every year due to business growth in new electricity products. In addition, in 2020, WFH measures for some employees did not reduce electricity use because some employees continue to work at the office normally on every floor. However, employees did not go out to eat. Therefore, the Company added another microwave for employees to heat up lunch in 2020. The Company's modification guideline was to install the solar rooftop to generate electricity for the Bangkok office to use (see more information on the issue of Climate Change under the project to install a 12-kW solar rooftop at the Bangkok office).

Table EN2 Showing Efficiency of Electricity Use at the Rayong Factory

No.	QTC Energy, Rayong Transformer Manufacturing Factory								
Item	2016	2017	2018	2019	2020				
Provincial Electricity Authority (kWh)	1,153,576	1,556,768	1,561,008	1,558,904	1,489,120				
Production Volume (MVA)	1,148.6	1,659.53	1,522.68	1,240.31	1,291.02				
Production Volume (unit)	2,341	4,162	3,602	1,693	1,686				
kWh/MVA	1,004.33	938.08	1,025.17	1,256.87	1,153.44				
kWh/Unit	492.77	374.04	433.37	920.79	883.23				



In Table EN2 and Graph EN2, electricity use by the Rayong factory in 2020 can be seen to have declined from the base year of 2019 by 4.48 percent while electricity use per MVA production unit declined by 8.23 percent. The Company achieved the goal to have increases not exceeding five percent of the base year. In addition, electricity use per production unit declined by 4.08 percent from the base year of 2019. Electricity use by the Rayong factory was less because of overtime work management with strict limits and controls to enable as much production in normal working hours as possible because of COVID-19 prevention measures that limit time outside facilities. This was a good opportunity for the Company to modify and manage time in order to increase production efficiency.



Table EN3 Showing Efficiency of Electricity Use at Q Solar 1

	Q Solar 1 Solar Energy Generation						
ltem	20	19	2020				
	Meter 6100034354	Meter 27668614	Meter 6100034354	Meter 277668614			
	Public Utilities	Systems	Public Utilities	Systems			
Provincial Electricity Authority (kWh)	31,106.00	47,520.00	28,651.00	51,183.60			
Production Volume (MWh)	13,2	01.8	13,130.58				

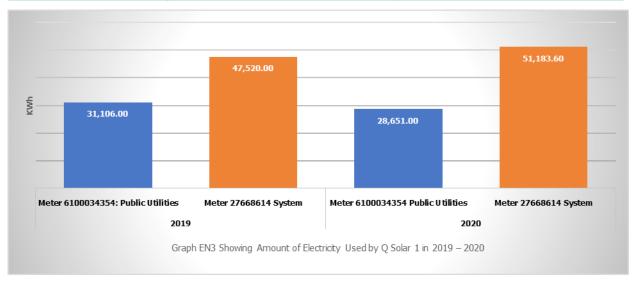


Table EN3 and Graph EN3 show the efficiency of electricity use by the Q Solar 1 power plant with two separate meters for public utilities and offices. In 2020, solar panels were installed to generate electricity and replace part of electricity from the PEA, causing electricity use to drop by 7.89 percent from 2019. The meter for systems controlling electricity generation from solar energy at night showed electricity use to increase by 7.71 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 2020 compared to 2019. 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 costeffectively.

#### 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 in the following table:

Table EN4 Showing the Amount of Fuel Used

ltem	QTC Energy						
item	2016	2017	2018	2019	2019		
Diesel	110,765	107,332	95,634	74,638	76,588.91		
Benzene	29,276	27.584	27,486	32,595	27,001.45		
Total (Liter)	140,041	134,952	123,121	107,233	103,590.37		
Production Volume (MVA)	1,148.6	1,659.53	1,522.68	1,240.31	1,291.02		
Liter (Diesel)/MVA	96.44	64.68	62.81	60.18	59.32		

จากตาราง EN4 แสดงให้เห็นว่าปี 2563 มีปริมาณการน้ำมันเชื้อเพลิงประเภทดีเซลเพิ่มขึ้น 2.61% ในขณะเดียวกันปริมาณ การใช้เชื้อเพลิงประเภทเบนซินลดลง 17.16% ซึ่งเป็นผลมาจากมาตรการป้องกันโควิด-19 WFH ทำให้การใช้น้ำมันเบนซินสำหรับ รถประจำตำแหน่งที่ทำงาน WFH ลดลง สำหรับสัดส่วนการใช้เชื้อเพลิงดีเซลต่อปริมาณการผลิต MVA ลดลงจากปีฐาน 2562 เล็ก ้ น้อยคิดเป็น 0.01% เนื่องจากมีปริมาณการผลิต MVA ที่เพิ่มขึ้นจากปี 2562 ได้ตามเป้าหมายที่กำหนดไว้ที่แปรผันเพิ<sup>่</sup>มขึ้นไม่เกิน 5% จากปีฐาน

Table EN5 Showing the Amount of Fuel Used by Q Solar 1

<b>It</b> em	Q Solar 1	
	2019	2020
Diesel	4,448.58	3,552.16
Benzene	2,760.68	3,881.96
Total Fuel Use	7,209.26	7,234.12

From Table EN5, diesel fuel use in 2020 can be seen to have been reduced by 24.65 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 in late 2020, causing fuel use to be reduced (see the Solar Energy Tuk-Tuk Invention Project).

Benzene used by grass cutters and water pumps in 2020 increased by 40.62 percent due to external factors around the power plant. Irrigation canal excavations created a large amount of particulates in the air for a long time, which landed on solar panels and reduced electricity generation capacity, causing solar panels to have to be cleaned for frequently. The panel washing process needed water pumps which use benzene.

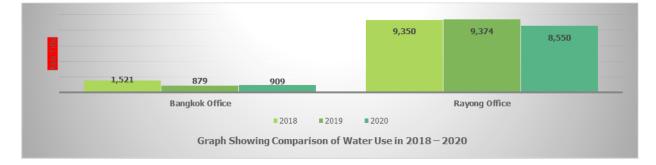
No goals were set for fuel use because the amount of fuel used was small and insignificant.

## **Q** Water Use

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.

QTC Energy & Q Solar 1 2016 2017 2018 2019 2020 Metropolitan Waterworks Authority (cubic 1,264 1,521 879 909 803 Surface Water (cubic meter) 4,504 5,174 4,829 Groundwater (cubic meter) 4,521 9.374 8.550 Total (cubic meter) 5,307 6,438 10,871 10.253 9.459

Table Showing Volume of Water Used



From the graph, performance in 2018-2020 can be summarized as follows: Volume of water from the Metropolitan Waterworks Authority used by the Bangkok office in 2020 increased by 3.41 percent.

Volume of groundwater used by the Rayong factory in 2020 declined

achieve the goal.

The Company achieved the goal.

The Company did not

Performance at the Bangkok office did not achieve the goal because a water pipe in the building broke in 2020, causing water use to increase slightly, and because new employees were accepted.

by 8.79 percent

#### 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. However, in 2020, the Rayong factory installed rain gutters to take rainwater from dormitory buildings and store rainwater for emergency use in fires with a legal storage volume of 70 cubic meters. In addition, the Company created a system to take overflowed water in drains 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

Water Management by Q Solar 1

- 1. 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

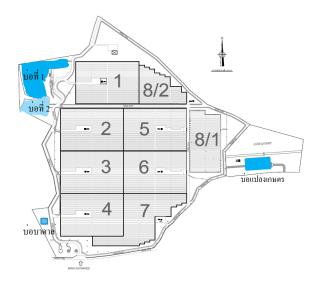


Table Showing Use of Groundwater and Natural Water Storage Volume in 2019-2020

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

Volume of ground water used by the Q Solar 1 power plant in 2020 was lower than 2019 by 4.19 percent. The Company did not achieve the goal of reducing by five percent due to increased solar panel cleaning frequency because external factors from irrigation canal excavations created dust on solar panels.

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.



**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 2020, the Company had 36 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: 94 percent of employees in the target group were trained. The Company did not achieve the goal.

# Safety

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**

In 2020, the Company changed from the OHSAS18001 safety, occupational health and work environment management system to ISO45001 standards. 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 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:

	QTC Energy		Q Solar 1
Level	Services & Bangkok Office	Rayong Factory	Amount
	Amount (person)	Amount (person)	(person)
Supervisor SOs	11	18	1
Technical SOs	-	-	1
Professional SOs	-	2	-
Executive SOs	14	12	1



Safety Committee (SC) Members in 2019-2020 (from elections in 2018)

First-Last Name	Position	Remarks						
1. Mr. Charoensak Sarawong	Committee Chairman	Appointed						
2. Mr. Sayan Dangprasert	Director	Appointed						
3. Mr. Man Treenai	Director	Appointed						
4. Mr. Tanwa Pumraya	Director	Elected						
5. Mr. Wachirawit Tanakiatsriboon	Director	Elected						
6. Mr. Ong-at Wanprake	Director	Elected						
7. Miss Arunroj Intasiri Director/Secretary Appointed								
Calculated as 2.78 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.

#### Infrastructure Modifications for Safety

In 2019, the Safety Committee proposed constructing a new chemical storage building because the area of the old building is unsuitable for the types and quantity of chemicals used in order to provide safety for workers by limiting chemicals stored in the area and storing chemicals in the chemical storage building along with preventing risk of fires or explosions from improper chemical storage. The Safety Committee received the budget for construction and construction was completed in 2020 along with installation of automatic fire alarms that prevent explosions, automatic fire extinguishers and emergency basins for workers in the area to wash eyes. A total of 1,411,000 baht was spent.







