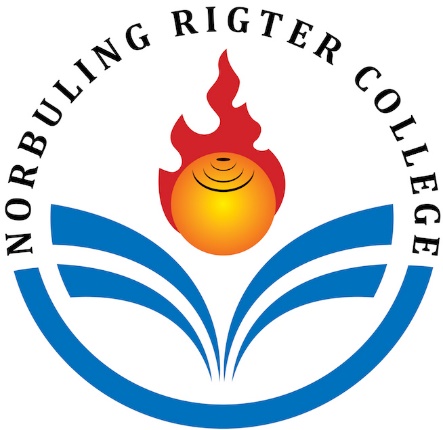
**NORBULING RIGTER COLLEGE**

**(Affiliated to Royal University of Bhutan)**

DOTENG, PARO, BHUTAN



**Title of the Assignment :**Case study on Adopting Renewable Energy in Manufacturing- A Path to Sustainable Growth

**Module Code and Name :** GSE101 Analytical Skills

**Module Tutor :** Prof.Dr. Vansanglura

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**Declaration**

We hereby declare that this academic work is our own and those derived from other sources have been appropriately acknowledged. We understand that if found otherwise, our academic work will be cancelled and no mark will be awarded besides the legal consequences***.***

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Signature of Student:

**Sl No Criteria Marks Assigned Marks**

1. **Identifying the problem 5%**
2. **Choosing the right approach for the 10%**

**analysis and solving the problem**

1. **Drawing the correct conclusion with 5%**

**a recommendation**

**Feedbacks/Comments by Module Tutor:**

**Introduction**

In a world facing climate change, energy insecurity, and rising fuel prices, renewable energy has become more than just a trend. It's a smart business choice. Governments are enforcing stricter rules, and customers prefer green and ethical brands. As a result, companies in various industries must rethink their energy usage.

This case study looks at Green Works Manufacturing Ltd., a mid-sized company that makes home appliances. It highlights the company's urgent need to shift from fossil fuels to renewable energy, the challenges it encounters in this process, and how real-world companies like IKEA have successfully managed similar changes.

**Identifying the Problem**

Green Works Manufacturing Ltd. is under increasing pressure from regulators, customers, and investors to cut its carbon footprint. The company's current energy model relies mainly on diesel generators and grid electricity that mostly comes from non-renewable fossil fuels. However, the cost of electricity from fossil fuels has been rising, and government carbon taxes are adding to the company's financial strain. Furthermore, environmentally conscious consumers are more inclined to support businesses that show they practice sustainability. Competitors are also starting to use cleaner technologies, presenting themselves as green brands.

This situation has pushed Green Works to look into switching to renewable energy sources like solar or wind power. The main challenge is how the company can make this transition in a cost-effective way, without disrupting its manufacturing processes or harming short-term profits.

**Choosing the Right Approach for Analysis**

To understand the issue and find the best way forward, we used three key tools: SWOT Analysis, PESTLE Analysis, and Cost-Benefit Analysis.

**A. SWOT Analysis**

The SWOT analysis showed that Green Works has a strong market presence and a skilled workforce. These are valuable assets for implementing change. However, the analysis also pointed out that the company uses older infrastructure. This might not work well with new energy systems unless it is updated.

On the bright side, government subsidies for solar installations and the option of green loans offer significant opportunities.

At the same time, the risk of competitors using sustainability for an edge and the possibility of employee resistance to changes in operations should be addressed and reduced.

B. **PESTLE Analysis:**

The PESTLE analysis showed a clear need for change.

Politically, the government actively supports renewable energy with tax breaks, grants, and environmental policies.

Economically, while the initial investment in renewable systems is high, the long-term savings from reduced energy bills are substantial.

Socially, consumers are increasingly choosing eco-friendly brands, and employees often feel proud to work for socially responsible companies.

Technologically, solar panel technology has become mature and accessible, which reduces adoption risks.

Legally, emissions standards and reporting requirements are tightening, and companies that do not comply may face penalties.

Environmentally, switching to solar energy would significantly lower the company’s carbon emissions and boost its sustainability rating.

C. **Cost-Benefit Analysis:**

A cost-benefit analysis (CBA) evaluated the financial implications of switching to solar energy. The proposed up-front cost is about $500,000 for conducting a rooftop installation of solar panels at one of the company’s primary facilities. This cost would include the solar panels needed for the installation, installation, and maintenance for the first year. The anticipated annual savings on electricity costs are projected to be approximately $100,000, which would provide the company with a payback period of five years.

Over the next 20 years, the energy savings from this alternative energy project is estimated to cumulatively exceed $1.5 million. Additional savings of adopting an alternative source of energy would be stable energy prices, a reduced dependence on the national grid, and an opportunity for environmental certification and green branding. These benefits that may impact savings would also cultivate increased community trust and support; the company would be viewed as a stronger brand.

**Real-Life Example: IKEA’s Renewable Energy Journey**

To support the case for the adoption of renewables, the real experience of the world's most well-known furniture retailer, IKEA, is included. IKEA is famous globally for its furniture, and it began to invest heavily in renewable energy over ten years ago. By 2020, the retailer had solar panels on over 90% of its stores and warehouses, and more than 500 wind turbines scattered around the world. The ambition of IKEA was to generate more energy than it consumed, and it effectively did in certain markets. The sales and social responsibility reports were filled with millions in energy savings each year, customer loyalty climbed, and carbon emissions were sharply reduced. The perspective of IKEA — that is, we will invest now for a sustainable future — is an important lesson for Green Works that even large energy user companies can successfully pivot their energy use towards renewables while preserving profit and public trust.

Finally, it is clear from the reported effort, and more importantly the cost-benefit analysis, that, yes, the transition to renewable energy may have challenges, but reward will exceed risk. Green Works should implement a phased approach to deployment in order to manage cost, as well to mitigate operational disruptions. A single pilot project in a production facility can easily become a template for deployment at other production sites. Publicly funded subsidies and green loans to assist Green Works with the transition away from fossil fuels will greatly reduce the financial burden.

**Recommendation**

The first step in the plan is for Green Works to establish a pilot solar project in one of its smaller facilities. This allows the organization to gain experience with utilizing solar energy in its operations while significantly limiting risk with a small (<10%) investment of capital.

To minimize upfront cost, Green Works should apply to a government grant or tax credit program geared towards renewable energy projects. The organization should also involve employees by incorporating educational programs or open forums for discussion to minimize resistance and disruption during installation.

Green Works should develop definitive measurable goals to keep the pilot project on track and regularly report back to stakeholders on success—e.g., establish a goal of achieving 50% of total energy from renewable sources by 2027.

Finally, the organization should reallocate any cost savings toward other sustainability-related project possibilities, for example, energy storage systems or water recycling systems.

**Conclusion**

Green Works Manufacturing Ltd. must act quickly and strategically in its transition to renewable energy. The rationale for change is multi-faceted — economic, environmental, legal, and social. Green Works’ internal capacities, combined with enabling factors in the external environment and consumer trends, make now a timely and necessary time for change. The transition will require investments and hurdles in the near-term, but the long-term payoff includes cost savings, brand superiority, and environmental stewardship. Based on IKEA’s experience, it can be learned that large, complex organizations can, indeed, change the way they consume energy and simultaneously become more resilient and sustainable. Green Works has the prospect to lead its sector by becoming an early adopter of clean energy and demonstrating that sustainability and profitability can actually coexist.

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