

# PATHWAY TO ACHIEVE YOUR CORPORATE SUSTAINABLE DEVELOPMENT GOALS

MioTech | Innovate for a Sustainable Future

**Jack Hai**

**May. 2022**





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# 1. About MioTech





# Corporate Profile

MioTech leverages **artificial intelligence** to solve the sustainability, climate change, carbon neutrality, and social responsibility challenges faced by financial institutions, corporations, governments, and individuals.

## Industry Affiliations



## Investors



Beijing: Sales & Marketing, R&D

Shanghai: R&D

Hong Kong: Global Sales & Marketing

Singapore: Global Sales & Marketing



# Team

Our team consists of **finance and technology talents** from world-renowned institutions in Silicon Valley, Wall Street, Hong Kong, and China. Of over 140 employees, **85% are engineers** trained in finance, big data, and artificial intelligence.



**Jason Tu**

**CEO**

Stanford MBA, led multiple teams in Standard Chartered Bank, WeLab, and Robinhood



**Tao Liu**

**CTO**

Cornell CS Master, specialized in distributed database and data infrastructure at Oracle and Turn



**Xu Tian**

COO



**Fay Wu**

Head of Research



**Jack Hai**

VP of Carbon & EMS



**Leo Wu**

VP of China Sales



**Qing Liu**

VP of ESG & Financial Services



**Jeff Chen**

VP of Consumer Products



Other employee backgrounds:

Morgan Stanley





# Products & Services

## ESG & Financial Services



Asia's largest ESG data platform providing comprehensive coverage and in-depth data for investment strategy, credit evaluation, risk management, and quantitative analysis.



The central hub for corporate, portfolio, supply chain, and subsidiary ESG data management, analytics, reporting, and reviewing.



Financial spreading made easy with one-click data extraction from financial statements, automatic standardized conversions, and custom accounting models.

## ESG Consulting

- ESG due diligence
- ESG benchmarking & target-setting
- ESG integration, risk mitigation, strategy formulation & implementation
- ESG ratings improvement
- Ongoing ESG performance tracking
- Internal ESG training
- ESG fund or capital allocation strategy

## Carbon & Energy Management



- IoT, AI-enabled Carbon Emission & Energy Management System
- LCA + PCF Analysis
- Carbon Asset Development
- Net-Zero Roadmapping
- Carbon-neutral Consulting and Climate Risk Advisory



## Capital Markets

### • ESG Index + Financial Products

Provide data feeds, methodologies, and frameworks for thematic indices, ESG ratings and ETF products.

### • ESG Research

Facilitate data-driven analyses across topics like macroeconomics, sector-specific trends, and green finance developments.

### • IPO Sustainability Advisory

Fully prepare prospective IPOs in sustainability and ESG to attract maximal investment and attention.



## Green Living



An app and community aiming to reduce individual carbon footprints. Green Mio gamifies and incentivizes users to engage in sustainable activities by rewarding emission-reducing behaviors with mio points.

- Promotes projects like tree planting, poverty alleviation, carbon offset programs (CER), and biodiversity.
- Collaboration with eco-friendly partners like EV charging stations, plant milks, etc.





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## 2. PATHWAY TO ACHIEVE YOUR CORPORATE SUSTAINABLE DEVELOPMENT GOALS

-- Carbon Neutralization





# CO2 Emission @ Organizational Level vs. Supply Chain Level

## Organizational Level Emission



### Scope 1 Direct Emissions

- Energy Combustion
- Own Production
- Coal
- Natural Gas
- Methane emission
- ...



### Scope 2 Indirect Emissions

- Purchased Electricity
- Purchased Heat
- Electricity
- Steam
- Compressed Air
- ...

## Product/Supply Chain Level Emission



### Scope 3 Other Indirect Emissions

- Upstream and Downstream Emissions
- Business Travel
- Packaging
- Logistics
- ...



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## 2.1. Organizational Level Carbon Neutralization





## PATHWAY TO SUSTAINABLE DEVELOPMENT

# Pathway to Carbon Neutralization

We summarized and generalized the 5-steps enterprise carbon neutralization roadmap in terms of sequence and degree of difficulties.



