

IMA CASE COMPETITION


Become a Towering Tree

— — Cost Reduction & Efficiency Improvement
Long-term Development

Team : Sailing

Number : HN20221886

CleanTech Co.

Content

CleanTech Co.

01
Overview

CleanTech Co：A Supporting Enterprise in the Middle of PV Industry Chain, Striving to Enter the First Echelon

CleanTech Co.

Set up 2012

Position supporting enterprise in the middle of the PV industry chain

Clean Tech

Title national high-tech enterprise

Mission → cost control, efficiency increase and sustainable development

Budget target → Revenue ¥73000, Net profit ¥7000 (2022), Asset turnover 1.15

Strategic target → enter the first echelon, ROE>=20% , CAGR 26%

Main Product

PV model's regulative center

junction box　　connector

Quality climate-resistant　waterproof　stable　high pressure-bearing

Major Business Activities

Research → **Production** → **Sales**

4.9% of revenue in recent three years

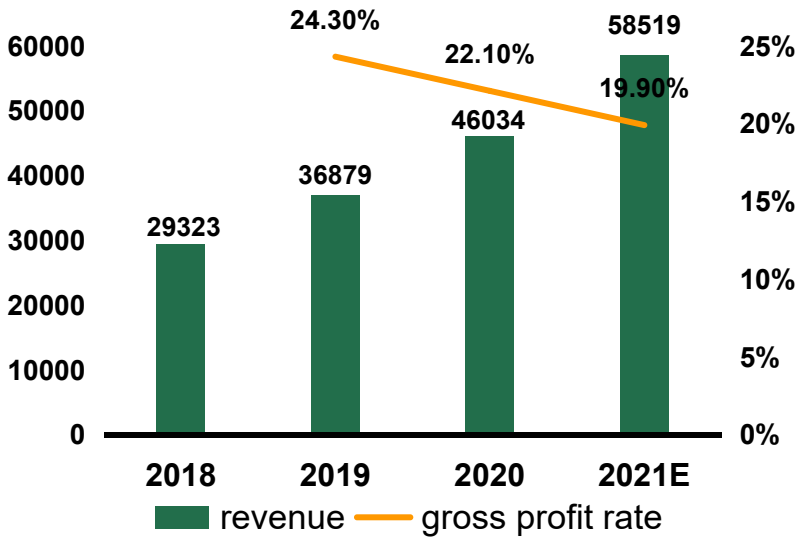
intelligent junction box is **technical feasible**

Tailored

revenue grows steadily

Performance

CleanTech Co 2018-2021E's revenue and gross profit rate (`0000)



3 year's CAGR **25.9%**　Average GPR **21.77%**

02
Center Strategies

Introduction

CleanTech Co.

Realistic dilemma

- **Sea freight** increase
- **Time** of sea shipping extend
- Cost of **temporary employment** increase
- **Subsidies** in the photovoltaic industry **decline**

→ **Cost** ↑ **Income** ↓

Raw material(80% of total cost) ↑ 5% → total cost ↑ **4%**

Sale price ↑ **2%**

→ Profit margin ↓ 2%

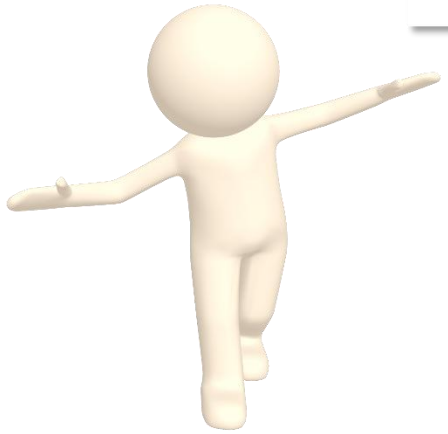
To achieve budget target

↓

Revenue **￥73000**
Net profit **￥7000**

↓

Control cost & Increase efficiency



To achieve strategic objective

↓

Enter **the first echelon**

↓

Insist on long-term development

Production Center: Measures Taken to Reduce Costs and Improve Efficiency that Can Work in a Relative Shorter Time

CleanTech Co.

Strength the Maintainance of Equipment

Try best to achieve **zero failure**

- ✓ Form the appropriate notion — zero failure can be achieved
- ✓ Production personnel cooperate with maintanance personnel

✗ The equipment never has problems

✓ In the process of management of equipment, you can decide when to overhaul to ensure that the equipment maintanance will not interrupt the production process

Reduce the **downtime**

- ✓ Arrange the maintainance time in non-production time

Implement total production maintanance(**TPM**)

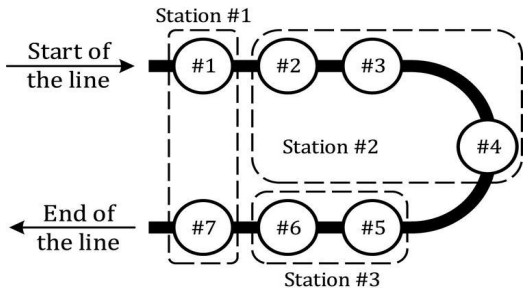
- ✓ Let production personnel participate in the maintainance work

Improve the space utilization rate of factory

Place equipment **compactly**

- ✓ eliminate conveyor belt production line
- ✓ integrate the separated workstations into the mian production production line
- ✓ reduce handling distance

Build a **U-shaped** production line



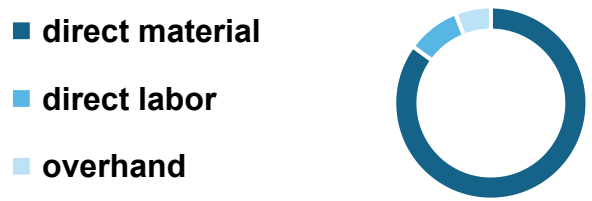
save **half** of space needed

venue rent

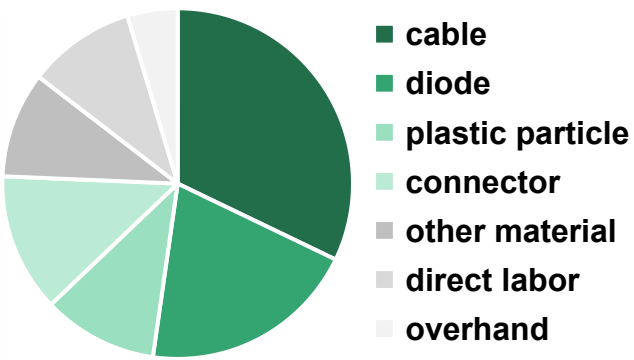
Production Center (Continue efforts in future): Upward Integration, Promoting Self-production of Raw Material

CleanTech Co.

Costs of sales proportion (%)

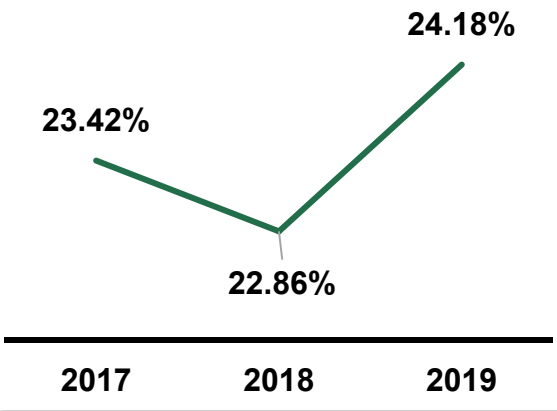


Costs Composition of Junction Box (%)



The main costs of a junction box are from cables, consisting **30%-40%**

Tongling Eletric's Gross Profit Margin from 2017-2019 (%)



Tongling Ltd actively **expanded upstream** from **2017**, purchasing raw materials like tinned skeins to **produce cables**, important part of junction boxs

+

Tongling Ltd achieved **more than 70%** cables produced by self-owned production line until June 2021

home-made **vs** outsourced → **GPM** ↑ **3%**

Upward Integration

Produce Raw Material by CleanTech Co

On top of *cables*, CleanTech Co can purse to produce *junction box body*, *junction box cover, conductive metal items* and so on by itself

- ✓ improve **vertical integration** of product production
- ✓ strengthen the **control of costs**
- ✓ increase the **GPM** of products

Reference : Tongling Ltd' s annual reports from 2017-2019 , Kuaike Eletric' s annual reports in 2020 , Tianfeng Securities Research Insititute

Production Center (Continue efforts in future): Promote the Automatic Transfermation of Production Line

CleanTech Co.