Photographs of the New Chemical Storage Building and Safety System Installation

#### 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 2020, the Company organized eight major practical training courses and spent 92,000 baht in operations as follows:

- 1. The basic firefighting and first-aid course by lecturers from the Public Disaster Prevention and Mitigation Department, Mab Yang Porn Tambon Administrative Organization spent a budget of 12,000 baht with 100 percent of trainees who were trained.
- 2. The firefighting and fire escape training course provided by lecturers from the Public Disaster Prevention and Mitigation Department, Mab Yang Porn Tambon Administrative Organization spent a budget of 11,100 baht with 211 trainees who participated in the fire escape drill (only employees are onsite when training).
- 3. Crane supervisor, controller, signaler and rigger training provided by lecturers from Eastern Training & Consultant Company Limited. This training had a budget of 34,000 baht with a target to train 30 new employees and 100 percent of employees were trained.
- 4. Crane work safety training provided by lecturers from Eastern Training & Consultant Company Limited had a budget of 17,000 baht with a target group of 31 employees who were trained more than two years previously. A total of 27 employees participated, or 87.10 percent.
- 5. Electricity work safety & CPR training provided by lecturers from Eastern Training & Consultant Company Limited spent a budget of 18,000 baht. This training had a target group of 25 employees who work with electricity and 100 percent of the target group was trained.
- 6. Forklift maintenance and safe driving training provided by lecturers from Metro Tech Equipment Company Limited had no expenses and had two groups of forklift driver employees. In the target group of 31 employees, 26 trainees were trained, or 83.87 percent.













- 7. Safety review training was provided for employees with a working life of two years and up by professional safety officers divided into seven groups. Of the target group of 136 employees, 123 employees or 90.44 percent of employees were trained at no cost.
- 8. Chemical work safety training course was provided by professional safety officers divided into three groups. Of the target group of 70 employees, 56 employees or 80.00 percent of employees were trained at no cost.



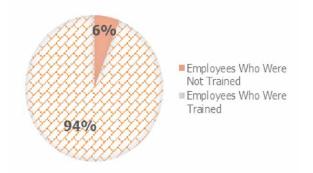




Sample of Images Accompanying the Annual Safety Training Review of 2020

#### Safety Training Goals for Employees in the Target Group

In 2020, the Company organized eight safety training courses with 94 percent of employees in the target group who were trained. The Company did not achieve the goal. The safety and HRD work sections will follow-up with employees who were not trained in 2021.



#### **Enforcement of Regulations**

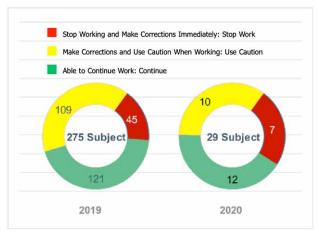
The Company has strict measures for enforcing safety rules and regulations. According to accident reports from past to present, most accidents are caused by human negligence in not wearing personal protective equipment before working or removing personal protective equipment when there is no one watching. 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.

However, in 2020, supervisors were lax in enforcing regulations and gave only verbal warnings without written records. On this issue, the Board of Directors and the Executive Committee directed supervisors at every level to maintain strict enforcement measures in 2021 to build discipline and a safety culture in the organization.



#### **Build Participation**

Support for KAIZEN and writing near-miss reports promoted employee participation in presenting concepts and eliminating lack of safety before accidents. In 2020, employees sent 21 safety KAIZEN articles out of 694 KAIZEN articles and 29 near-miss reports were sent.





Statistics on Participation in Writing Near-miss Reports

Statistics on Participation in Preparing Safety KAIZEN

Employee participation in preparing near-miss reports and safety KAIZEN in 2020 dropped significantly due to impacts and employee concerns about COVID-19. Therefore, employees did not show much interest in preparing nearmiss reports and safety KAIZEN concerning work safety from employee views. However, employees prioritized KAIZEN on the issue of quality to reduce waste in processes, loss of time and increase work efficiency. This was another reason which increased statistics on accidents in 2020. In 2021, the Company will modify plans and motivate more employees to participate.

Another model for participation building was the 5S Safety & Happy Workplace weekly activity, which the Company continued to operate under the responsibility of the Safety Committee. In 2020, the activity was hosted on 18-20 August. Activity booths were organized to show inventions, near-miss reports, photographs in the "Start-Safe" concept. Outside agencies were invited to participate in activities which combined 5S work and building organization safety with safety because the Company sees that these three issues support one another under the 5S concept to reduce accidents and create happiness in working. This activity covered participation by employees in every company under COVID-19 prevention measures in 2020. Therefore, students from schools in Mab Yang Porn were not invited to activities. The Company spent a budget of 41,822.61 baht on activities.





#### 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 2020 are as follows:

Table Showing Sound Measurements in Work Areas

				Test Results				
Area	Test Point	2018	1/20149	2/2019	1/2020	2/2020	Standard	Unit
		19/6/18	15/3/19	23/7/19	20/3/20	30/6/20		
Factory 1	Steel Core						85	dB( A)
Factory 3	Human Resources Department	63.5		74.5			85	dB( A)
Factory 3	Unicore Metal Cutting Machine	77.5		77.9	79.9		85	dB( A)
Oil Baking & Filling	Tanking	76.8		75.0	76.2		85	dB( A)
Assembly	Wood Cutting Room	81.9		78.8	80.6		85	dB( A)
Steel Core Workshop				89.0	82.0		85	dB( A)
Factory 4	Steel Pellet Shooting Area	86.0					85	dB( A)
Assembly	Workshop			74.3	75.9		85	dB( A)
Assembly	Copper Core Welding						85	dB( A)
Installation	Spray Booth			76.8	77.3		85	dB( A)
Coiling 1	Coiling						85	dB( A)
Coiling 2	Coiling						85	dB( A)
Coiling 3	Coiling	69.0		74.3	71.5		85	dB( A)
Coiling 4	Coiling	75.7		69.9			85	dB( A)
New Coiling Building	Coiling Machine	75.0		73.0	71.0		85	dB( A)
Paper Cutting Room	Paper Cutting			77.2	77		85	dB( A)
Factory 4	Chassis Assembly and Welding	85.0		86.0	95.7		85	dB( A)
Factory 4	Plasma Cutting Machine			85.7	85.7		85	dB( A)
Factory 4	Office in Production Building			68.1			85	dB( A)
Factory 5	Chassis Welding and Assembly		86.4		92.0		85	dB( A)
Factory 5	Robot Chassis Welding and Assembly				88.3		85	dB( A)
Factory 5	Steel Pellet Shooting Area		84.3		89.3		85	dB( A)
Factory 5	Automatic Steel Pellet Shooting Area				88.6		85	dB( A)
Factory 6	Spray Booth		80.1		81.6		85	dB( A)
Factory 6	Spray Booth (Large)		81.0		85.3	81.3	85	dB( A)

In 2020, the results from two tests and measurements of noise disturbance in work areas showed six 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. The second measurement and health checkup results according to risk factors in 2020 found no employees with hearing problems in all six danger areas.

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

			Test F	Results			
Parameter	Area	1/2017	1/2018	1/2019	1/2020	Standard	Unit
		19-20/6/17	19-20/6/18	23-24/7/19	23-24/3/20		
General Volume Level (Leq 24hr)	Employee Dormitory	62.4	65.6	67.0	68.4	70	dB( A)
General Volume Level (Lmax)	Employee Dormitory	87.3	92.7	104.0	90.2	115	dB( A)

#### Test Results of the Environment for Working with Chemicals

				Annual Test F	Results				
Area	Parameter	01/17 *	18	01/19	02/19	01/20	02/20	Standard	Unit
		16/06	25/6	15/3	23/7	20/3	30/6		
Steel Core: Steel Cutting/Slitting	Iron Dust	0.015	Not Detected		Not Detected	Not Detected		10	mg/m³
Factory 3	Total dust	<0.25	Not Detected		Not Detected	Not Detected		15	mg/m³
Steel Core: Steel Arrangement	Acetone	0.20			Not Detected	Not Detected		1,000	ppm
Factory 3	Xylene				Not Detected	Not Detected		100	ppm
	Toluene				<0.25	1.52		200	ppm
	Total dust				Not Detected	Not Detected		15	mg/m³
Steel Core: Steel Arrangement	Xylene							435	mg/m³
Factory 1	Xylene	<0.25	Not Detected					100	ppm
	Toluene							435	mg/m³
	Toluene	1.81	0.49					200	ppm
	Acetone	Not Detected	Not Detected					250	ppm
	Total dust	Not Detected	0.26					15	mg/m³
Steel Core: Steel Clamp Paint	Xylene							435	mg/m³
	Xylene	Not Detected	Not Detected		1.86	Not Detected		100	ppm
	Toluene							200	mg/m³
	Toluene	Not Detected	2.41		8.62	0.32		200	ppm
	Acetone	Not Detected	Not Detected		10.0	Not Detected		1,000	ppm
	Total dust	<0.25	Not Detected					15	mg/m³
	Carbon Monoxide	1	Not Detected					50	ppm
	Copper Fume							0.1	mg/m³
	Xylene	Not Detected	Not Detected					100	ppm
	Toluene	Not Detected	0.30					200	ppm
	Iron Fume	0.01	0.023					10	mg/m³
Steel Core: Plasma Cutting Workshop	Acetone	Not Detected	Not Detected					1,000	ppm
Steel Score: Steel Cutting Machine	Iron Dust				Not Detected	Not Detected		10	mg/m³
Workshop/Base Drill	Iron Fume				Not Detected			10	mg/m³
	Total dust				1.19	Not Detected		15	mg/m³
Coiling: Coiling 3	Total dust	0.84	<0.25					15	mg/m³
	Copper Fume				Not Detected	Not Detected		0.1	mg/m³
	Respirable Dust				Not Detected	<0.15		5	mg/m³
Coiling: Coiling 4	Total dust	Not Detected	0.34					15	mg/m³
	Copper Fume	Not Detected	Not Detected		Not Detected			0.1	mg/m³
	Respirable Dust				Not Detected			5	mg/m³
Coiling: Coiling Building	Total dust	Not Detected	Not Detected					15	mg/m³
	Copper Fume	Not Detected	Not Detected		Not Detected	Not Detected		0.1	mg/m³
	Respirable Dust				Not Detected	Not Detected		5	mg/m³
Coiling: Paper Cutting Room	Total dust	0.43	0.42		Not Detected	Not Detected		15	mg/m³
	Respirable Dust	0.1	0.2		Not Detected	Not Detected		5	mg/m³
Assembly: Chassis Assembly	Copper Fume	Not Detected			Not Detected	Not Detected		0.1	mg/m³
	Iron Fume	Not Detected						10	mg/m³
	Total dust				Not Detected	Not Detected		15	