### Evaluation & Tracing

Carbon & EMS

Carbon MRV

### Elimination & Reduction

Smart Lighting Control

HVAC Intelligent control

Thermal Insulation Improvement

Reduce Consumables usage

Behavior Management

### Efficiency Improvement

Air Compressor Optimization

Boiler Optimization

Motor & Pump Optimization

Production Process Optimization

LED Lighting

### Energy Structure Optimization

Distributed solar panel

Distributed solar heat

Biomass

GSHP/ASHP

Equipment Electrification

### CCUS & Offset

CCUS

CCER

Carbon Trading

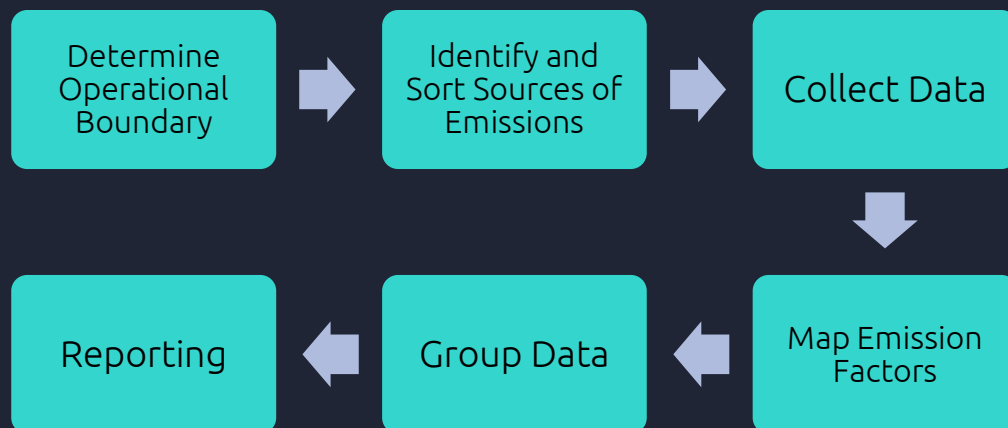


## PATHWAY TO SUSTAINABLE DEVELOPMENT




### Step 1.1 Carbon Inventory

**The first step towards Carbon Neutralization is always to understand where you are right now.**

From organizational level, you need to identify the sources of carbon emissions and calculate the volume and intensity of carbon emissions, in order to formulate more efficient strategies to reduce carbon emissions, and reach emission peak and eventually carbon neutrality.



### GHG Emissions

	Definition	Scope	Disclosure Types
 Scope 1	<b>Direct Emissions</b>	Energy Combustion Own Production	
 Scope 2	<b>Indirect Emissions</b>	Purchased Electricity and Heat	Scope 1 & 2
 Scope 3	<b>Other Indirect Emissions</b>	Upstream and Downstream Emissions Business Travel	Scope 1 & 2 & 3





## PATHWAY TO SUSTAINABLE DEVELOPMENT

# Step 1.2 Digitized Carbon & Energy Management System

Various real-time data sources enable transparent and efficient Carbon & Energy Management



Electricity



Steam



Coolant



Comp. Air



Natural Gas



Water



VOC



Others



- Comprehensive Realtime Monitoring
- Ascertain Current Status



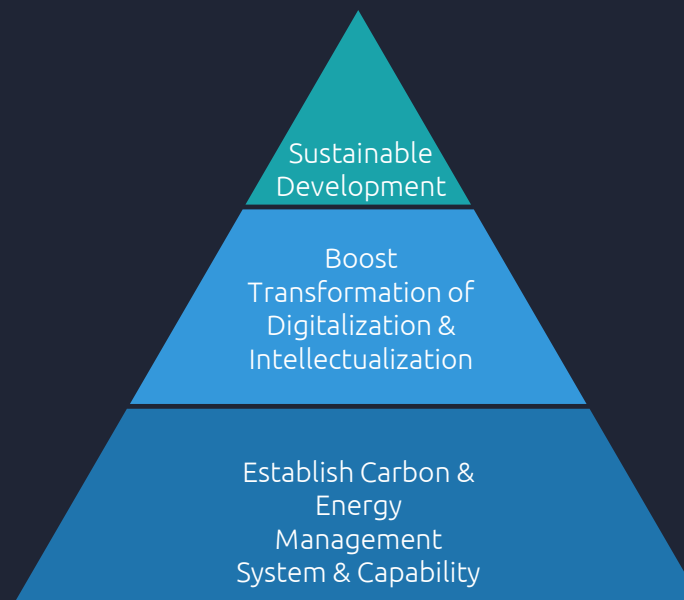
- Intelligent Analysis
- Identify Reduction Opportunities



- Value Quantification of Reduction Solutions



- Group-level Control & Visualization of Carbon-neutral Progress





## PATHWAY TO SUSTAINABLE DEVELOPMENT

# Step 2. Reduction & Elimination

### Situation

Lighting & Heating in factory & admin building usually counts for 10-20% of the overall energy consumption, these equipment are manually controlled in general.