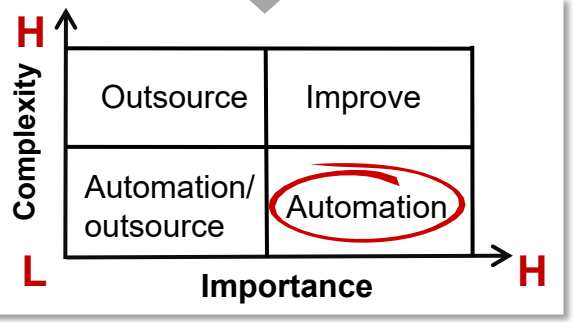
Main components of Junction box

- Box body
- Lid
- Terminal blocks
- Connector
- Diode
- Chip

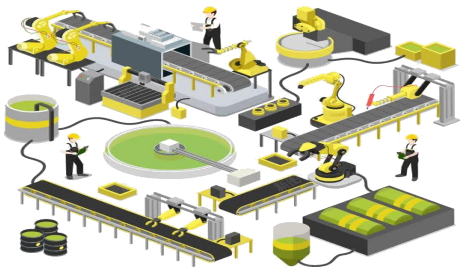
key production process → **assemble** every components

LOW complexity + **HIGH importance**

Optimize production process according to product characteristics



Automated assembly line



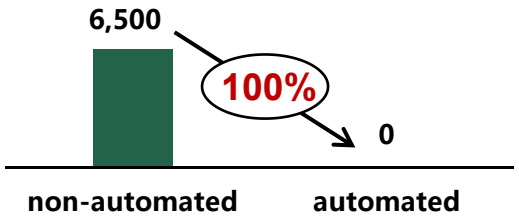
✓ **reduce** the number of labors needed for **assembly** link and **welding** link

✓ **improve the quality** of key assembly procedures

Predictive Benefits Analysis

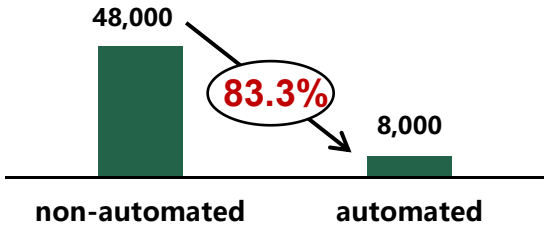
Rectification Costs

Rectification Costs Comparison of Pre and Post Automation (month per production line / RMB)



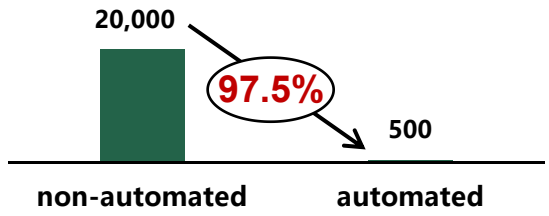
Labor Costs

Labor Costs Comparison of Pre and Post Automation (month per production line / RMB)



Material Costs

Material Costs Comparison of Pre and Post Automation (month per production line / RMB)



Reference : Runze X BOX junction box' s illustraion and Runze CEO' s interview ; Notes : detailed illustration of predictive benefits analysis please see in appendix 1

Quality Center: Strengthen and Improve Quality Detection, Reducing Cost of Returned Goods

CleanTech Co.

Upgrade the standard of tesing laboratory

Strive to recognized by China National Accreditation Service for Conformity Assessment (**CNAS**)

Based on **international authoritive standards** (EN50521, EN50548, UL3730)

Test Products
- mechanisim
- eletricity quality
- material characteristics

To confirm → **Safe & Reliable**

Update quality certification standards

ISO 9001 + ***IEC 62941***

Product	Standards
Connectors	*CQC33-462198-2020* *IEC 62852:2020*
PV junction boxes	*CQC33 462192-2020* *IEC 62790:2020*

Strengthen the strength of quality inspection

Test Methods	Quality Requirements
• Sulfur dioxide corrosion capacity	Strong aging resistance
• 90KW·h/m ultraviolet irradiation	Strong UV resistance
• 750 ° C hot wire test	Good heat dissipation performance
• IP65 anti-flushing test	Excellent sealing performance

Junction Box Quality Inspection

Quality Requirements	Test Methods
Current matching capability of diode	• Heat spot durability test • Diode thermal performance test
Reasonable electrical safety design	• Power frequency withstand voltage test
Excellent flame retardant ability	• Flame retardant test (HB, V-2, V-1, V-0)
Low connection resistance	• High and low temperature cycles 200 times

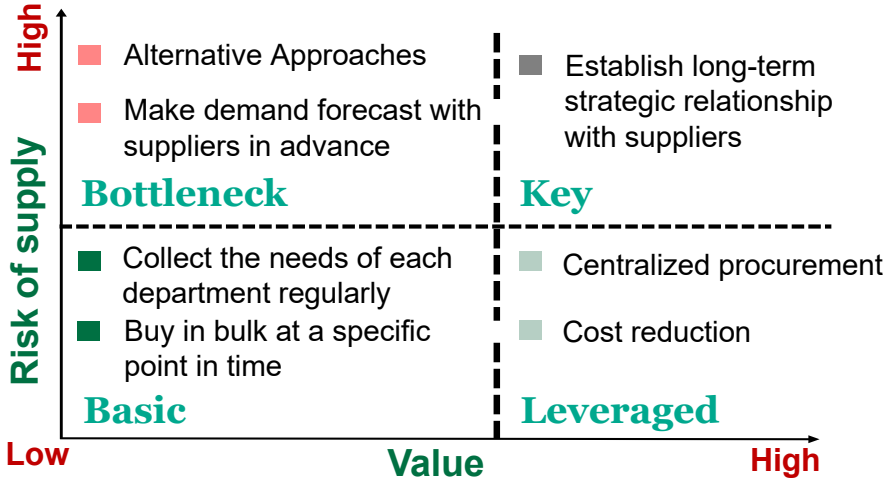
Reference : A study on the quality of photovoltaic junction boxes by Huayang Photovoltaic Detection Technology Co. , Ltd. , Changzhou

Supply Chain Center: Procurement Process Control + Suppliers management (Be Effective in a Relative Shorter Time)

CleanTech Co.

Procurement Control

Customize different procurement strategies



Strengthen cost control and supply continuity

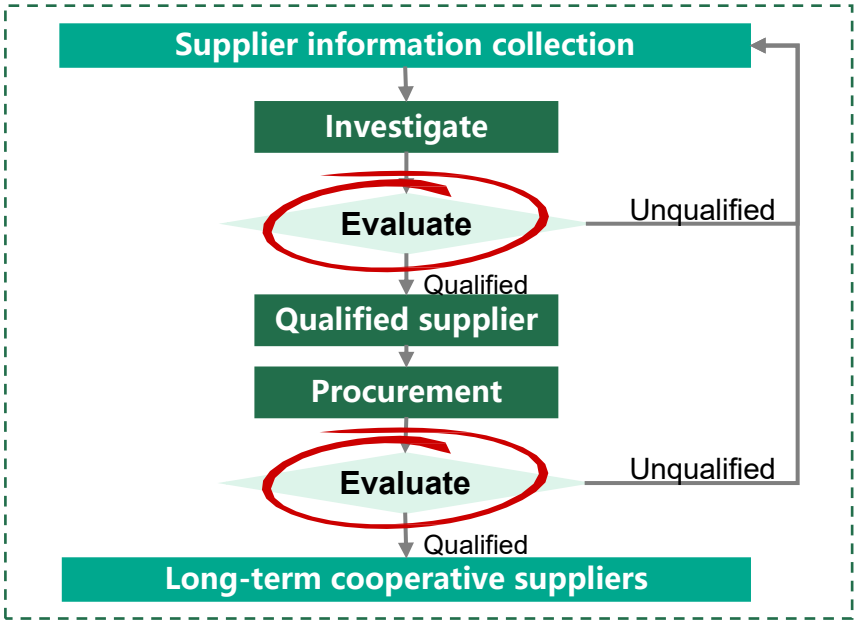
1. **Purchasing volumes:**
   - Producing according to sales
2. **Purchasing Unit Price:**
   - Lock cost by confirming with suppliers in advance
   - Reduce fluctuation by using derivatives, like future
3. **Supply continuity**
   - Strengthen purchasing plan and stocking strategy