				Annual Test F	Results				
Area	Parameter	01/17 *	18	01/19	02/19	01/20	02/20	Standard	Unit
		16/06	25/6	15/3	23/7	20/3	30/6		
Assembly: Workshop	Lead							0.2	mg/m³
	Copper Fume	Not Detected	Not Detected		Not Detected	Not Detected		0.1	mg/m³
	Iron Fume	Not Detected	Not Detected		Not Detected	<0.007		10	mg/m³
	Carbon Monoxide				Not Detected	1		50	
Assembly: Wood Cutting Room	Total dust	Not Detected	<0.25		Not Detected	<0.20		15	mg/m³
	Respirable dust	Not Detected	Not Detected		Not Detected	Not Detected		5	mg/m³
Installation: Spray Booth	Total dust	Not Detected	2.38		Not Detected	Not Detected		15	mg/m³
	Xylene	Not Detected	Not Detected		Not Detected	7.73		100	ppm
	Toluene	Not Detected	< 0.25		Not Detected	12.4		200	ppm
Transformer Repair	Total dust	< 0.25	0.25		Not Detected	Not Detected		15	mg/m³
	Oil Mist				0.25	Not Detected		5	mg/m³
Chassis: Welding & Assembly,	Total dust	< 0.25	1.53		Not Detected	Not Detected		15	mg/m³
Factory 4	Carbon Monoxide	1	Not Detected		1	1		50	ppm
	Iron Fume	0.046	0.095		0.038	<0.007		10	mg/m³
Chassis: Plasma Cutting Machine,	Carbon Monoxide	< 0.25			1	1		50	ppm
Factory 4	Iron Fume	0.038	<0.007		0.008	<0.007		10	mg/m³
	Total dust		Not Detected		Not Detected	Not Detected		15	mg/m <sup>4</sup>
Steel Pellet Shooting Room (interior)	Iron Fume	0.046	0.042		THE BOLOGICA	0.067		10	mg/m <sup>3</sup>
otoon roller oncoming recom (intener)	Iron Dust	0.010	0.012	0.121		0.069		10	mg/m <sup>3</sup>
	Respirable Dust	0.100	Not Detected	Not Detected		Not Detected		5	mg/m³
		21.000	21.000	21.1		20.9		19.5-23.5	//////////////////////////////////////
Steel Pellet Shooting Room (exterior)	Oxygen Iron Fume	0.011	0.019	21.1		20.9		10	
Steel Fellet Shooting Room (extend)		0.011	0.019	0.000		<0.007			mg/m <sup>3</sup>
	Iron Dust			0.099		<0.007		10	mg/m³
	Total dust			0.76		Not Detected		15	mg/m³
Spray Booth, Factory 4	Carbon Monoxide	Not Detected	Not Detected					50	ppm
	Iron Fume	Not Detected	0.072					10	mg/m³
	Respirable dust	0.2	0.9					5	mg/m³
Baking & Oil Filling	Carbon Monoxide		Not Detected					50	ppm
Amorphous	Total Hydrocarbon		4.85		23.9			N/A	ppm
	Total dust		0.51		Not Detected			15	mg/m <sup>3</sup>
	Respirable Dust		Not Detected					5	mg/m <sup>3</sup>
	Bis-phenal A		0.060		Not Detected			5	mg/m³
Factory 5 Chassis: Welding &	Carbon Monoxide			Not Detected		1		50	ppm
Assembly	Iron Fume			Not Detected		0.041		10	mg/m³
	Total dust			0.25		<0.20		15	mg/m³
Factory 5 Chassis: Painting	Toluene			149				200	ppm
	Xylene			58.4				100	ppm
	Total Dust			0.76				15	mg/m³
Factory 5 Chassis: Robot Assembly	Carbon Monoxide					1		50	ppm
	Iron Fume					<0.007		10	mg/m <sup>3</sup>
	Total dust					Not Detected		15	mg/m³
Factory 6 Chassis: Spray Booth	Toluene			4.26		1.11		200	ppm
	Xylene			6.89		Not Detected		100	ppm
	Total Dust			0.42		Not Detected		15	mg/m³
Factory 6 Chassis: Spray Booth (large)	Toluene			2.63		17.2		200	ppm
	Xylene			1.73		22.8		100	ppm
	Total Dust			< 0.25		20	6.07	15	mg/m³
Factory 6 Chassis: Painting	Toluene			Not Detected		1.44		200	ppm
	Xylene			Not Detected		Not Detected		100	ppm
	Total Dust			0.680		Not Detected		15	mg/m³

<sup>\*</sup>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 • I IIII

In 2020, the number of accidents doubled from 2019, making the year of 2020 the year with the highest number of accidents. Many external factors in 2020 caused impacts on employee stress such as anxiety concerning the COVID-19 pandemic, which had impacts causing some family members to become unemployed and some family members lived far apart due to outbreak prevention measures. In addition, factors from distancing measures for preventing outbreaks canceled gatherings. When accidents occurred in normal conditions, every employee would be called to hear explanations and a summary of the accident investigation immediately on the next day to give employees awareness and caution. However, due to the aforementioned preventive measures, communications have changed to channels via Line, Mail and message boards, which are one-way communications and another reason why accidents have increased. The Safety Committee (SC) and executives have made much effort to help employees relax from stress by using verbal warnings rather than issuing written warnings and by retraining employees individually.

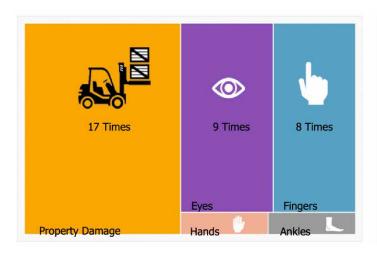
In 2020, 36 accidents occurred and one accident caused severe injury and caused work to stop for 19 days. Losses from work interruptions have a value of 2,254.50 baht paid by the Company. The difference can be disbursed from the group accident insurance balance and the compensation fund. The injury was penetration of fingers by silicon, which needed surgery. Currently, the aforementioned employee has been treated and has returned to work in the employee's old position and duties.

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

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

Remarks: In 2020, Q Solar 1 had no accidents from work.

Graph of Accidents by Type of Danger: 2020



■ Unsafe Actions ■ Unsafe Conditions Both 9 . Times 25% 21 Times 58%

Graph of Accidents by Cause: 2020

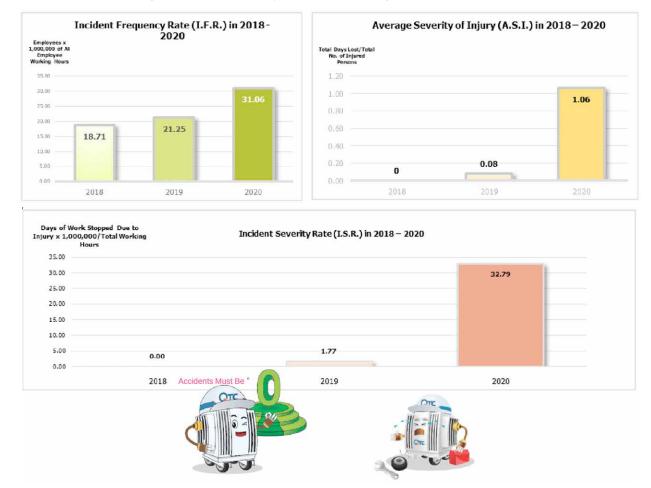
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According to investigations of accidents and based on the graph of accidents by causes, accidents in 2020 are caused by unsafe employee actions (58%), unsafe work conditions (25%) and unsafe actions in areas with unsafe work conditions (17%). Furthermore, from the graph of accidents by characteristics of danger, 17 accidents can be seen to have occurred with property damage for the Company valued at 758,064.24 baht. In addition, accidents which caused danger to vital organs such as eyes and fingers increased from 2019. Overall, the number of accidents, damage and severity of accidents in 2020 was higher than in 2019.

On this issue, the Board of Directors and the Executive Committee see the importance of the situation and is concerned. The Board of Directives and the Executive Committee have ordered reviews to assess risks, control plans and risk reduction plans in order to determine if plans remain suitable for the current situation along with strictly enforcing safety rules and regulations. The Company will maintain the goal in 2021 to have zero accidents. However, if uncontrollable or unavoidable events occur, the Company must reduce the severity and number of accidents to be less than 80 percent from 2020.

Safety Committees (SCs), SOs at every level (in factories) and employees in the area have reviewed work processes and assessed work area safety risks including work methods along with preparing control plans, plans for reducing risks, retraining plans and building safety awareness by carrying out Completely Check Completely Find Out activities (CCCF).

Graph Showing Comparison of Safety Statistics According to ANSI Standards in 2018 - 2020

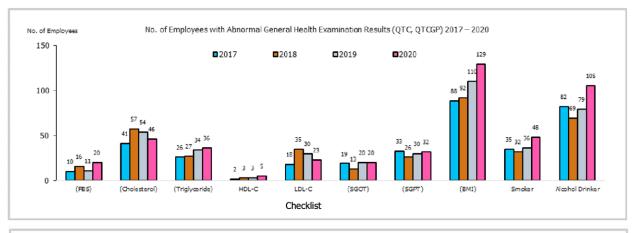


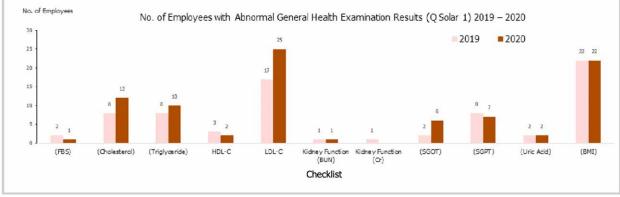
# Health

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 guitting alcohol, smoking and substance abuse, etc. Furthermore, the Company organizes annual health examinations and continually monitors results.

#### **Annual Health Examinations**

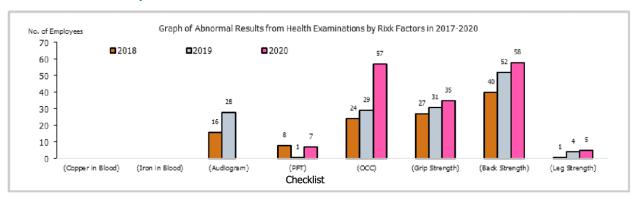
The Company arranges for employees to receive health examinations once a year at the Bangkok office including QTCGP and the factory in Rayong. In 2020, the Company used two medical facilities, namely, BMC Plus Hospital with Phayathai Sriracha Hospital and Samitivej Srinagarindra Hospital. Examinations 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 2020, a budget of 621,870 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 increased from 2019 as a result of lack of exercise. Therefore, the Company continues to support activities for promoting exercise through Fun & Fit activities. The Company expects to be able to motivate employees to pay attention to health, eat healthy foods, and reduce alcohol consumption and smoking in every subsidiary.