### Issue

- Left open when no demand
- Over cooling / heating
- Fixed power, cannot automatically adjust according to environment

### Solution

- Use smart switch/circuit breaker & rules engine to control the equipment
- Use motion sensor/light sensor to control lighting duration and strength
- Use temp. sensor & PID controller to optimize heating system





## PATHWAY TO SUSTAINABLE DEVELOPMENT

### Step 3. Efficiency Improvement

#### Situation

Boiler and Furnace are often used in factories as heating source for production process and office building. Its energy consumption could not be neglected.

#### Issue

- Capacity & Demand mismatched
- Ash accumulation & coking reduce thermal efficiency
- High exhausts temperature leads to energy waste

#### Solution

- Operation strategy optimization
- Use new materials on thermal exchange surface to enhance thermal exchange
- Waste heat recovery





## PATHWAY TO SUSTAINABLE DEVELOPMENT

### Step 4. Energy Structure Optimization

#### Solar Panel

Area	Installed Capacity	Annual Operation Hour	Power Generation	Carbon Reduction
1,000 m <sup>2</sup>	100KW	1,825 h	182,500 kwh	137 ton

Forklift

Diesel → Electricity

Heating

Ground source heat pump

Biomass





# PATHWAY TO SUSTAINABLE DEVELOPMENT

## Step 5. Offset



### Demand



#### Regulated Market

- Allowance + CCER → Compliance
- Asset Management

#### Voluntary Market

- Social Responsibility
- Branding & Marketing



### Consulting



- Trading
- Project Development
- Compliance Management
- Asset Management



### Supply



#### Emission Reduction Companies

- CCER
- VCS
- CER
- GCC
- GS



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## 2.2. Product & Supply Chain Level Carbon Neutralization





# PATHWAY TO SUSTAINABLE DEVELOPMENT

## Product Carbon Footprint

### What is LCA?

Life Cycle Analysis; a quantitative assessment of the potential environmental impacts of a product (or service) throughout its life cycle (i.e. "cradle to grave") from raw materials, production, distribution, use, and disposal stages.

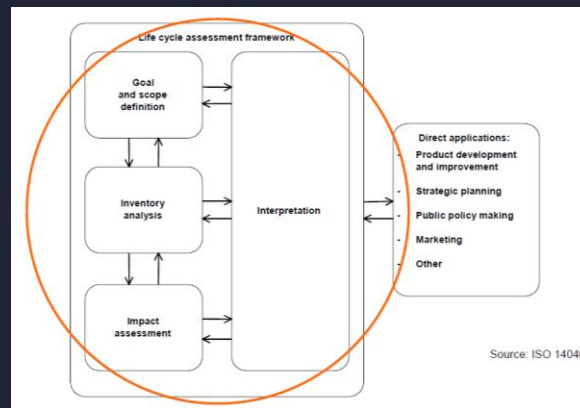
### What is PCF?

Product Carbon Footprinting; the total direct and indirect GHG emissions caused across the entire life cycle ("cradle to grave" or "cradle to gate") of a product (or service), measured as "CO<sub>2</sub> equivalent".

### Scope



### Framework



### Benefits



Optimize Supply Chain Management



Industry Leadership



Enhance Brand Image  
Prepare for net-zero

### Active Companies





# Emission Reduction In Different Phases



## Raw Material Extraction

- Recycled Material
- Low carbon material
- ...



## Manufacturing



## Logistics & Packaging

- Electricity/H2 Fuel
- SAF
- Recycled Packaging
- Bottle vs. Bulk delivery
- ...



## Usage

- Energy Efficiency
- ...