Performance Management

Item	Sub-item	Weight	Score
Staff	Punctuality	0.4	25
	Accuracy	0.4	25
	Cost	0.1	25
	Professionalism	0.1	25

Suppliers management

Optimize supplier management process



Expand the range of supplier choices

✓Exhibition ✓Existing stakeholders ✓open tendering

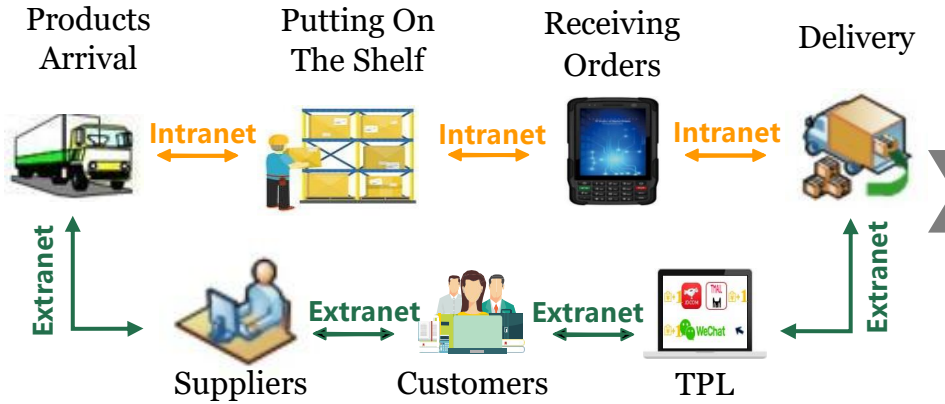
Performance Management

Item	Sub-item	Weight	Score
Supplier	Punctuality	0.4	25
	Quality	0.4	25
	Technology	0.1	25
	Service	0.1	25

Supply Chain Center(Continue efforts in future):Internal and external information sharing + Information integration and analysis

CleanTech Co.

Internal and external information sharing



- **Optimize the Intranet**
  - **Measure**: Share material demand and inventory warning
  - **Benefit**: Reduce inventory surplus and improve product competitiveness
- **Establish efficient extranet**
  - **Measure**: Share orders with 3PL and customers
  - **Benefit**: Reduce transaction costs between firms

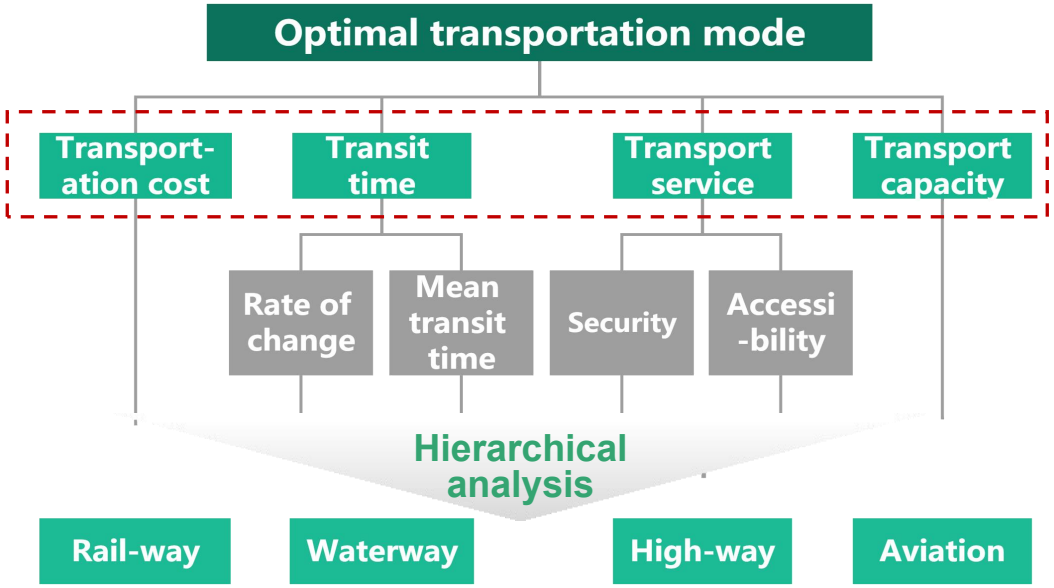
Information integration and analysis

➢Visualization of storage

➢Build an Automated Warehouse

- ✓ Number of workers ↓ 79%
- ✓ Land area ↓ 87%

➢Choose a reasonable mode of transportation



Reference : open websites

Market Center: Optimize Management of Domestic Market + Strengthen Management of Current Customers

CleanTech Co.

Optimize mgt of domestic market

- Divide domestic market into six parts
- Learn local specified weather conditions
- Adjust junction box to make it more suitable for every region

(E.g. strengthen climate-resistance, sun-proof, water-proof)

✓ Improve degree of **satisfaction**

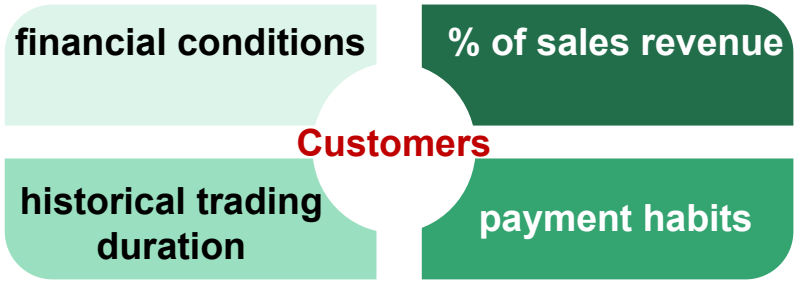
Strengthen mgt of current customers

Satisfy **differentiated** demand

- Communicate with main customers regularly
- Satisfy *the PV module manufacturers'* differentiated demand resulted from the fierce competition
- Increase customers' loyalty

Strengthen mgt of **trade receivables**

Considerations of customers' **credit rating**



Arrange sepecified person to **collect TR**

- ✓ classify customers according to **credit rating**
- ✓ require payment to be made within **1-4 months (PV industry's convention)**
- ✓ chase **overdue** receivables timely
- ✓ **update** credit rating regularly

Reference : open websites

Technique Center: Development Process Standardization to Reduce Costs + Strengthen External Cooperation

CleanTech Co.

CleanTech Co.

R&D management

Product iteration

Strengthen cooperation

commercial feasibility evaluation

②Planning ④Verification ⑤Release

①Concept ③Development

Demand analysis

tech-

sustainability

cost-competitiveness

Center linkage for cost management

Finance — standard cost analysis

Purchase — proposal review

Production — difficulty adaptation

Exit mechanism

Indicator — benefit-cost analysis

Product structure

Split

Monomer

Bypass protection circuit

Directional module

Improve efficiency

Rated current level

Heat dissipation capacity

……

Talent

Colleges

Experts

Talent Pool

Consultants

Independent directors

Resource allocation

Laboratories

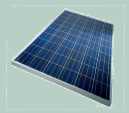
Project

Base

Technique Center: Industry Convergence to Improve the Efficiency of PV Conversion

CleanTech Co.

Upstream



New cell

Synchronous technological innovation

Downstream

Track demand changes

Equipment **renovation**
Raw materials **recycling**
Alternative materials development

- Reduce production cost
- Improve product quality
- Save energy and raw material consumption

Intelligent junction box	Improve intelligence safety alert
Configure MPPT	Reduce the impact of different battery
N-type products	Improve battery conversion efficiency

Measures	Aging of effect	Effect
R&D management	**Short-term**	**Avoid** high cost **loss ; Shorten** development **cycle** **Reduce product changes** after production
Strengthen cooperation	**Long-term**	Form **complementary advantages** on **talents** and **equipment**
Industry Convergence	**Long-term**	**Improve** product **performance** **Improve** customer **loyalty**

Personnel Administration Center: Improve the Personnel Management System

CleanTech Co.