Health Examinations by Risk Factor



Health examinations according to work risk factors in 2020 found risks with continually rising trends such as back muscle abnormalities among coiling employees who had to stand and work with machines for extended periods of time and risk of abnormal hearing among welders in loud work environments. The Company modified work areas to be controlled areas in the hearing conservation project and follows-up to ensure that employees wear PPEs at all times when working in the area.







Images of Annual Health Examinations in 2020 under COVID-19 Prevention Measures In 2020, the following two employees became sick due to work:

- 1. An employee had irritation and pain at the eyes. The employee was sent to be treated at the hospital and had to stop work for two days. Irritation to the eyes was caused by metal fumes from welding transformer bodies. Therefore, the SC provided special goggles capable of closer attachment to the face as replacements for all welders.
- 2. An employee had irritation at the eyes and was sent to the hospital. The employee had to stop work for one day. This was caused by small wood particles in the workshop. The SC will modify dust vacuuming systems and ventilation systems in 2021.

Statistics on Work-related Illnesses in 2013 - 2020

			N	lo. of Illne	esses/Yea	ar		
Item	2013	2014	2015	2016	2017	2018	2019	2020
Work-related Illnesses (employees)	0	0	3	0	0	0	0	2
No. of Work Days Lost Due to Work-related Illnesses (days)	0	0	0	0	0	0	0	3

#### **Health Consultation**

The Company arranged for factory nurses to provide first-aid and consultation about employee health. In 2020, five employees asked for health consultations due to health examination results consisting of four male employees and one female employee. Factory nurses visited body work areas to provide recommendations concerning hygiene and first-aid when dust hits eyes.





## **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 Tagror clubs, etc. However, due to the COVID-19 pandemic, activities that require large gatherings of members had to be canceled.

In 2020, 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 1: Fun & Fit and QTC Season 2: Fun & Fit with Family activities as follows:

#### QTC Season 1: Fun & FIT

Objectives:

- 1. To support exercise among employees.
- 2. To let employees benefit from free time.
- 3. To reduce illness from health risks.

#### Brief Description of Activities

- Applicants must be QTC employees with personal goals.
- Applicants will receive a smart watch.
- Applicants may perform any exercises that can have distance saved as KM.
- Results are to be sent via Line Group Fun & Fit 1.
- The administrator is to collect statistics and summarize every day.
- The program has a duration of four months.
- Employees receive rewards for challenges according to conditions.
- Contributions are to be paid by the Company from the distance accumulated by employees to purchase medical instruments to give to Mab Yang Porn THPH.

#### QTC Season 2: Fun & Fit with Family

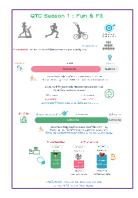
Objectives:

- 1. To support exercise among employees and families.
- 2. To support good family relationships.
- 3. To reduce illness from health risks.

#### ลักษณะกิจกรรม โดยย่อ

- Applicants must be QTC employees and family members.
- Personal exercise goals are to be specified to accumulate distance in KM.
- No specific sports.
- Results are to be sent via Line Group Fun & Fit 2.
- The administrator is to collect statistics and summarize every day.
- The program has a duration of four months.
- Employees receive rewards for challenges according to conditions.
- Rewards from challenges will be used to build an organic vegetable growing building at Ban Map Toei School.

#### A budget of 140,782 baht was spent to support the project in both seasons.





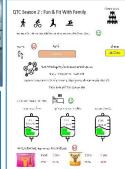










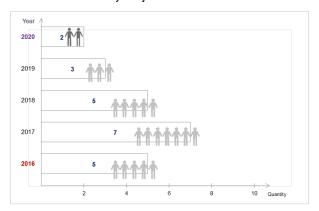


Photographs of Fun & Fit Activities in Both Seasons

#### 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 3 by having police officers (Pluak Dang Police Station) perform 100 percent inspections. The Company found two employees with narcotic substances. One employee refused therapy and asked to resign from work from inability to change personal behaviors. The other employee asked for therapy according to steps. The Company had 3,000 baht in expenses in 2020.

Statistics on Narcotic Substance Detections in the White Factory Project in 2016 - 2020



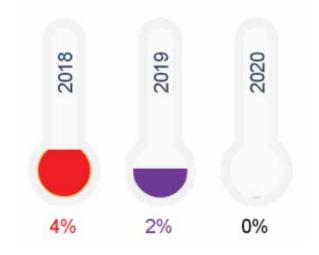
#### **Influenza Vaccination Project**

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. Because of the COVID-19 pandemic, the Company organized influenza vaccinations earlier to cover every subsidiary under COVID-19 prevention measures. In 2020, vaccinations were carried out by Wiparam Laem Chabang Hospital and Chularat 11 Inter Hospital with a budget of 105,180 percent and 90 percent of employees consented to be vaccinated. In 2020, 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 2020

Annual Influenza Rate among Employees

# **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 2020, the Company had no complaints.

Goal: 2. Zero complaints from employees concerning violation of personal rights by supervisors

or colleagues.

Result: In 2020, 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 2020, assessment of 77 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).

# C Employment

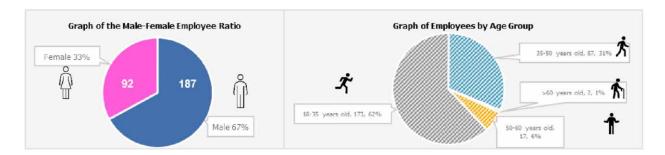
The Company gives importance to fair employment with wages no less than the minimum wage prescribed by law. In addition, the Company provides appropriate and necessary benefits for employees in addition to providing equal recruitment opportunities with no discrimination against ethnicity, religion and gender in line with the human resource management policy: https://qtc-energy.com/th/human-resource-management-policy/.

In 2020, the number of employees at the end of the year was 3.4 percent less than 2019 because COVID-19 pandemic created business risks. The Company's directors and the Executive Committee has a policy to fully care for employees and pay wages at the normal rate. However, overtime work may be reduced depending on production amount or other activities. If employees resigned, the Company has no policy to accept replacements and uses existing human resources to full capacity in order to reduce business risks and maintain survival of every employee. In 2020, the Company had the following ratios of employment and wages:

#### Employment ratio table

				QTC E	nergy					QTCGP &	Q Solar 1	
	20	17	20	18	20	19	20	2020		19	20	20
Employment Conditions as of 31  December	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent	Amount (employee)	Percent
By Gender												
Male	132	63.16	160.00	65.31	180	67.92	167	66.27	22	73.33	20	74.07
Female	77	36.84	85.00	34.69	85	32.08	85	33.73	8	26.67	7	25.93
By Level												
Management	25	11.96	-	-								
Male	14	-	-	-								
Female	11	-	-	-								
Knowledge	102	48.81	-									
Operation	82	39.23	-	-								
L9 – UC	_		26.00	10.61	27	10.19	28	11.11				
Male	_		14	-	14	-	14	-				
Female	_		12	_	13	_	14					
L7 – L8		<u>-</u>	20.00	8.16	21	7.92	19	7.54				
Male			20.00	0.10	13	-	11					
Female					8	-	8					
L1 – L6	_		199.00	81.22	217	81.89	205	81.35				
Male	-	<del>-</del>	199.00	01.22	153	-	142	-				
					64	_	63					
Female					04	-	03					
By Age												
18-35 years old	154	73.68	159.00	64.90	178	67.17	167	66.27	11	36.67	6	22.22
36-50 years old	48 -	22.97	76.00	31.02	77	29.06	75	29.76	12	40.00	12	44.44
50-60 years old	7	3.35	10.00	4.08	10	3.77	8 2	3.17 .79	. 7 -	23.33 -	9 -	33.33 -
> 60 years old								.10				
By Area												
Bangkok Office												
Male	23	11.00	22.00	8.98	29	10.94	31	12.30	11	3.33	11	3.70
Female	23	11.00	27.00	11.02	29	10.94	31	12.30	2	6.67	1	3.70
Rayong/												
Prachinburi Factory	400	FO 40	420.00	EC 22	454	FC 00	F.4	04.40	04	70.00	-	40.50
Male Female	109 54	52.16 25.84	138.00 58.00	56.33 23.67	151 56	56.98 21.13	54 136	21.43 53.97	21 6	70.00 20.0	5 20	18.52 74.07
Total Employees at End of Year	<del>, 14</del>	23.04	JO.UU	23.01	סט	۷۱.۱۵	130	33.81	o	20.0	∠∪	14.01
(employees)	20	9	24	<b>1</b> 5	24	15	25	52	3	0	2	7

#### Graph of Employment Ratios in 20203



Graph of Employee Ratios by Area

Ratio of High Ranking Executives in the Country



#### Entry-level Wages and Benefits

ltems	L1 - L6	L7 - L8	L9	- UC
IIGIIS	L1 - L0	L7 - L0	Section	Department
Starting Wages (Not Including Experience): Baht	10,050 – 25,000	А	ccording to Wage Structur	е
Traveling Costs	•	•	•	-
Cost of Living	•	•	-	-
Controlled Engineering Profession Certificate Cost	Only Certifie	d Engineers	-	-
Risk Cost	Only High R	isk 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 Labo	oratory Workers	-	-
Daily Food Cost	Only L1 Employees	-	-	-
Type 2 Driver's License	Only Drivers	-	-	-
Provident Fund	•	•	•	•

Table Showing Ratios of Wages and Remuneration

		QTC Energy										1
		17	20	18	20	19	2	020	20	19	2020	
Employment Conditions as of 31 December	baht) Amount (million	Percent	Amount (million baht)	Percent	Amount (million baht)	Percent	Amount (million baht)	Percent	Amount (million baht)	Percent	Amount (million baht)	Percent
By Gender												
Male	62.1	62.89	68.77	64.66	83.79	85.38	90.49	85.34	7.48	75.69	6.92	81.58
Female	36.65	37.11	37.56	35.34	44.36	34.62	48.01	34.66	2.41	24.4	1.58	18.42
By Level												
Management	36.14	36.6	-	-	-	-			-	-		
Knowledge	40.64	41.15	-	-	-	-			-	-		
Operation	24.97	22.25	-	-	-	-				-		
L9 – UC	-	-	37.06	34.87	43.25	33.75	48.87	35.29		-	-	-
L7 – L8	-	-	15.73	14.79	15.73	12.27	13.37	9.65	-	-	-	-
L1 – L6	-	-	53.54	50.34	69.18	53.96	76.26	55.06	-	-	-	-
Total Employees at End of Year (employees)	98	.75	106	3.35	128	3.16	13	8.50	9.	89	8	.48

	By 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	86.96							
2020	20,574,754.00	14.00	126,402,862.00	86.00							

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.