## End of life

- Recycling



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## 2.3. COST & IMPACT OF EMISSION REDUCTION ACTIONS ALONG THE JOURNEY

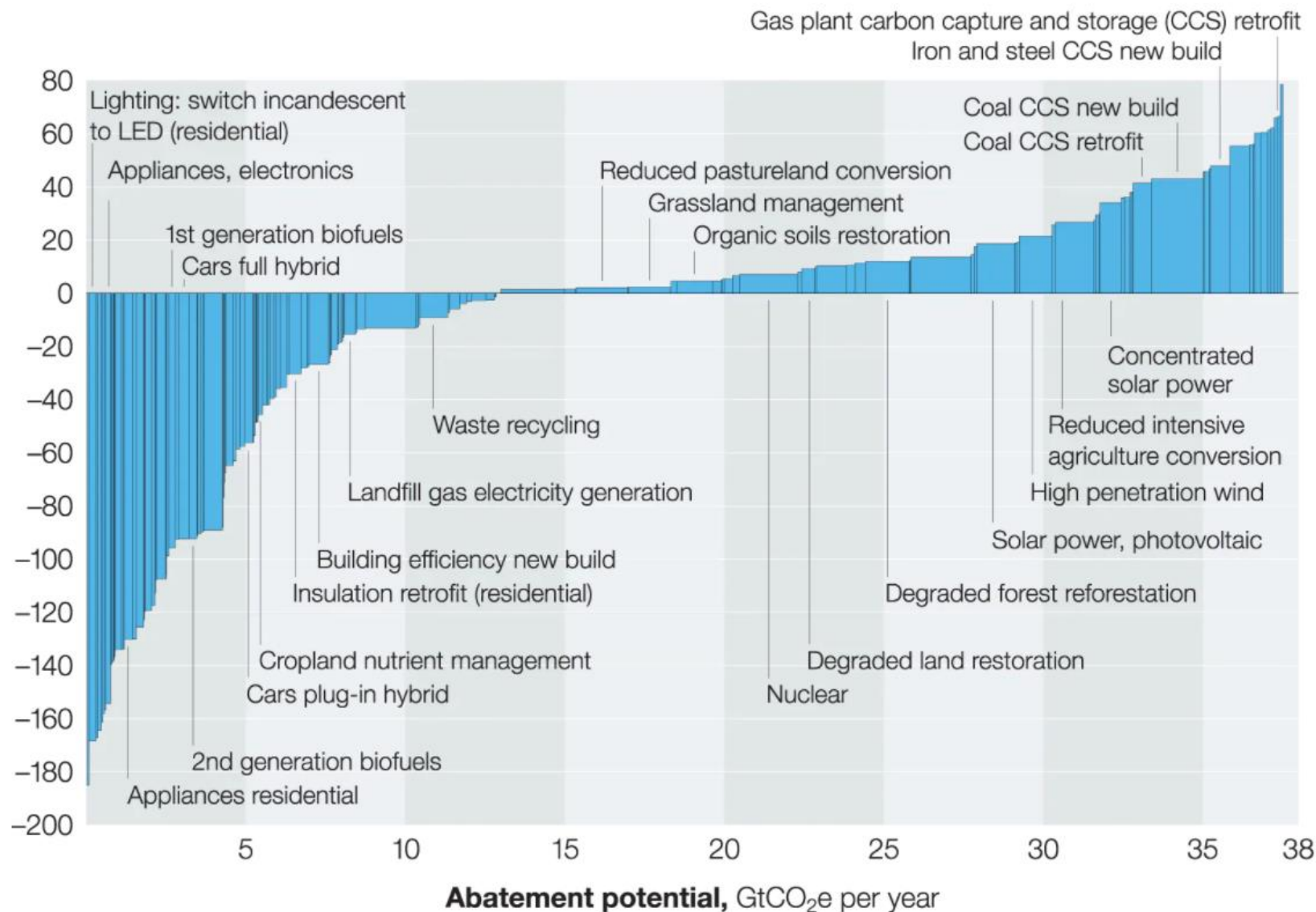




## PATHWAY TO SUSTAINABLE DEVELOPMENT

# COST ALONG THE JOURNEY

Abatement cost, € per tCO<sub>2</sub>e



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €80 per tCO<sub>2</sub>e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.