Recruit outstanding talents

website
session
recommendation
advertisement
Recruitment channel

+

Equity incentives
Promotion incentives
Bonus
Compensation system

Manage employers

Management
Professional skills
New employee
Hierarchical training

+

Focus	OKR
Plans	**Indicators**

Performance mangement

Retain outstanding talents

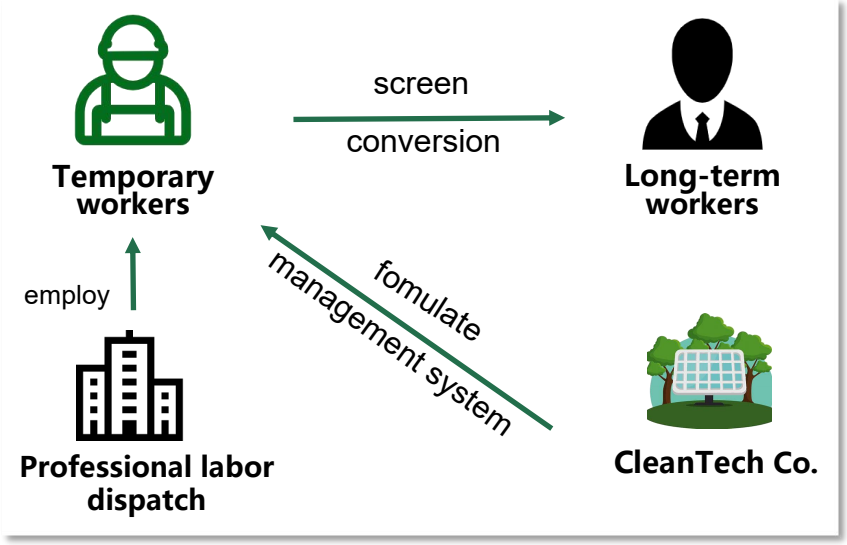
Spiritual
Material
Career development
Understand needs

+

weed out
reward
Incentive plan
Succession plan
Career plan
Screening

Reduce the risk of temporary employment

Employers need to **choose formal institutions**, **cooperative employment**, signed formal **contracts**, to ensure the quality of work.



Summary——Implications

- ✓ **Reduce** temporary labor costs
- ✓ **Reduce** turnover rate
- ✓ **Improve** production efficiency
- ✓ **Enhance** sense of belonging

Financial Center: Operating, Investing and Financing Measures in Short-term

CleanTech Co.

Operating
Reasonable tax planning

Set-up stage

- ✓ Transfer part of the business to **low-tax areas**

Procurement stage

- ✓ **Take advantage of time difference** between purchasing and receiving raw materials
- ✓ A reasonable **delay in payment**

Sales stage

- ✓ Prepaid or outsourced **freight**
- ✓ Split up to enjoy **small-scale tax benefits**

Internal accounting stage

- ✓ Select an appropriate method of **issuing inventory**
- ✓ **Accelerate depreciation** to reduce current income

Investing
Investing project control

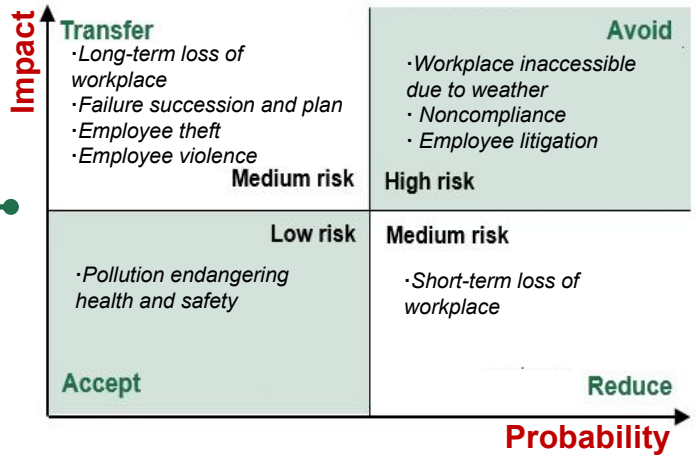
Project management

(1) Pre-invest information collect
<Pre-invest Background Investigate>

(2) Project evaluation
Visualize evaluation results

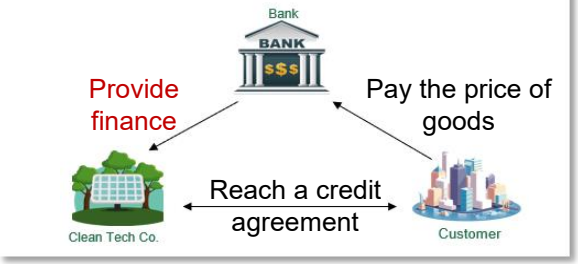
(3) Project implementation
<Project Settlement Sheet>

Risk control

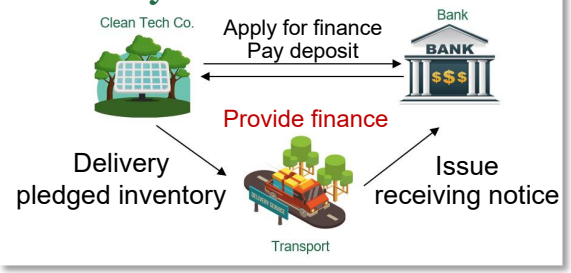


Financing
Supply chain finance

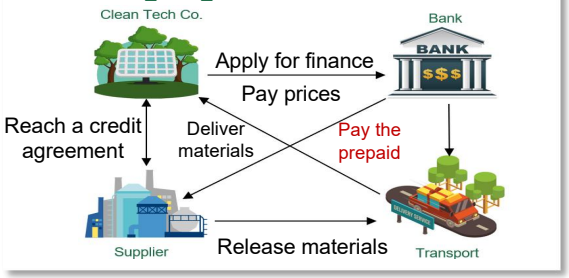
Account receivables finance



Inventory finance

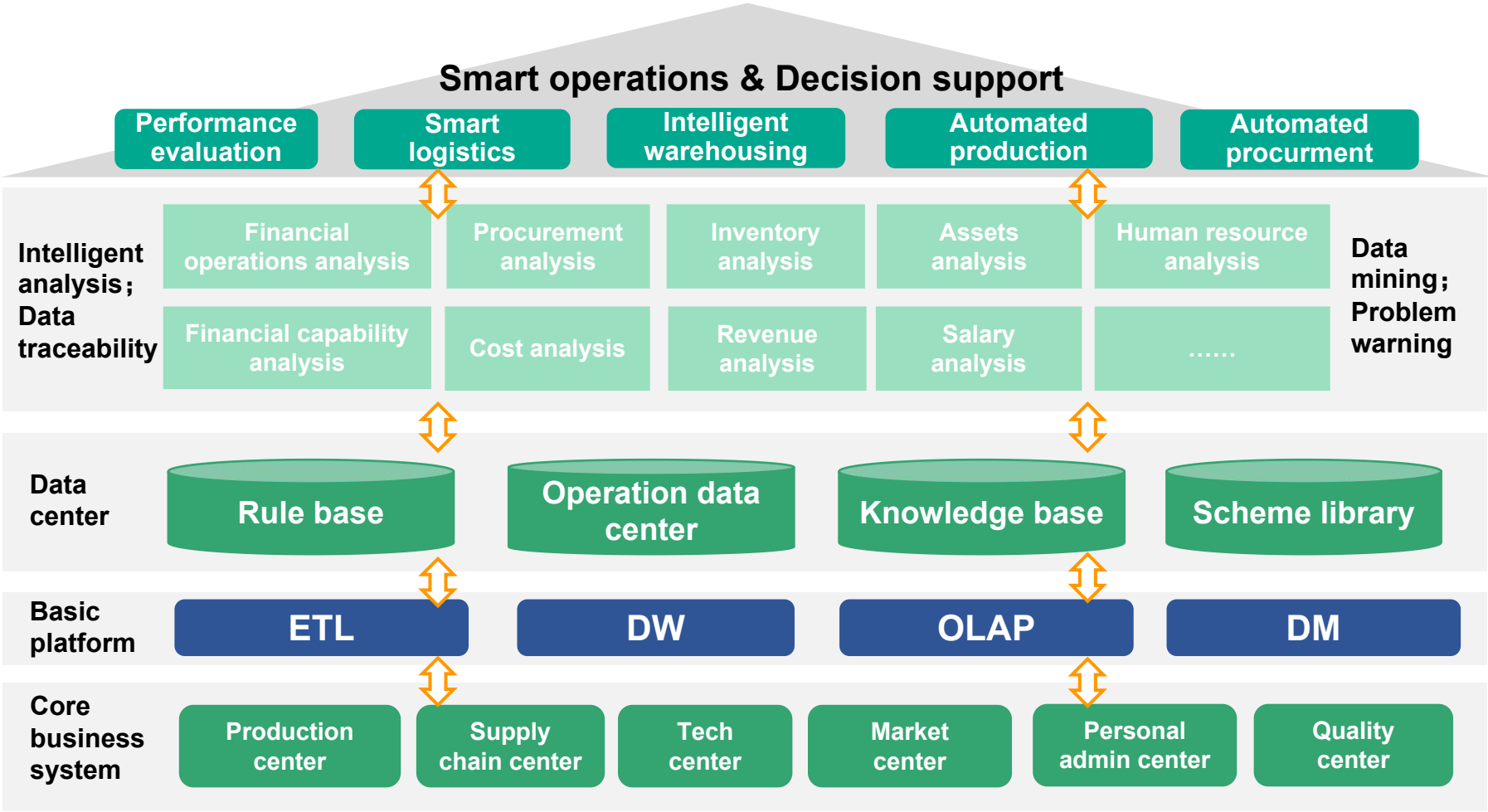


Account prepaid finance



Financial Center: the Integration of Business and Finance

CleanTech Co.