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

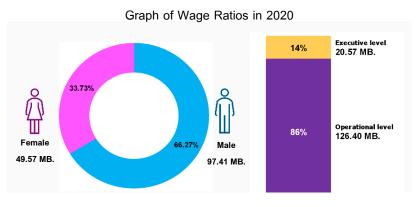


Table of Minimum Wage by Organization Location

Organization Location	Minimum Starting Wage	Minimum Wage Prescribed by Law
	(not including other benefits)	
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
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 but the Company plans to systematically perform human rights due diligence (HRDD) to meet international standards in 2021 – 2022.

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

#### **Benefits Committee**

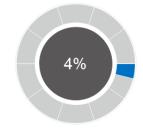
The Company created an elected Benefits Committee with the role and duty of representing employees of the Company and all subsidiaries in order to present opinions for improving environments, public utilities and benefits specified by law to the Company. Employee representatives (Human Resources Division) 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 (2019 – 2020) and consists of the following persons:

Benefits Committee									
First Name	– Last Name	Representative of	Position						
1. Miss Jutamanee	Rotjansang	Production Dept.	Chairwoman						
2. Mrs. Tipwimon	Tawornchat	Sustainability Development Dept.	Committee Member						
3. Mr. Chatchai	Sang-apai	Production Dept.	Committee Member						
4. Mr. Ekachai	Sipenwan	Management Dept.	Committee Member						
5. Mr. Jedsada	Prateeb	Production Dept.	Committee Member						
6. Miss Pakanat	Tangtrakun	Management Dept.	Committee Member						
7. Mrs. Chopaka	Kanpaipuan	Accounting & Finance Dept.	Committee Member						
8. Miss Petcharat	Sutirapornchai	Foreign Sales Dept.	Committee Member						
9. Mr. Watcharin	Klakasikit	Special Project Sales Dept.	Committee Member						
10. Miss Mayuree	Suramanee	Services Dept.	Committee Member						
11. Miss Panida	Suwannasri	Domestic Sales Dept.	Committee Member						
12. Miss Suttirak	Suttisatit	Sustainability Development Dept.	Secretary						

Ratio of Benefits Committee to All Employees Including Every Subsidiary

1: 23 Employees





#### Significant Performance of the Benefits Committee in 2020

of the Company and every subsidiary caused significant impact on the daily lives of employees such as measures requiring every employee to wear face masks and washing hands with alcohol gel or soap frequently. At that time, face masks and alcohol gel was difficult to find and expensive. In addition, measures to close the factory to prevent employees from going back to eat lunch at home and prevent contact with outside persons, causing employees to have to accept burdens from buying food or ordering food by using food delivery services. The Benefits Committee heard employee problems and presented problems to the Executive Committee to provide support and reduce impacts on employees according to the following list:

- The Committee asked the Company to distribute five face masks to each employee to be sufficient for use in one week.
- The Committee asked the Company to help with employee lunch costs by providing an extra ten baht per day per employee for three months or until measures are relaxed.

The Executive Committee saw fit to follow proposals made by the Benefits Committee by approving the budget to relieve impacts in the amount of 121,139.00 baht in order to cover all subsidiaries. The Benefits Committee had the following performance:

1. The Benefits Committee and CSR or HR units created understanding with employees on measures specified by the Company for employees to understand future benefits for employees, families and the Company.

The COVID-19 pandemic, strict infection prevention measures of the government and anti-infection measures

- 2. The Benefits Committee approved a budget of 46,869.00 baht to procure 1,250 muslin masks and alcohol gel.
- The Benefits Committee approved a budget of 74,270.00 baht to help 248 employees with coverage of subsidiaries affected by factory fence closure measures. The Company paid an extra ten baht per day per employee for lunch. High ranking employees at the manager level and up and WFH employees did not receive the aforementioned financial support.

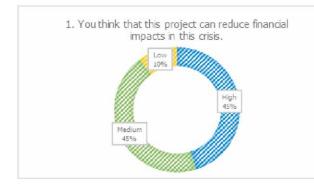


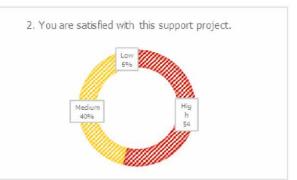






Employee Satisfaction toward the Company's Support Measures





#### "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



			2019	)	2020		
Year	2017	2018	QTC	QTCGP&Q Solar1	QTC	QTCGP&Q Solar1	
Employees Who Took Maternity Leave (employees)	7	4	8	-	5	-	
Employees Who Returned to Work (employees)	6	3 (1 employee took leave including in 2019)	7 (1 employee took leave including in 2020	-	4 (1 employee took leave including in 2021)	-	

Remarks: One employee who took leave in 2019-2020 returned to work in 2020.

#### "Mother's Corner"







First-time Mothers and Consultation with the Factory Nurse

#### QTC's Nephews & Nieces in 2020







Prao, Daughter of Nook & Pon

TN, Son of Fa

Riya, Daughter of Beau



Scale, Son of lu

#### Scholarship Project for Employees' Children

In 2020, the Benefits Committee considered 59 scholarship applications for employees' children according to specified conditions. Scholarships are divided into the following three levels:

		Total:		87,500 baht
3	Secondary Education	9 Scholarships	@2,000 baht	18,000 baht
2	Primary Education	39 Scholarships	@1,500 baht	58,500 baht
1	Preschool	11 Scholarships	@1,000 baht	11,000 baht





#### Safety Committee (SC) and Benefits Committee Elections

The terms of the current Safety Committee (SC) and the Benefits Committee (2019-2020) will become expired by the end of 2020. Therefore, the Company held new committee elections to perform duties in the year (2021-2022) on 6 November 2020 with the following results:

#### Safety Committee

- 11 applicants
- 3 elected



Election Results: No. 1, No. 7 and No. 10 were elected with votes in that order.

#### **Benefits Committee**

- 9 applicants
- 5 elected



Election Results: No. 5, No. 8, No. 1, No. 4 and No. 3 were elected with votes in that order.





A total of 165 employees voted or 86.39 percent of all eligible voters with three disqualified ballots or 1.81 percent. Election results are as follows:

## **Complaint Channel**

Every employee can complaint 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 as another channel.





Perfe	ormance Measurement
$\Longrightarrow$	Wage and Salary Management Zero employee complaints about unfair wages and returns.
	Employee Rights Zero employee complaints about violations of personal rights by supervisors or colleagues.
	Human Rights in the Value Chain Zero suppliers who fail to meet human rights and QTC Supplier Code of Conduct assessment criteria.

2017	2018	2019	2020
0	0	0	0
_			_
0	0	0	0
		2	0
		_	J

# **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 2020, the Company achieved 32.09 percent of the goal. The Company did not achieve this goal.

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

Result: In 2020, the Company achieved four issues. The Company did not achieve the goal.

Goal: 3. Resignation rate lower than two percent.

Result: In 2020, the Company had a resignation rate of 1.22 percent. The Company achieved the goal.

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

Result: In 2020, employee happiness was at 60.40 percent. The Company did not achieve the goal.

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

Result: In 2020, scores for attachment to the organization were at 65 percent. The Company did not achieve the goal.

# Human Capital Development

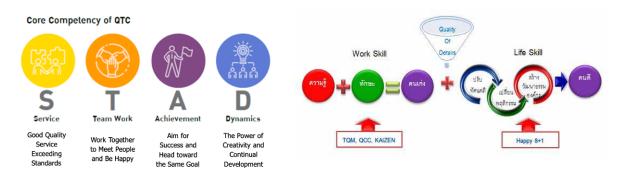
# Thinking inside the box without changing ways of thinking and without practicing necessary skills

is a barrier to self-improvement.



"Happy Brain"

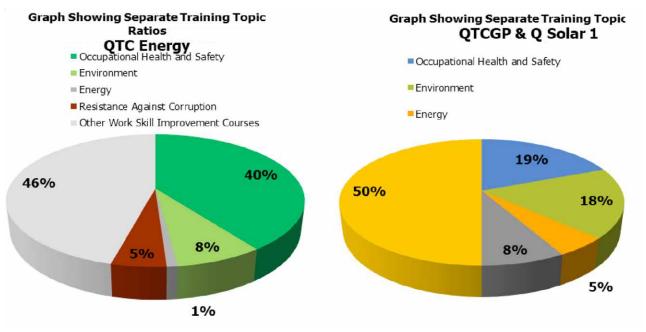
The Company places importance on and is committed to improving employee skills, knowledge and abilities according to the sustainability equation of Q + R = S by applying the strategy of improving people comprehensively to create good and talented people in order to improve employee abilities to be consistent with the organization's core abilities and systematically combine the organization's knowledge in order to learn at all times. Training and development OJT Training Inhouse Training Public Training had the following three models:



#### Statistics on Training Hours

		Hours/Person/Year										
Employee Status			QTC Energy				QTCGP & Q Solar 1					
	20	17	20	18	2019		2	020	2019		2020	
By Level	Total Training Hours	Average/Person/Year	Total Training Hours	Average/Person/Year	Total Training Hours	rAverage/Person/Yea	Total Training Hours	Average/Person/Year	Total Training Hours	Average/Person/Year	Total Training Hours	Average/Person/Year
Management	1,671.50	64.29	-	-	-	-	-	-	-	-	-	-
Knowledge	2,709.50	26.05	-	-	-	-	-	-	-	-	-	-
Operation	4,468.00	52.56	-	-	-	-	-	-	-	-	-	-
L9 – UC	-	-	1,587.50	56.7	2,829.50	104.8	1260	45.96	-	-	-	-
L7 – L8	-	-	1,067.50	50.83	2,628.50	131.43	1264	63.73	-	-	-	-
L1 – L6	-	-	6,314.10	29.37	9,150.00	36.17	5606	26.29	-	-	-	-
By Gender												
Male	5,880	43.64	5,919.90	41.4	10,410.5 0	61.97	5749. 5	32.62	337	15.32	700	35
Female	2,969	37.31	3,049.20	38.12	4,197.50	49.38	2380. 5	28.26	87	10.88	120	17.14
Total Training Hours	8,849		8,969 14,608		ene	0.400		4	24		20	
for the Year (hours)			0,8	109	14,	000	8,130		4	<b>24</b>	0.	20
Average Employees	214		34	23	31	53	004		••			27
per Year (employees)	2		2.	2.5	2:	,,	261		30			•

#### Graph of Training Courses in Various Areas Necessary for Work in 2020



Training & Development Expenses 1,274,711.07 Baht

Training & Development Expenses 68,700.00 Baht

## **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. The project committee and Human Achievement Service Company Limited designed a course with a development period of six months and the following topics:

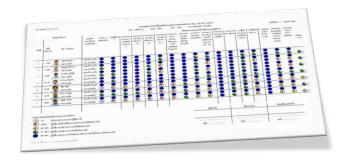
Additional Strategy & Management for DM Level+

Modules	Core Courses	Man-day	Time	Trainers
	Business Concept	2 days	9:00 am - 4:00 pm	ТВА
	Mega Trends & Strategy Formulation	1 day	9:00 am – 4:00 pm	ТВА
How to Manage for	Strategic Marketing & Brand Reputation	1 day	9:00 am - 4:00 pm	TBA
Success	Planning Technique	1 day	9:00 am - 4:00 pm	ТВА
	Finance for Executives	1 day	9:00 am - 4:00 pm	ТВА
	Project Management	1 day	9:00 am - 4:00 pm	ТВА
	Dinner Talk	0.5 days	6:00 pm – 9:00 pm	ТВА

However, because COVID-19 occurred in 2020 and strict preventive measures were enacted, the Company had to stop development plans in the Management Development Program to reduce face-to-face meetings between employees at the executive level and professors from outside the Company.

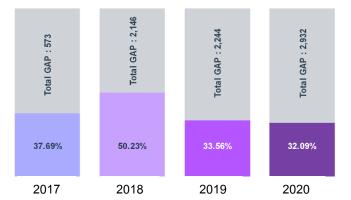
## **Training & Development**

Improve Knowledge &^ Skills to Reduce GAP



Skill Development to Reduce GAP in 2017 - 2017

Goal: 50% per Year

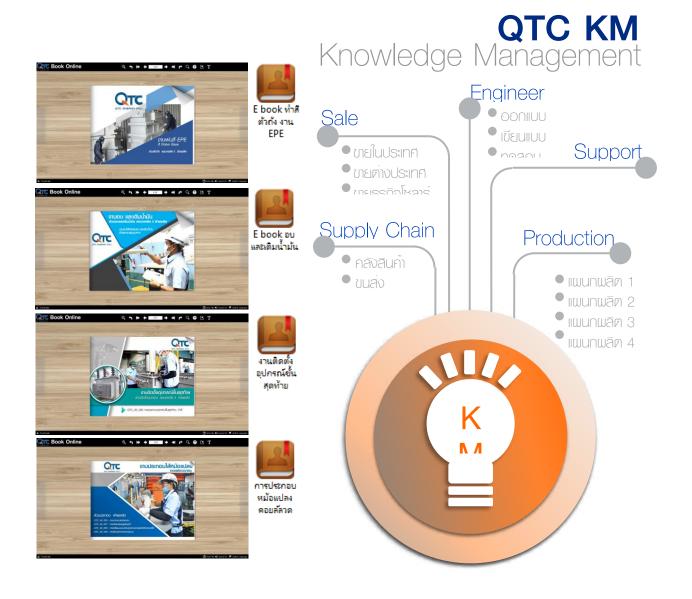


The Company is committed to developing personnel in the area of hard and soft skills (Knowledge, Attitude, Behavior) by having supervisors and HRD assess with the Skill Matrix Chart and using GAP to provide knowledge, training and develop employees to increase competency, product quality, punctual delivery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

In 2020, employee training to reduce GAP at work did not succeed according to plans due to social distancing measures. Therefore, training models were modified from on-the-job experience to online learning and from field work in some parts. Employees had to adapt significantly to learn, causing competency assessments in the second round of 2020 to show lower difference in GAP than the goal. Employees achieved 32.09 percent. In 2021, HRD will modify training and development models in order for 90 percent of learning to be through KM learning and for 10 percent of learning to be through coaching in order to build from 2020 after employees had more changes to learning in the area of using technology.

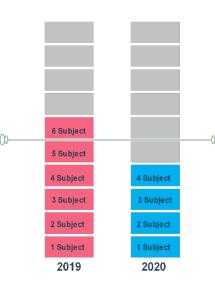
Learning and Development Model in 2020





#### **Performance**

The Company had a goal to collect and prepare at least five articles of the organization's KM. In 2020, the Company completed and learned four topics concerning key production techniques. The remaining article is being prepared.



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.

# **Q** Employee Care

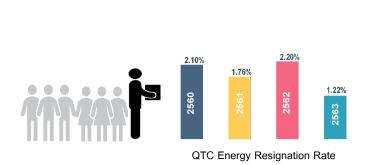
The Company is aware that employees are an important resource in driving the organization toward goals, paying attention to work and creating happiness in employees' lives. The Company has an important mission to provide support in the area of personnel, time and necessary resources under the happy workplace policy at https://qtc-energy.com/th/happyworkplace-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

		QTCGP & Q Solar 1										
	2017		20	18	20	2019		2020		2019		)20
item	Amount (employe e)	Percent	Amount (employe e)	Percent	Amount (employe e)	Percent	Amou nt (emplo yee)	Percent	Amou nt (empl oyee)	Percen t	Amou nt (emplo yee)	Percen t
No. of Employees at End	20	09	245		265		252		30		27	
New Employees												
Male	40	62.5	58	73.42	81	92.05	21	84	4	80	_	_
Female	24	37.5	21	26.58	7	7.95	4	16	1	20		
New Employees		0.10		20.00	•	7.00		.,	•			
18-35 years old	55	85.94	67	84.81	79	89.77	21	84	3	60	-	-
36-50 years old	9	14.06	10	12.66	9	10.23	4	16	1	20	-	-
50-60 years old	-	-	1	1.27	-	-	-	-	1	20	-	-
> 60 years old	-	-	-		-	-	-		1	20	-	-
Dismissed Employees by Gender												
Male	34	62.96	31	65.96	59	89.39	34	89.47	2	66.67	1	100
Female	20	37.04	16	34.04	7	10.61	4	10.53	1	33.33	-	-
Dismissed Employees by Age												
18-35 years old	43	79.63	29	61.7	60	90.91	32	84.24	2	66.67	1	100
36-50 years old	10	18.52	16	34.04	6	9.09	6	15.79	1	33.33	-	-
50-60 years old	-	-	-	-	-	-	-	-	-	-	-	-
> 60 years old	1	1.85	2	4.26	0	0	-	-	-	-	-	-
Average Employees per Year (employees)	2	.1	1.76		2.2		1.22		10		3.	70





QTCGP & Q Solar 1 Resignation Rate

In 1 to 2 months, the average was at 2.2 percent. The Human Resources Division studied data from questionnaires and visited sites to analyze causes of resignations. New employees were found to have been unable to adapt to the organization, colleagues, new job characteristics, rules and regulations in addition to having problems at work without knowing who to consult.

This led to the problem-solving process by using the mentorship system.

## **Mentorship System Processes** Plan Assess and Perform Assess Set System Capacity Select Mentoring Mentor Criteria Improvem Mentors **Duties** Results Year 2019 Year 2020

Employees selected by section supervisors and mentorship system processes perform the duty of instructing new employees based on training needs in the area of technique, use of equipment, machines, design reading, use of instruments including working with safety and the environment along with solving problems onsite through KAIZEN modifications.

After the probationary period, mentors assess knowledge, skills and good behaviors through skill assessments with supervisors and HRD in order to have acceptable assessment scores and lower resignation rates among new employees.

# Mentorship **System Use in QTC**





**Necessary Mentor Skills** 

**Listening Skills** 

**Inquiry Skills** 

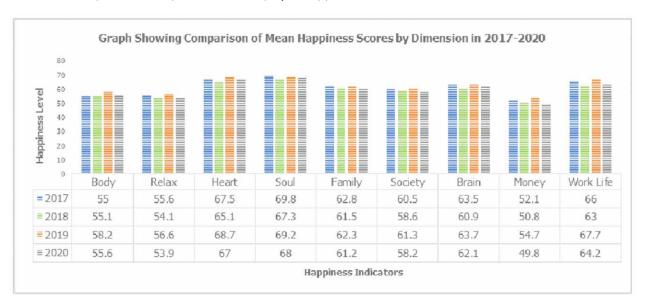
**Management/Understanding Differences** 

**Relationship Building** 

**Problem-solving** 

## Happiness in the Organization

The Company measured happiness of QTC Energy employees continually since 2016 by using the Happinometer. In 2020, a survey was conducted in September 2020 with 253 respondents out of 258 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 including employee satisfaction, attachment to the organization and life balance along with preparing detailed summary reports which the Company will use as a guideline for further development and improvement of employee happiness.