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## III. Case Sharing

-- Shell Group





## Case Sharing

# Shell Group

Royal Dutch Shell plc, commonly known as Shell, is an Anglo-Dutch multinational oil and gas company headquartered in The Hague in the Netherlands. It is incorporated in the United Kingdom as a public limited company. It is one of the oil and gas "supermajors", and, measured by 2020 revenues, the fifth-largest company in the world.

Shell aims to achieve net-zero emission by 2050, all production unit are facing huge decarbonization pressure. They are looking for partners who can support them to reduce energy consumption, improve operational efficiency and reduce GHG emission to achieve 2050 ambition.

Customer Sector: Petrochemical

Location: 20+ countries

Hardware: Smart power meter, gas/water/steam/compressed air flow meter

Software Version: Carbon + Energy Management

Deployed Version: Cloud based SaaS

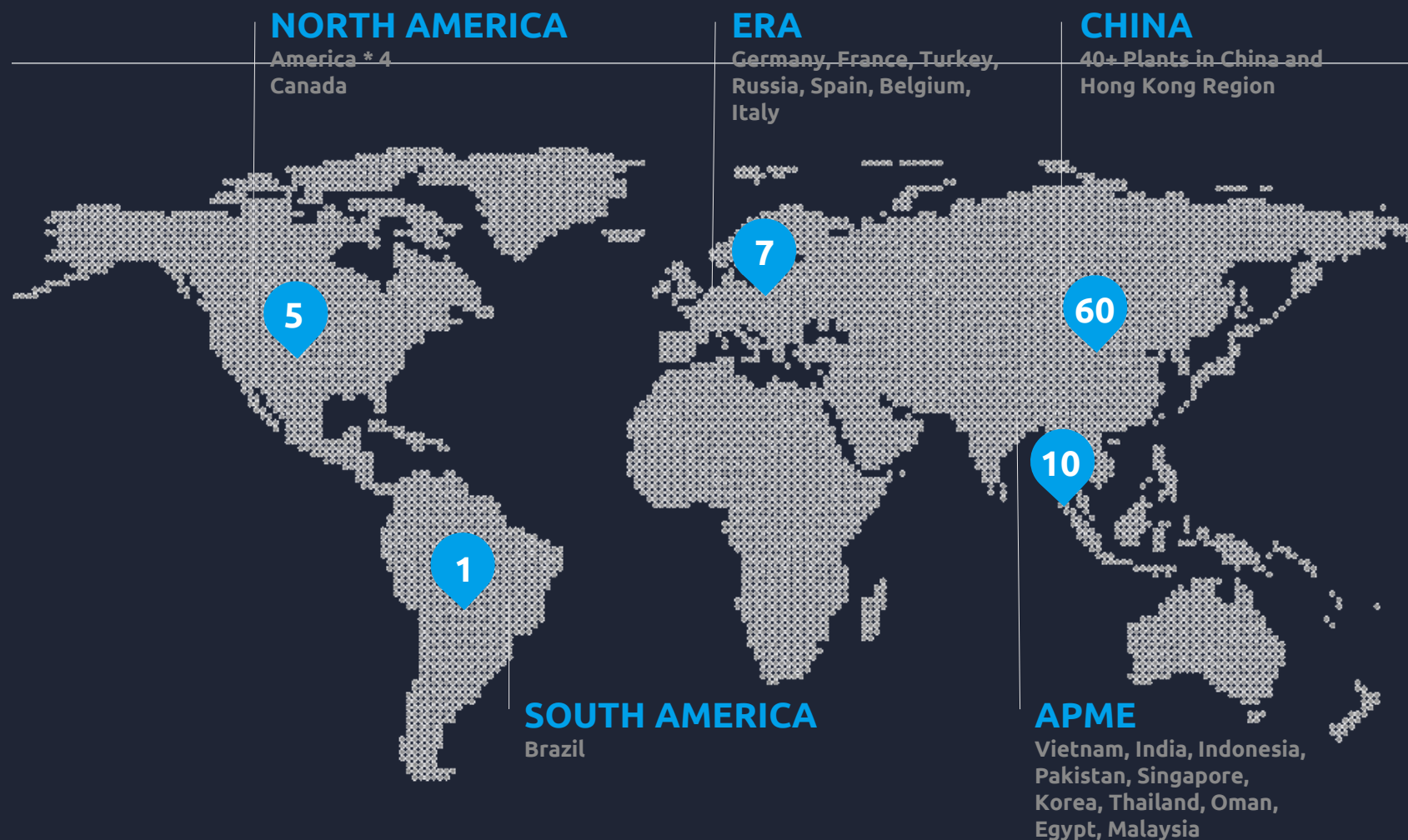
Carbon Emission Scope: Scope 1+2





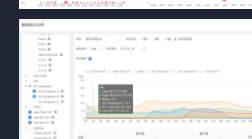