As the hub of decision-making information, the financial department links the economic decision-making of all departments

Eg: production + supply chain+ financial ➡ control of raw material purchase price

03
Budget Management for Tech Center

Technology Development VS Product Development

CleanTech Co.

Technology Development

It refers to the **substantial improvement** for processes or systems of production or management by using knowledge gained from **research and experience** internally or **importing technology** externally.

Product Development

It refers to the process of **upgrading current products** or **designing, conceiving and realizing new products**, based on **market needs**, industry environment and other aspects.

Main point: The change of Perceived Value of a product or service to Customers

What is Perceived Value

The judgment of a product or service by consumers ideas of what is taken and what is given.

- Usage value
- Exchange value
- Esteem value
- ……

Who are Customers

A customer becomes a consumer when he or she uses the goods or services

- Internal customer
- External customer

If **change**, then it's **product** development
If **not change**, it's **technology** development

Reference : Zesemour's theory of customer-perceived value

Technology Development VS Product Development

CleanTech Co.

Characteristics	Technology development	Product development
	Money → technology	Technology → money
Target	Improve **production capabilities** for multiple market segments	Achieve the **financial goals**; deliver product **on time**; **satisfy needs** of one market segment
Certainty	Exploratory, uncertain	Certain, predictable
Objects	Equipment, material, energy resource, production process	Product
Risk	High technology risk	Low technology risk; high commercial risk
Team member	Technician	Cross-department team
Project establishment criteria	Applied in the future to form strategic leverage of **differentiation** advantages	Achieve **profits** or **fit** into strategy
Success criteria	Can be used for product **development**/production **improvement**	Met **customer requirements** and achieved **sales expectations**

Management focus		
	Cost	**Quality**
	Security	**Efficiency**
	Excellence & Professionalism	**Customer needs**

Technology Development and Product Development in Intelligent Junction Box

CleanTech Co.

Functional advantages of intelligent junction box

Product types	Bypass Protection	Temperature detection	Voltage detection	Output switch	ID uniqueness	Wireless communication	Current detection	Alarm	Power tracking
Traditional	√	×	×	×	×	×	×	×	×
Normal intelligent	√	√	√	×	√	√	×	√	×
Fully-intelligent	√	√	√	√	√	√	√	√	√

Technology development in junction box

Core Technology

- ✓ **Maximum power point tracking technology**
  - – Monitor and improve the power generation efficiency
- ✓ **Intelligent shutdown technology**
  - – Automatically cut off circuit in abnormality
- ✓ **MOSFET thyristor integrated control technology**
  - – Reduce heat generation to increase service life

→ Temperature detection, Voltage detection, Current detection, ID uniqueness, Wireless communication, Power tracking

→ Alarm, Output switch

→ Bypass Protection

Supporting Technology

- ✓ Scientific achievements management technology
- ✓ Phased achievement verification technology
- ✓ Technology alarm and control technology

→ Overall process efficiency and management

Product development in junction box

- ✓ **Intelligent control chip**

–Through three main functions, improving life cycle of junction box, reducing cost of cables, wiring and other materials

Reference : Company Announcement of QC Solar, Open website

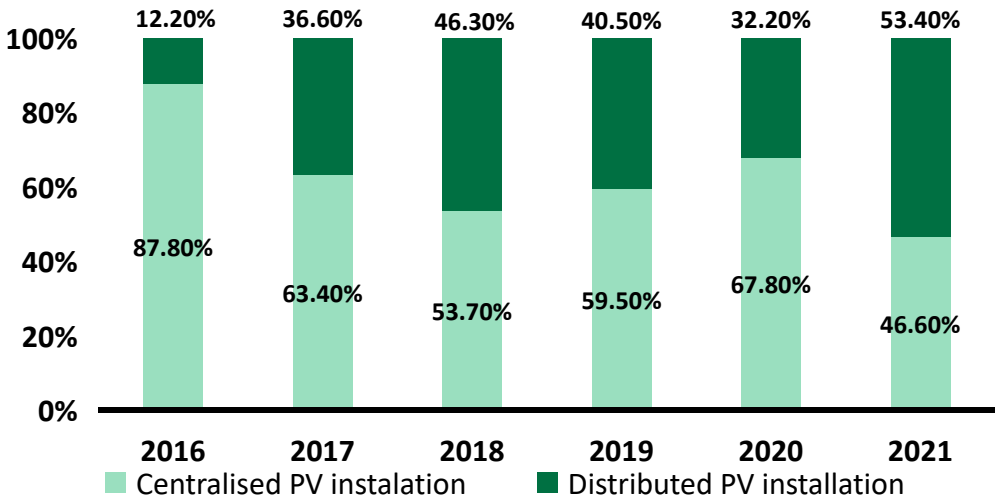
The Necessity of an Increment of ¥5 m in R&D Development: Seize market opportunity and maintain long-term competitiveness

CleanTech Co.

Distributed PV installation becomes main force

- Distributed PV installation, with **lower initial investment** comparing to centralized PV installation, is attracting more downstream manufacturers.
- **High security requirements** of distributed PV installation making intelligent junction box more applicable, which owns the advantages of **MPPT**, **intelligent shutdown** and **low calorific value**

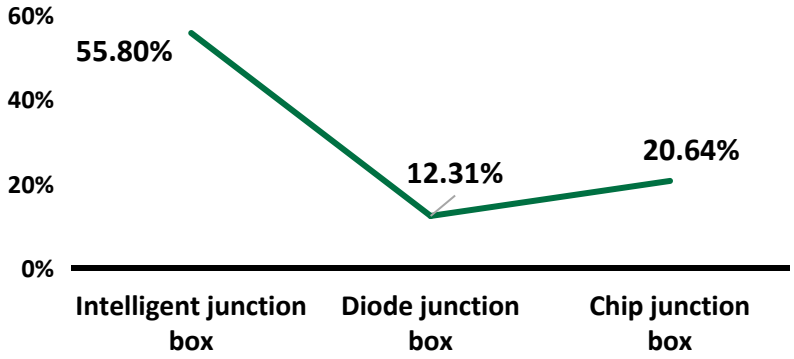
2016-2021 China PV Installations Proportion



Excellent profitability

- Benchmarking one of the first enterprises in the industry to start the development and pilot sales of intelligent junction boxes and finding it **gains more profits** than the ordinary one at the user end.

2021 Gross Profit Margin in Different Kinds of Junction Boxes



Policy promotes intelligent modules

Intelligent photovoltaic industry innovation and development action plan (2021-2025)

Reference : Company Announcement, : National Energy Administration, Kaiyuan Securities Research Institute

Allocation of R&D investment: Forecast R&D investment of Clean Tech Co. in 2022

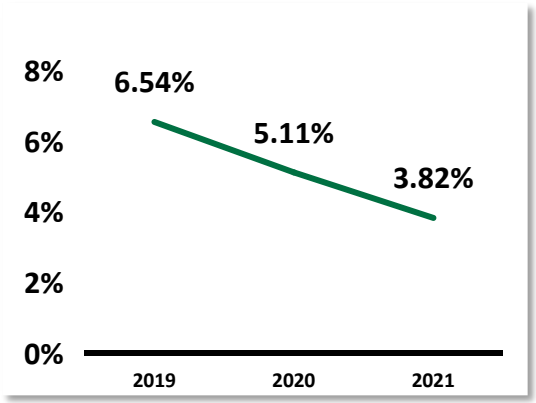
CleanTech Co.