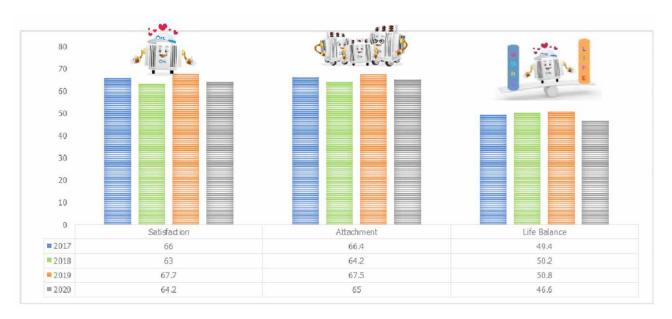




Results from surveying employee happiness (only QTC Energy) in 2020 found happiness in every dimension to have declined form 2019. Overall happiness was 2.2 percent less than 2019 and survey results were consistent with the current situation, showing lower production capacity and no employee income from overtime work as a result of the COVID-19 crisis and COVID-19 prevention measures. Social distancing resulted in fewer social activities that create attachment. Nevertheless, the Company remains committed to improving employee happiness to achieve expected goals.

#### Satisfaction, Attachment and Life Balance

The Company measures employee satisfaction, attachment and life balance with happiness by using extensions of the Happinometer instrument and sending data to be analyzed by the Thailand Centre for Happy Worker Studies, the Institute for Population and Social Research, Mahidol University. In 2020, a survey in September 2020 with 253 respondents out of 258 respondents had the following analysis results:



Graph Showing Comparison of Results from the Employee Satisfaction, Attachment and Life Balance Survey

According to the graph showing the comparison of results from surveying satisfaction, attachment and life balance in 253 out of 258 employee representatives, scores for employee satisfaction, attachment and life balance in 2020 were lower than in 2019. This was consistent with and shared the same reasons as the employee happiness survey. Similarly, the Company remains committed to improving processes to meet employee needs to live a balanced life.

The goal of employee attachment to the organization is 80 percent of the score. According to the surveys since 2017, the Company was not able to achieve the goal. The current goal is to have a high score based on criteria used in analyses by the Thailand Centre for Happy Worker Studies. However, the Company will continue to improve every weak point in management to improve employee attachment scores to the highest level.





Average scores of 0.00 – 24.99 mean low attachment.

Average scores of 25.00 – 49.99 mean medium attachment.

Average scores of 50.00 – 74.99 mean high attachment.

Average scores of 75.00 – 100.0 mean the highest attachment.

## **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

From the "Agriculture Lovers' Free Vegetables & Savings" club, this project became a housewives' group for housewives of employees living at the Company's employee dormitories. In 2020, the project requested more unused areas of the Company to plant garden vegetables for consumption. The remaining vegetables were sold to employees at inexpensive prices to create supplemental income and reduce expenses by not purchasing vegetables at fresh markets. This created good options for reducing COVID-19 infection risks in dormitory communities from meeting people in fresh markets.

Images of Vegetable Gardens Planted by Employee Housewives at QTC Dormitories















## Morals & Ethics Promotion Activities in 2018

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** 









Dry Food Offerings on 26 DEC 2020



Merit Pot Activity to Add Beverages to Coolers as Public Service at Mab Yang Porn THPH



"Be kind to each other. We believe true happiness comes from giving" **Happy Heart** 

## Photograph Competition to Support the Family 2020

"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 2020



Two Meters Apart With Family Against COVID However Far...It's Near



ขม ที่เรียกว่า ปักร ถึงแม้จะเดิบโตมา ไม่มีแม่อู้ให้กำเนิดเลี้ยงคูมา ชย่างหลายๆ ครอบครัว แต่เรากักมีใจและดีใจ เหลือเกิน ที่ชีวิตเด็กผู้หญิงคนนี้ ไม่ถูกทอดทิ้ง เรามี "แม่ ที่เรียกว่าป้า" บ้าที่เดียสละทุกอย่างในชีวิตของตัวเอง ไม่มี แม้กระทั่งสามีและครอบครัวของตัวเอง แต่าิยัง อื่นดูเลี้ยงดูแลเราและพี่ชาย จนจบปริญญาโท งคู่ใต้ ด้วยตัวของบ้าเองคนเดียว บ้าทำให้ทุก อย่างที่รู้สึกขาดถูกเติมเติม รางวัดนี้ให้บ้า "แม่ ที่เรียกว่าบ้า" :)



ขอบคุณพ่อ ที่อยู่เคียงข้างลูกเสมอ ไม่ว่าลูกจะโตแค่ไหน ในสายตาของพ่อ ลูกก็ยังเป็นเด็กน้อย ที่น่ารักของพ่ออยู่เสมอ พ่อของหนู ก็ยังน่ารักอยู่เสมอ "รักพ่อค่ะ"

"Build Family Relationships Through the COVID-19 Crisis" No matter how we are apart, we still love the same. Mr. Sumet Ninsonti

"I Love My Mother the Most Because My Mother is the Most of My Love" Miss Emika Suratonkoset

"I Love My Father the Most Because My Father is the Most of My Love" Mr. Nattapat Komwutichai

## **Employee Value Promotion 2018**

In 2020, the Company awarded certificates to employees who worked for twenty years and employees who worked for ten years. Certificates were awarded to employees on 26 December 2020 in a small activity without spending much time by following COVID-19 prevention measures. Some of the recipients were unable to come and accept awards. Thus, the Company kept awards for employees to accept later. The following persons received awards:

No.	First Last Name	Position	Award	No.	First-Last Name	Position	Award
1	Mr. Watcharin Klakasikit	Expert	20 years	7	Mr. Songkran Chaipanat	Service Technician, L3	10 years
2	Mr. Chanchai Tanawan	Dept. Manager, L-11	20 years	8	Mr. Ruangsit Petkla	Employee, L2	10 years
3	Mr. Chamnan Paknam	Employee, L-1	20 years	9	Mr. Piyapong Boonserm	Service Technician, L9	10 years
4	Miss Kanoknipa Singhkaew	Employee, L-1	10 years	10	Mr. Suran Panomai	Div. Manager, L9	10 years
5	Miss Jiraporn Patanang	Section Chief, L7	10 years	11	Mr. Paiwan Sarapong	Sales Engineer, L4	10 years
6	Mr. Jedsada Prateeb	Employee, L2	10 years	12	Mr. Narong Titnam	Employee, L2	10 years













#### **Recreation Activities in 2020**

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



#### **Annual Vacation**

Due to the COVID-19 pandemic in 2020, 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 Company's performance in employee care under the organization happiness policy by applying happy workplace guidelines in all areas has made the Company one of twenty Happy Family organizations And the Company received the Happy Family Award, Outstanding Level, of 2020

The activity considered for the award was importance placed on the institution of the family from the factory to the home

"QTC Fun & Fit with Family"

https://www.youtube.com/watch?v=SLfvfrzTNJM





Photographs of the Organization Receiving the Happy Family Award, Outstanding Level

From Dr. Supreeda Adunyanon, Manager, Thai Health Promotion Fund Manager (THPF)

On 21 December 2020

# **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 2020, the Company had no complaints from communities or society.

Goal: 2. Approval in public hearings from stakeholders in communities in cases with need for

transparent public hearings in compliance with the law.

Result: In 2020, the Company and every subsidiary had no need to hold public hearings.

#### **QTC Meets Communities**

In 2020, 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. Nevertheless, the Company continues to place importance on the following issues discussed in 2019:

- 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.

On the second issue, the Company considered that the Company cannot carry out the project due to the COVID-19 pandemic. The Company postponed activities indefinitely until the situation returns to normal and informed leaders of every school in communities. On the first issue, the Company considered to build organic vegetable cultivation structures at Mab Toei School through the School Structures Project.



# Q Participation in Community Development

### "Greenhouse in School" Project

The project is an expansion from a project proposed at the Communities Meet QTC activity of 2019. The aforementioned project is not in the expertise of QTC personnel. However, schools wanted the project to benefit students according to intentions. Therefore, the Company's CSR Division trained in the project to grow vegetables without soil organized by Mab Yang Porn Tambon Administrative Organization and selected Ban Map Toei School as a pilot school. Because the COVID-19 pandemic created inconvenience in traveling to improve homes in the Locals Unite Project, the Company used the project's budget to improve local areas close to factories in the School Structures Project. Operations in this project had support from QTC suppliers such as Siam Wind Board Company Limited, which supplied metal parts for construction, and Thai RK Kin Company Limited which supplied labor for construction with QTC being responsible for other construction expenses and procurement of equipment and seeds. Furthermore, the Company's volunteer welders spent time after hours to prepare four sets of trays for growing vegetables. Employees who participated in the QTC Season 2 Fun & Fit with Family Project collected 10,000 baht in money from challenges to donate cash to the school to provide for expenses in purchasing seeds and fertilizer including other necessary equipment. The project received high support from people in society, which created a positive experience for QTC personnel, who were able to expand results to other schools in the community with a goal of having one structure per school per year. The project spent a total of 34,673 baht in operations (not including 10,000 baht in contributions and cost of metal equipment and parts from Siam Wind Board Company Limited).











The structure was handed over on 24 December 2020. Students have begun to grow organic vegetables in the first structure.

### Quality of Life Promotion and Development Project for Thai Disabled Persons

In 2020, 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 337,260 baht to provide vocational education. Project operations were under the responsibility of the Thai Chamber of Commerce. Financial support was allocated to three parts consisting of: (1) financial support for disabled persons: 93.95 percent for practical training allowances, theory training fees and capital for raising egg chickens; (2) financial support for the project operator: 3.75 percent for activity expenses such as coordination costs, follow-up costs and meeting costs, etc.; and (3) financial support for project operators: 2.30 percent for project management expenses. Project performance in 2020 was as follows:

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

Item	Unit	Qty	Price/Unit	Total
Egg Chickens Aged 18 Weeks	Chickens	60	250	15,000
Chicken Feed	sack	31	500	15,500
Chicken House Material and Equipment Costs	-	-	-	15,300
Total	-	-	-	45,800

Disabled persons received egg chickens in September. In October - November, some of the chickens died and some became sick, resulting in few eggs sufficient for only household consumption. Sales began in December and created extra income as follows:

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

No.	First–Last Name	Age	Disability  Mobility or	Income before the Project (per month)  Disabled Person's	Extra Income from Egg Sales (per month)  52 chickens remain with 90 baht in eggs
'	นายจันทร์ อาวุธพันธ์	04	physical impairment.	Allowance: 800 baht Senior Citizen's Allowance: 600 baht	sold per day, a total of 3,000 baht.
2	นางสาวเอื้อย มั่นจิตร	45	Psychological or behavioral disability.	Disabled Person's Allowance800 baht	45 chickens remain with 80 baht in eggs sold per day, a total of 2,400 baht.
3	นางสาวทองสุด เนเยือด	43	Mental disability.	Disabled Person's Allowance: 800 baht Wages: 1,500 baht Welfare Card: 300 baht	50 chickens remain with 90 baht in eggs sold per day, a total of 3,000 baht.