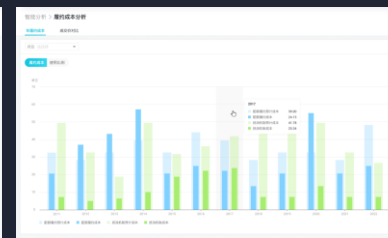
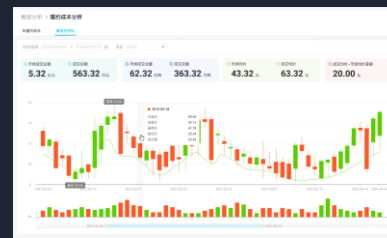
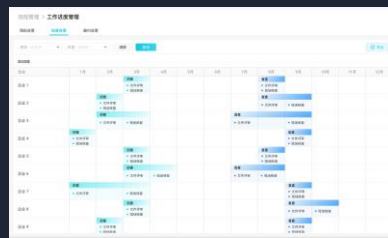
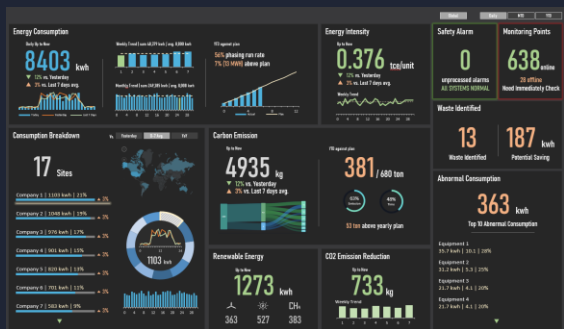
## Case Sharing

# Shell Group





# Case Sharing Shell Group

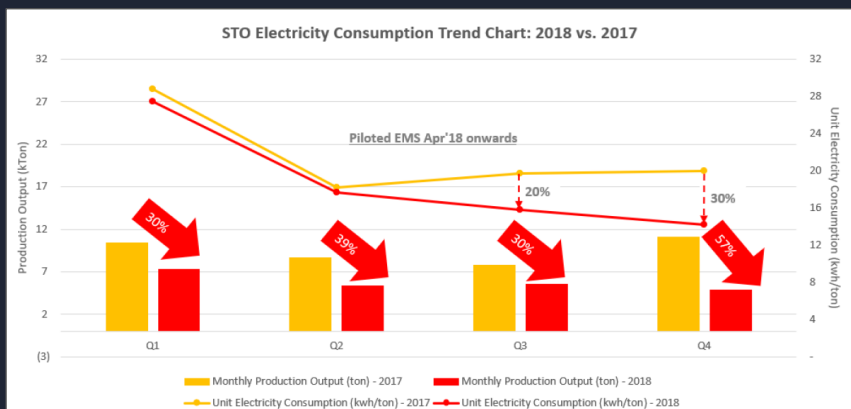




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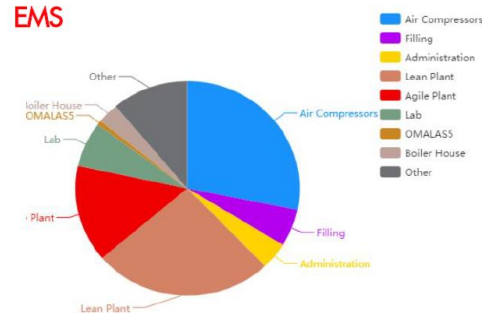
## Shell Group

### Shell China STO LOBP Unit Production Energy Consumption **Reduced by 30%**



Saving idea	Type	Saving versus original consumption (%)	Saving versus total electricity use (%)
Replacing air compressors with lower power units	B	30	5
Central air conditioning: automatic control and rearranging working desks	A + B	10	1
Optimising the production schedule for blending and filling	B	10	2
Shutdown plan: checklist for ensuring all unnecessary equipment is switched off	B	30	2
Optimising laboratory power use: resetting the auto-start timing	A	10	0.5
Lighting power control: automatic control	B	20	0.2
Using the EMS and production data to check power use per production volume in daily huddles	C	TBD	TBD