R&D Investment = R&D expensed amount + R&D capitalized amount

R&D expensed amount

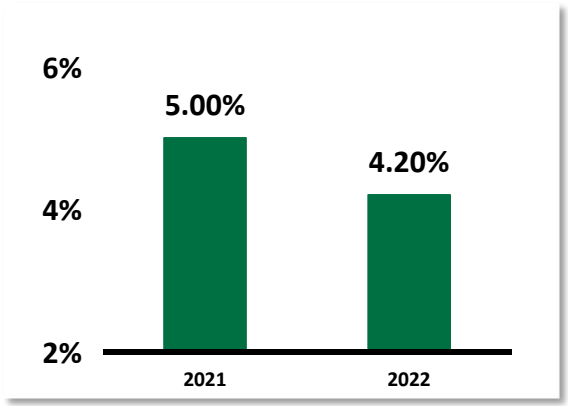
✓ Determine the R&D expense rate of Clean Tech Co. in 2022

2019-2021 R&D Expense Rate of QC Solar



R&D expense rate growth = **-16.02%**

2021-2022 R&D Expense Rate of Clean Tech Co.



R&D expense rate in 2022 = **4.20%**

R&D expensed amount =**730m** * 4.20% = **30.66m**

R&D capitalized amount

✓ Referring to several comparable companies Tongling Electric and JSHT
✓ There is no capitalized R&D investment in recent years

R&D expensed amount = **0m**

Conclusion

Total R&D investment in 2022 **(without additional investment of ¥5m)** = ¥ **30.66m**

Reference : Company Announcement of QC Solar Notes: calculation process please see in appendix 2

Allocation of R&D investment: Sharing investment between two product series & Sharing investment within junction box

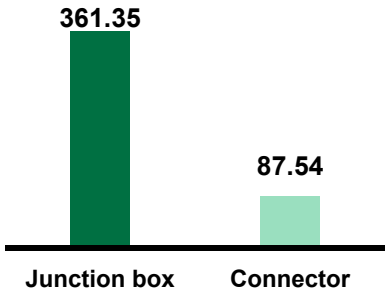
CleanTech Co.

Sharing investment between two products Junction box & Connector

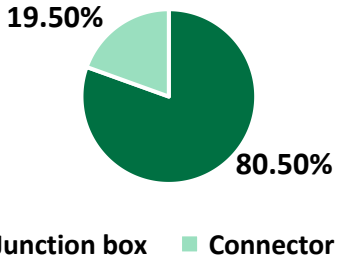
Distribution idea

- According to **costs of sales** of two main product series referring to the most similar comparable company QC Solar in reality
- **Allocating the initial R&D** investment between **junction box** and **connector**

The First Half of the Year 2022 Costs of Sales of Main Products in QC Solar (¥m)



Proportion of Investment in Junction Box and Connector



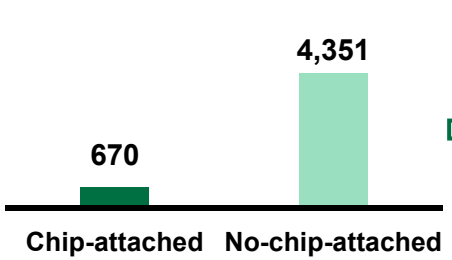
	Junction box	Connector
R&D Investment(¥m)	24.68	5.98

Sharing investment within junction box Original products & Intelligent products

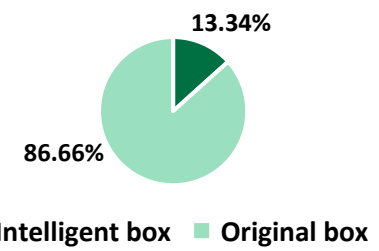
Distribution idea

- According to the **sale volumes** of chip-attached and no-chip-attached junction box referring to comparable company Tongling Electric
- **Allocating ¥24.68 m** between **intelligent junction box** and **original junction box**
- **Input ¥5m** new investment into **intelligent box**
- Ensuring **competitiveness of original box** and **development of intelligent box**

2021 Sales Volumes of Chip-Attached and No-Chip-Attached Junction Box in Tongling Electric (m)



Proportion of Investment in Intelligent Box and Original Box



	Intelligent	Original
R&D Investment(¥m)	8.29	21.39

Reference : Company Announcement of QC Solar Notes: calculation process please see in appendix 2

Allocation of R&D investment: Sharing investment between two stages & Expenses control

CleanTech Co.

Sharing investment between two stages: Technology & Product development

Distribution idea

- **Allocating ¥ 8.29m** between **technology development** and **product development** of intelligent junction box
- Maintain **profitability** of overall junction boxes
- The expensed proportion in the technology development stage is **significantly higher** than that in the product development stage.

✓ **60%** to technology development stage

✓ **40%** to product development stage

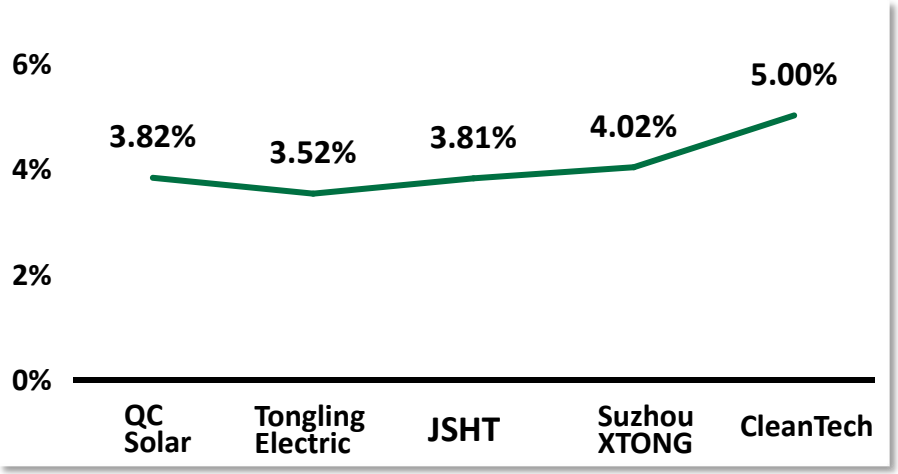
	Technology development	Product development
R&D Investment(¥m)	**4.97**	**3.32**

Expenses control: Managing expensed investment amount

Distribution idea

Maintaining the R&D expense rate ranging from **3.50%~5.00% if the actual R&D investment above ¥30.66 m,** referring to the data from Clean Tech Co. and from several comparable companies in reality in 2021.

2021 R&D Expense Rate in several companies



Reference : Company Announcements from several companies Notes: calculation process please see in appendix 2

Control Mechanism & Participative Budget

CleanTech Co.

Control mechanisms		Budget features
Before	Input control	Decision-making functions
	Project initiation review	Communication function
	Budget involvement	
	Rational allocation of resources	Resource allocation function
During	Process control	Decision & control functions
	Use resources efficiently	Project initiation review
	Interactive budgeting	Communication& feedback function
	Budget adjustment	Communication function
After	Output control	Decision-making functions
	Evaluation & incentive	Performance evaluation function
		Incentive function

Prepare a budget = Participative budget + Activity based budget

Participative budget

People impacted by the budget are actively involved in the budget creation process.

Procedures

- The bord/senior managers put forward the overall goal of tech center.
- Project teams(product design & electronic design dept) make their own budgets. MA dept ought to provide professional assistance.
- Tech center pools these budgets to form the R&D budget.

Activity Based Budget

CleanTech Co.

Activity based budget

What

Activities are thoroughly analyzed to predict costs and to achieve the optimal allocation of resources.

Why

Overcome difficulties caused by the high degree of uncertainty and non-standardization of R&D activities.