Due to the COVID-19 pandemic in 2020, the Company did not send representatives to perform acceptance inspections and visit disabled persons under the Company's responsibilities. The person responsible for the project performed these tasks on behalf of the Company.

## **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 2020, the Company purchased goods weighing 2,825 kg. and valued at 50,850 baht.



#### Katnang Ketwong Happiness Basket

In 2020, the Company purchased 286 Happiness Baskets from Mrs. Katnang Ketwong, a mother who refused to give up and wove baskets to sell and support her son who is congenitally disabled and bedriddent. Purchases were valued at 52,310 baht and used for "Volunteer to Take Friends to Happiness" activities to give to employees in birth months as gifts. This helped employees who received baskets to see the value of items obtained by helping others who are in more difficult circumstances. In addition, baskets can be used in place of plastic bags to reduce plastic waste.









Furthermore, the Company ordered an extra 50 baskets valued at 15,800 baht to pack necessities, face masks and hand sanitizer gel to give to older adults in Ban Bo Thong Community, Prachinburi, where Q Solar 1 PCL is located on Senior Citizen's Day.













Happiness Baskets from Mrs. Katnang Ketwong, Phran Kratai, Kamphaengpet

#### Lighting Modification Project at Wat Bo Thong Rang San

Because the Q Solar 1 power plant is located in Ban Bo Thong community areas and most of the employees are local Buddhists who regularly go to temple and make merit at Wat Bo Thong Rang San, a community temple, and the temple had problems from darkness at night on the road at the temple's entrance with danger for passersby, the Q Solar 1 power plant organized a project in collaboration with the Prachinburi Provincial Electricity Authority to modify lights and donate lights as public benefit and temple property. This project had a budget of 26,584.80 baht for installing lights.





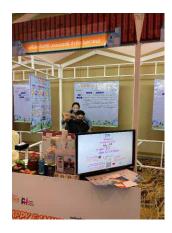




Photographs of Work on 27 April 2020

# **Q** Social Investment

Regarding investments for society, QTC assessed and found the Company to not be prepared to directly invest for society as a company business. Therefore, the Company has guidelines to invest in society through procurement and use of business services for society. In 2020, the Company canceled public relations or product introduction activities. When activities were organized, the Company held activities for only short periods of time in order to comply with COVID-19 prevention measures. Thus, the Company did not hire from state health enterprises (SHEs). However, at the end of the year before the new outbreak, QTC had a booth at the Warm and Happy Family Support for Organization Workers event at Wayuphak Room 6, Centra Hotel, Changwattana Government Center. Therefore, the Company instructed SHE massage teams to provide services for participants using one massage chair for half a day and a budget of 3,000 baht.









Photographs of the Event on 21 December 2020

# Activities for Society

In the area of activities, donations or support, the Company prioritizes and analyzes necessity, reasons for activities or donations including the Company's ability to carry out activities, donations or provide support with transparency and accountability under the anti-corruption policy. The main activities and donations of the Company and subsidiaries in 2020 are as follows:

#### QTC Loves Children 2020

This activity is an annual activity organized by the Company on a rotation of community schools specified by Mab Yang Porn TAO. In 2020, this activity was hosted on Saturday, 11 January 2020, at Ban Huay Prab School, Mab Yang Porn, Pluak Daeng, Rayong. The Company spent 33,285 baht in activities with 4 QTC Loves Children volunteer employees.









Photographs of QTC Loves Children 2020 Activities at Ban Huay Prab School

#### Playground Construction for Ban Nong Pai Lom School

Q Solar 1 allocated a budget to support quality of life in school age for preschool children and primary education students in communities where the power plant is located by building playgrounds and providing toys with safety standards that are basic playing instruments necessary for children's development. The budget amounted to 100,000 baht per year. In 2020, the Company built and delivered a playground to Ban Nong Pai Lom as the first school on 15 September 2020.









Photographs of the Playground Handover at Ban Nong Pai Lom School, Bo Thong, Prachinburi

# Activities to Support Persons Affected by the COVID-19 Crisis

The COVID-19 pandemic and measures enacted by the government to control outbreaks, stay at home measures and restrictions against large gatherings such as fresh market closures, closures of certain services, etc., have broadly impacted people, particularly those who are poor and have occupations related to activities with government measures, causing loss of income, no money for expenses in daily life with much evidence on television and online media.

As a Thai entrepreneur with social responsibilities, QTC states the intention to provide assistance for people impacted by COVID-19 based on current capabilities to relieve suffering and build morale among people with difficulties in areas where the Company and subsidiaries are located. The Company took the following actions:

#### The Company prepared aid bags for persons impacted by COVID-19

The Company prepared 300 bags of items necessary for living to provide aid for people affected by COVID-19 and delivered bags to government agency representatives to distribute to people in the following three areas:

People in Mab Yang Porn, Rayong, through Mab Yang Porn TAO: 100 bags

People in Bang Kapi, Bangkok, through Bang Kapi District Office: 150 bags

People in Ban Bo Thong, through Bo Thong TAO: 50 bags

Aid bags for people impacted by COVID-19 contain the following necessary items in life:

1. asmine Rice 3 kilograms 5. QTC Bottled Water 1 pack

2. Canned Fish 1 pack 6. Salted Eggs or Chili Sauce 1 pack

3. Hand Sanitizer 1 tube 7. Face Mask (muslin)

4. Green Cloth Bag 1 bag

With a value of 415 baht per bag and 300 bags, the Company spent a budget of 124,515 baht.



Photographs of Aid Bags Distributed by Government Agencies on Behalf of QTC

On 19-22 May 2020

### **Sharing Transformers**

The COVID-19 pandemic caused many industrial factories in Pluak Dang and nearby neighborhoods to close temporarily with many people laid off. Some factories paid partial wages, causing people to not have sufficient income for expenses. In addition, preventive measures enacted by the government to control outbreaks created more hardship in daily life for unemployed persons who are unable to find other income. The Company is aware and sympathizes with affected persons. Allowing people close to the Company's factories to suffer without providing any help may create difficulties in factories.

Therefore, the Company directed the CSR team and volunteer employees to prepare sharing transformers with support from Saphan Si Steel Products Limited Partnership in modifying the factory's old boxes for use by placing sharing transformers in front of the Rayong factory in order to provide food, beverages or necessary items in daily life to relieve suffering for people in Mab Yang Porn or nearby areas impacted by the COVID-19 crisis. The Company asked for cooperation from every person to take only enough to eat and use in order to share with other people in difficulty.

Placing sharing transformers in front of the factory resulted in cooperation from the government sector, the private sector and community members who have enough wealth to share and fill sharing transformers with rice, dry goods, beverages, vegetables, fruits and snacks, etc., every day. Each day, visitors came to fill transformers and take from transformers. In addition, some of the Company's employees from the Bangkok office and subsidiaries including regular factory employees added items and donated cash for CSR to purchase necessary items to fill sharing transformers regularly. This created participation among members of society to be generous to people who have difficulties and allow community members who were impacted to overtime this difficult time.



Photographs of Happiness Shared by Givers to Recipients at the Sharing Transformer in Front of QTC's Rayong Factory

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#### Waterproof Nano Face Masks with Straps for Children

The Company prepared 4,000 face masks printed with the QTC logo to give to five community schools and Mab Yang Porn Tambon Health Promotion Hospital to give to students to wear and prevent COVID-19 or children or youths who come to use hospital services. The Company spent a budget of 100,000 baht and had the following performance:

1. Ban Mab Yang Porn School:	1,530 masks	Valued at:	38,250 baht
2. Ban Huay Prab School:	1,250 masks	Valued at:	31,250 baht
3. Mab Yang Porn Wittayakom School:	660 masks	Valued at:	16,500 baht
4. Ban Map Toei:	300 masks	Valued at:	7,600 baht
5. Mab Yang Porn Small Children's Center:	160 masks	Valued at:	4,000 baht
6. Mab Yang Porn THPH:	100 masks	Valued at:	2,500 baht

Total Value: 100,000 baht



Ban Huay Prab School



Ban Mab Yang Porn School



Ban Map Toei School



Ban Mab Yang Porn Wittayakom



Mab Yang Porn Small Children's **Development Center** 



Mab Yang Porn THPH









Masks were handed out on 2-5 October 2020 by Phra Khru Sangkarak Sombat Wisutato

# **Echoes from Community Representatives**



"Q Solar 1 has always supported the temple, especially by solving the problems. I have always been worried about the safety and lives of monks and other people. When the streets are lit, bad things don't use this route again. Monks feel good and people feel good. It's a good thing to happen in our society."

> Phra Khru Sangkarak Sombat Wasutto Abbot, Wat Bo Thong Rangsan Bang Bo Thong, Kabinburi, Prachinburi

"QTC did things that show concrete corporate social responsibility by educating and increasing skills for students outside the class room and support school development. I admire this and I'd like to thank you."

> Mr. Sovapat Patom-ampon Director, Mab Toei School





"QTC is a very generous organization. QTC offered full support, leading to a sustainable and secure society for the community and strength in every sector"

> Mr. Ekachai Kanchanasakunchai Chief, Public Disaster Prevention and Mitigation Division General Administrator, Administrative Level Mab Yang Porn Tambon Administrative Organization

# **About This Report**

QTC has been preparing the sustainability report since 2014. This report has been prepared in accordance with the GRI Standard: Core option. Identify content and organizational information, management approaches, and significant sustainability issue in 2020 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 2020 to 31 December 2020

**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 2019, QTC Energy Public Co., Ltd.

https://qtc-energy.com/wp-content/uploads/2020/06/report-

sustainbility-qtc-csr2019-en.pdf.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

Please express your opinion toward the value of this report by scanning the QR code.



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QUALITY OF DETAILS >>
D-DYNAMICS E-ENVIRONMENT
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I-INNOVATION L-LEADERSHIP S-SERVICE

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