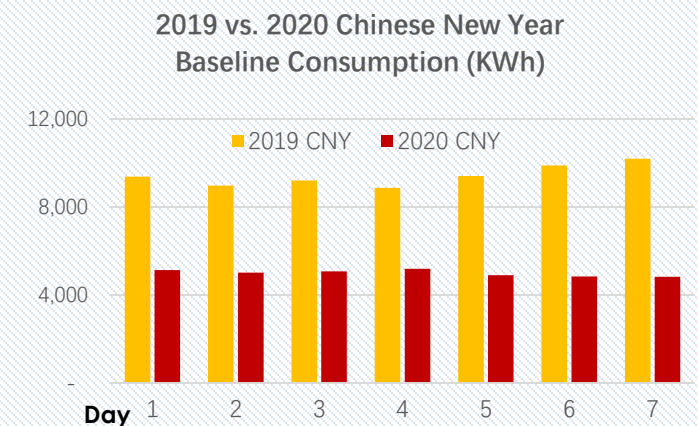
### EMS



- Opportunities (Assumption Vs. Real Data)
- Timely Intervene (Monthly Data Vs. RT Data)
- RealTime & Visible Result
- Machine management (Link with maintenance)
- Process Optimization (link with OEE/CPS..)

- Fixed Electricity consumption
  - Move to Variable content (Air Con.)
  - Optimize the Fixed (Air compressor)
- Variable Electricity consumption
  - Optimize the Variable (LED)

### Shell China 2019 vs. 2020 CNY Baseline Energy Consumption **Dropped by 47%**



With the support and application of OCS EMS, ruling out production variance impact (Exclude ZhuHai), for Shell China the average baseline energy consumption during 2020 CNY holiday is reduced by **47%** of that in 2019, which equals to at least **4419 KWh** of saving every day, namely **940,879 KWh** of electricity and **708 tons** of GHG emission reduction every year.



# Case Sharing

# Shell Group



Jory Richard

VP of Global Supply Chain

“Really positively surprising results that deliver real CO2 and Opex savings. Let’s make sure we replicate to other plants across the globe at speed.”

REPORT

Case studies

### REAL-TIME MONITORING OF lubricant plant electricity consumption

Reducing greenhouse gas (GHG) emissions is an important demonstration of Shell's internal sustainability and social responsibility. Electricity consumption accounts for almost 50% of lubricant plant GHG emissions. The Shell Electricity Monitoring System (EMS) is a web-based tool that tracks electricity consumption in real time. The EMS has helped to achieve an 8.3% reduction in electricity use from 2017 to 2018 at the Shell (Tianjin) Oil & Petrochemical Co. Ltd lubricant oil blending plant in Tianjin, north-western China, and is now being implemented at other plants.

**Scope** The EMS has been piloted at the Tianjin lubricant oil blending plant (Figure 1), which produces lubricants in kettles, tanks, drums and ISO tanks. The plant's capacity is 1.1 million litres a year and covers more than 250 stock keeping units and more than 10 brands, including Shell Tellus, Shell Omala, Shell Avia, Shell Sphera and Shell Turbo oils and some brands made for equipment manufacturers.

**Pilot study** The pilot began in June 2018. Electricity use at the plant is typically 25–35% of the total for the unit with the rest being variable. Based on simulations using 2017 data, the 2018 electricity use was forecast to be 23.7% higher than the previous year, but the EMS helped to reduce actual electricity consumption by 8.3% (Figure 2).

**Energy-saving ideas** The EMS was used to identify energy-saving opportunities (Table 1). These ideas were then proposed and implemented. The EMS was used to verify the savings made. These categories of electricity consumption savings were identified. These are shown in Table 1 and include:

- a. compressed air consumption
- b. non-reflexion power installed greater than needed
- c. inevitable identified by comparison with other data, for example, by benchmarking with other plants

**Optimizing equipment layout and distribution** At the Tianjin plant, air compressors consume more electricity than other equipment type (Figure 3). The EMS showed a 24,000 kWh monthly air compressor power consumption, with a 2,000 kWh negative consumption compared with an 800 kWh daytime consumption.