How

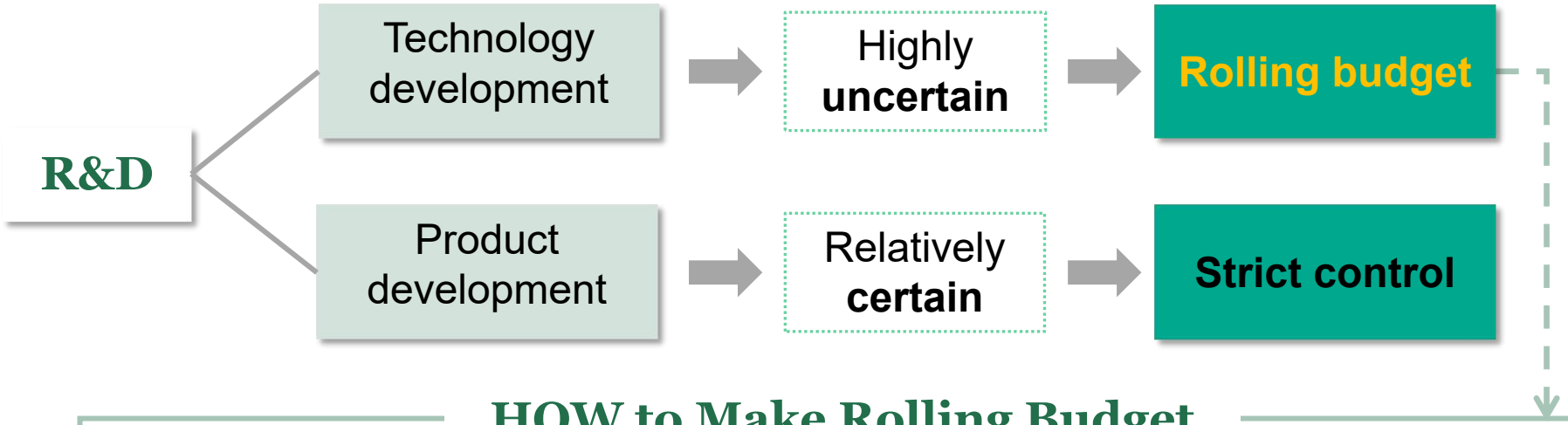
①Identify **main activities & cost drivers**
②Aggregate costs
③Allocate costs based on cost drivers

Technology development				
Stage	Technical concept formation	Technical concept research	Technical concept landing	Acceptance of technological achievement
Main activity	Proposal put forward	Feasibility research	Dismantling key tech's, R&D	Review , determine further management
Cost driver	Numbers of proposal put forward	Budget size	Human resource input & machine hour	Human resource input

Product development			
Stage	Definition	Design	Develop
Main activity	Set-up the team, approve business plan	Design	Develop MVP(minimum value product), user review & feedback
Cost driver	Labor hour	Labor hour	Number of MVP

Intermediate Control for Technology Development: Rolling Budget

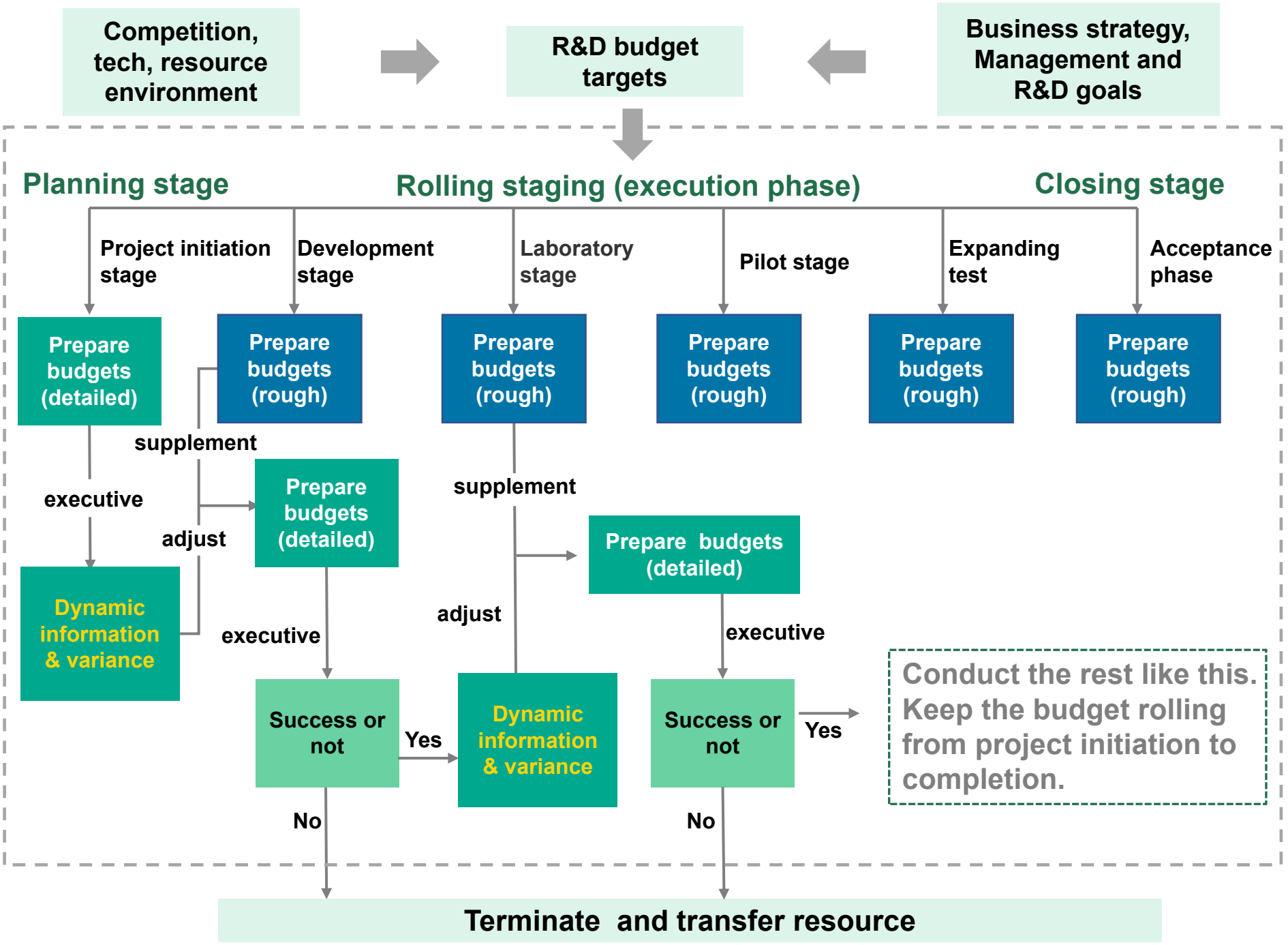
CleanTech Co.



HOW to Make Rolling Budget

- ✓ Pre-set important **time nodes.**
- ✓ Provide **budget buffer period** after each node to supplement and adjust budgets.
- ✓ Prepare **detailed** budget for **next** period and relatively rough budgets for the other.
- ✓ After implementing each detailed budget, the **dynamic information** and **variance** should be included in a new round of budgeting.
- ✓ Implement the **new detailed budget.**

ATTENTION: Strike a balance between flexibility and control


Competition, tech, resource environment
R&D budget targets
Business strategy, Management and R&D goals
Planning stage
Rolling staging (execution phase)
Closing stage
Project initiation stage
Development stage
Laboratory stage
Pilot stage
Expanding test
Acceptance phase
Prepare budgets (detailed)
Prepare budgets (rough)
Prepare budgets (rough)
Prepare budgets (rough)
Prepare budgets (rough)
Prepare budgets (rough)
supplement
executive
adjust
Prepare budgets (detailed)
Dynamic information & variance
supplement
Prepare budgets (detailed)
adjust
executive
executive
Success or not
Yes
Dynamic information & variance
Success or not
Yes
Conduct the rest like this. Keep the budget rolling from project initiation to completion.
No
No
Terminate and transfer resource

Intermediate Control for Product Development: Strict Budget

CleanTech Co.

Third weekend of every month

- ✓ Managers of **tech center** and **financial center meet**
- ✓ **Specific progress estimation** for current month based on accumulated progress
- ✓ To ensure target progress will be achieved

End of every month

Budget detailed table

- ✓ Formed by **financial center and technology center**
- ✓ To present **project progress**, **financial expense progress** and **payment progress** for the next month

Every month

Every Tuesday

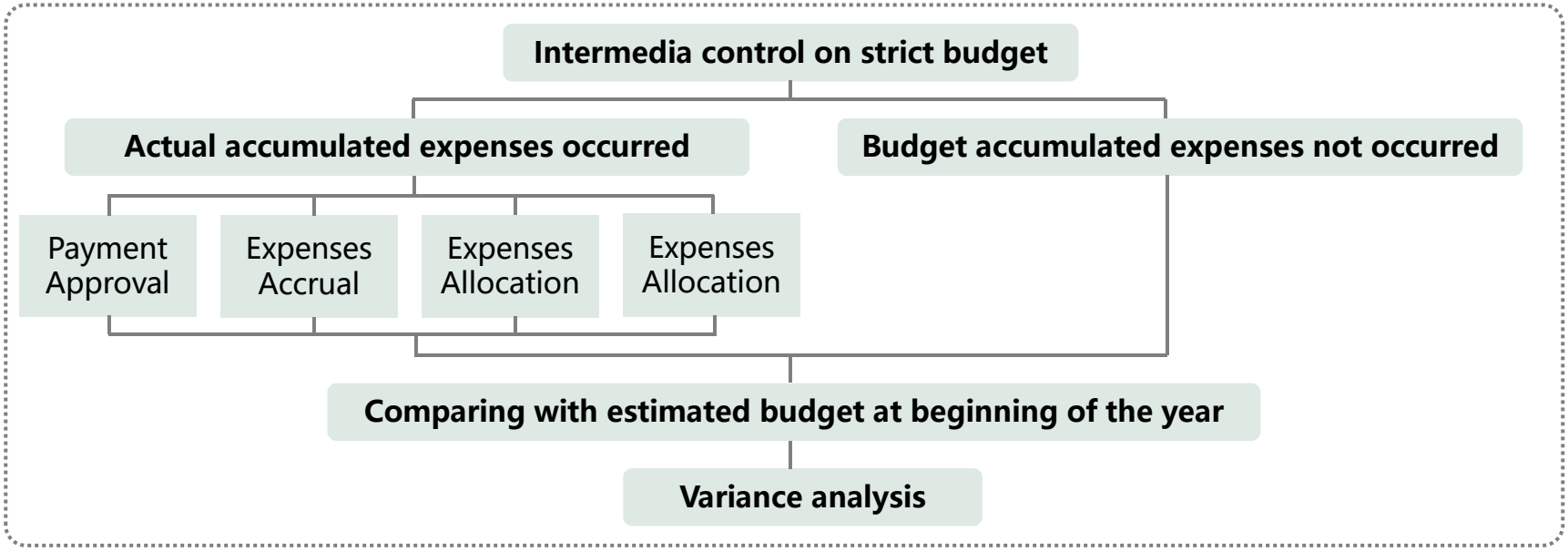
Expense analysis table

- ✓ Formed by **financial center**
- ✓ To **alarm** progress control and delayed work

End of every month

Variance analysis report

- ✓ Formed by **managing accounting department**
- ✓ To compare **actual results** with **budget** of **progress and expenses** for the month
- ✓ To summarize **differences**, clarify **causes** and **continuous improvement**



Post-budget Control: Performance Evaluation Function & Incentive Function

CleanTech Co.

Performance evaluation function

Determining evaluation index

Primary index	Secondary index	Tertiary index
Performance evaluation system based on budget management	Budgeting	• Budget preparation basis • Budget editing data
	Budget implementation	• Budget implement attitude • Budget execution time
	Implementation results	• Financial index • Non-financial index
	Continuous improvement	• Adjustment procedures • Evaluation direction

Fuzzy comprehensive evaluation method

✓ Converting qualitative evaluation into quantitative evaluation

Making factor set $U = (u_1, u_2, \cdots, u_m)$

→ Making evaluation set $V = (v_1, v_2, \cdots, v_n)$

→ Conducting single factor fuzzy evaluation to obtain the evaluation matrix $R_i = (r_{i1}, r_{i2}, \cdots, r_{in})$

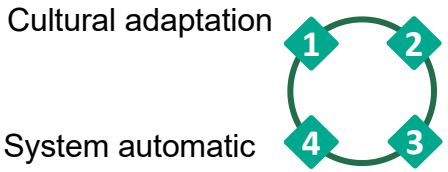
→ Determine factor weight $A = (a_1, a_2, \cdots, a_m)$

→ Establishing a comprehensive evaluation model $B = A_{1*m} \circ R_{m*n}$

→ Conducting total scores of system $F = B_{1*n} * S^T_{1*n}$

Incentive function

Four stages of incentive based on performance evaluation



Basic principles

✓ Enterprise first
✓ Following the principle of market
✓ Positive reward principle
✓ Based on demand
✓ Fairness and impartiality
✓ Moderate reward and punishment

Measures

Target incentive	target responsibility system
Respect incentive	value orientation
Participation	management and advice
Honour incentive	attitude and contribution
Care incentive	daily work and life
Competition	survival of the fittest

Risk Associated with Budget and Its' Management

CleanTech Co.

Who are faced with	What	How to manage
Budgeters	Cost & time consuming	Standardize processes; IT support
	Budget slack	The reward is divided to "reward for prepare a sound budget" and "reward for achieve the budget".
Fund approvers	Money management rigid risk	Streamlined approval process for budgeted spend; strict one for off-budget expenditures.
Evaluator	Budget assessment risk	Establish the necessary exemption mechanisms; a sound performance appraisal system, turn to consultants if necessary.
	Budget assessment independence risk	MA should not be the only dept in charge of assessment; the board or a depend committee should be involved.

ATTENTION

Budget Risks

ABB budget	Rolling budget	Strict budget
• Selection for cost drivers is arbitrary • Inconvenient to manage and control	• Lagging information due to bills in transit • Lack of cooperation of other divisions • Lack of executive force from heavy jobs	• Deviation from reality • Lack of flexibility


THANKS FOR YOUR ATTENTION !

Reference

CleanTech Co.

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Appendix

CleanTech Co.

Appendix 1 : Detailed illustration of predictive benefits analysis

- **Rectification costs**

non-automated: RMB5000-RMB8000 (month per production line)
automated: the rectification costs can be ignored

- **Labor costs**

non-automated: 3 person * 2 shifts = 6 persons' costs = RMB48000 (month per production line)
automated: 1/2 person * 2 shifts = 1 person's cost = RMB8000 (month per production line)

- **Material costs**

non-automated: RMB20000 (month per production line)
automated: RMB500 (month per production line)

Appendix 2 : Detailed illustration of allocation of R&D investment

➢ **Forecast R&D investment of Clean Tech Co. in 2022**

1. Determine the R&D expensed amount

(1) Determine the R&D expense rate of Clean Tech Co.

(i) Calculate the expense rate growth of the most comparable company QC Solar.

$$\sqrt{\frac{3.82\%}{6.54\%}} - 1 = -16.02\%$$

(ii) Calculate the R&D expense rate in 2022 based on the result from (1) and R&D expense rate of 5.00% in 2021.

5.00% * (1-16.02%) = 4.20%

(2) Ensure the target revenue in 2022 = **¥ 730m**

(3) Calculate the R&D expensed amount in 2022 = **¥ 730m * 4.20% = ¥ 30.66m**

2. Determine the R&D capitalized amount

Considering several companies in reality, there is no capitalized R&D investment in recent years.

The R&D capitalized amount in 2022 = **¥ 0m**

Conclusion: Total R&D investment (without additional investment of ¥ 5m) = ¥ 30.66m

Appendix

CleanTech Co.

Appendix 2 : Detailed illustration of allocation of R&D investment (¥ m)

➢ **Sharing R&D investment between two product series: Junction box and Connector**

According to the **costs of sale** of two kinds of product in QC Solar, the most comparable entity.

30.66
- **Junction box:** 30.66 * 80.50% = **24.68**
- **Connector:** 30.66 * 19.50% = **5.98**

➢ **Sharing R&D investment within junction box: Original products and Intelligent products**

We assume that additional 500m will be input into intelligent box, and 80% of the remaining to intelligent box too.

24.68
- **Intelligent junction box**
  - 5
  - 24.68 * 13.34% = 3.29

  → **8.29**
- **Original junction box** **24.68** * 86.66% = **21.39**

➢ **Sharing R&D investment between two stages: Technology and Product development**

We assume that 60% of investment will be input into technology development, while the 40% to product development.

8.29
- **Technology development:** 8.29 * 60% = **4.97**
- **Product development :** 8.29 * 40% = **3.32**