In the blending process, compressed air is mainly used for opening pneumatic valves and line

FIGURE 1  
Tianjin lubricant oil blending plant

FIGURE 2  
Electricity consumption per barrel of lubricant oil

FIGURE 3  
Electricity consumption by equipment type

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FIGURE 4  
Average compressed air consumption by time of day

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FIGURE 5  
Hourly electricity consumption

FIGURE 6  
Electricity consumption by equipment type

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FIGURE 7  
Hourly electricity consumption

FIGURE 8  
Electricity consumption by equipment type

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# Case Sharing

## Shell Group

## "Shell GC LSC De-Carbonization Best Practice Report"



壳牌润滑油中国/香港区供应链碳减排实践报告

2019.8.5 日

壳牌的碳减排实践总述

在减少碳足迹的报告中, 润滑油供应企业在全球企业中名列前茅。我们通过对行业内的研究揭示未来业务的特点, 并将企业逐步融入低碳经济价值链。和减少石油需求相称, 润滑油供应企业需要, 使用更清洁的能源作为生产能源。

### 减少和避免碳排放

[illegible]

张源快马战李福

[illegible]

### 绿色能源替代

四川泸州从疏浚江底淤泥中，回收得到重晶石、石英灰、重晶石与重晶石-三氧化硅凝胶。通过江底淤泥“清淤提质”，除了避免无益地运出外，还节约了处理淤泥的“气”与“电”消耗。比如将重晶石凝胶添加至混凝土中，从而显著提高混凝土强度和使用寿命等。在江底淤泥清淤提质后，我们正从该江中陆续提取了1200多吨，在物流末端，我们大力推广“包中包”重晶石凝胶，另外，在重晶石凝胶中析出重晶石，也能节约大量能源消耗问题，这些举措都会大大节约成本并提升疏浚淤泥的利用价值。



来源: 根据作者对 1990 年 10 月 1 日以前在世的 100 名被调查者的调查。

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## 壳牌的碳减排实践总述

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[illegible]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70	0.71	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.00
2	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70	0.71	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.00
3	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70	0.71	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.00
4	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.																																																																													

肥料使用对碳源的影响估算过程:

肥料  $\log_{10}(\text{kg/ha})$  包里的碳源量为每千克养分  $0.113\text{g}/\text{C}/\text{CSE}$  碳量。而  $\log_{10}(\text{kg/ha})$  包里的肥料净重为  $20\text{g}$ ，纯净度  $0.98 \times 4 = 0.52\text{g}$ ，那么  $\log_{10}(\text{kg/ha})$  肥料包里的碳源重量为  $0.113 \times 0.52 = 0.05876\text{g}$ ，因此可推算出单位重量的肥料包里的碳源为  $0.417\% = 0.00417 \times 100\%$ 。

来源:根据作者编《香港居民生活状况调查报告》。

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## 壳牌的碳减排实践案例总述

自2016年起, 品牌运营和供应链在不同的生产经营环节进行了碳减排实践。这些实践可以按照如下种类进行归

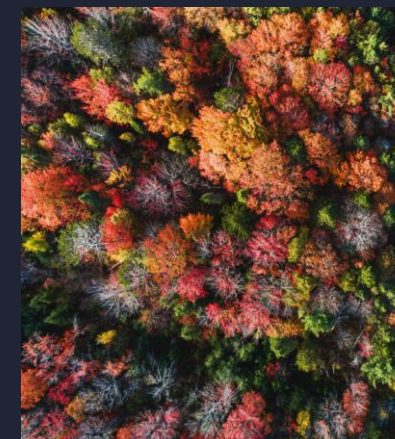
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以今年产钢量200万吨的天津工厂为例,原料环节节能减耗XX吨/年,生产和资产管理环节节能减耗XX吨/年,物流环节节能减耗XX吨/年,能源供应环节节能减耗XX吨/年,生态环境环节节能减耗XX吨/年,喜报环节节能减耗XX吨/年,共减耗XX万吨/年。

[illegible]

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## IV. How Can MioTech Help You?





MioTech

# Carbon & Energy Management

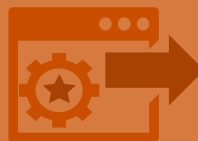
End to End Carbon &  
Energy Management  
Service & Solution



Consulting



Intelligent Platform



Asset Management



Low-Carbon Solution



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